
Entamoeba histolytica INFECTION AMONG STUDENTS LIVING IN NNAMDI AZIKIWE UNIVERSITY HOSTELS, AWKA, SOUTH-EASTERN NIGERIA

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Abstract

A cross sectional survey was carried out to determine the prevalence of *E. histolytica* among students living in three hostels of Nnamdi Azikiwe University, Awka, between January- April 2007. Fresh faeces were collected and examined from a total of 460 students. Direct smear technique was used for identification of the trophozoite or cysts in stool samples. Out of the total of 460 stool samples examined, 118 (25.7%) were infected with *E. histolytica*. Mgbajaka Hostel recorded a prevalence of 17.3% while the prevalence of 36 and 23.7% came from Lan Hostel and University Hostel respectively. Infection was higher in females (26.9%) than in males (24.2%). However difference in infection between sexes was not significant ($\chi^2_{cal} = 0.48$, $\chi^2_{tab} = 3.84$, $df = 1$, $p < 0.05$). The soft stool samples had more parasites (58.8%) than the formed stool (19.9%) and this was significant ($\chi^2_{cal} = 45.66$, $\chi^2_{tab} = 3.84$, $df = 1$, $p < 0.05$). Most students patronize road side food vendors with doubtful amoebiasis condition. The study shows that *E. histolytica* could be found in human communities like university hostels. Management of the refectories by university authorities as was done in the seventies and eighties is recommended among others.

Keywords: *Entamoeba histolytica*, trophozoite, students, prevalence, amoebiasis, refectories.

Introduction

Amoebiasis, a protozoan (*Entamoeba histolytica*) parasitic disease is endemic in about 50-80% of the population of some parts of the world (WHO, 1999). *E. histolytica* is endemic in many parts of tropical and sub-tropical Africa, Asia, Mexico, China, South America, Britain, Northern Europe and United States. Distribution is related more to hygiene than to climate. The parasite is transmitted by the faecal-oral route, with the infective cyst being ingested in food, water or from hands contaminated with faeces (Cheesbrough, 1999).

Amoebic dysentery occurs when *E. histolytica* trophozoites invade the wall of the large intestine and multiply in the sub-mucosa, forming large flask-shaped ulcers. The amoebae ingest red cells from damaged capillaries. Dysentery, diarrhea, cramp and general malaise are some of the symptoms. Sometimes *E. histolytica* amoebae are carried to the liver in the portal circulation and form abscesses, especially in the right lobe. This is however more common in adults than in

children, with a higher frequency in men. There is pain and tenderness over the liver, wasting and fever with chills and night sweats (Cheesbrough, 1999).

There is sufficient evidence to show that amoebiasis is endemic in Nigeria (Nnochiri 1975, Abioye and Ogunba 1972, 1978; Okeke *et al* 2003, Asinobi *et al* 2007). However these studies were done among students living in the hostels of Nigerian Universities.

Since amoebiasis is strongly associated with slum conditions, poor sanitation, poverty and ignorance, a pertinent question is, could this disease be found in human communities like university hostels? This study is therefore intended to find out if *E. histolytica* existed among the inmates of the Nnamdi Azikiwe University hostels, Awka, Anambra State, Nigeria.

Materials and methods

Three Nnamdi Azikiwe University hostels were involved in this study. They are Mgbajaka, Lan and University Hostels. Mgbajaka is located along Amudo Road. It is



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about 10 km from the university with free savannah and a field surrounding it. Even though this hostel is fitted with water closets, they do not function, due to non-availability of piped-water. Lan Hostel is located along the road to the former university temporal site. It is an old building with water closets. Refuse is dumped indiscriminately in the hostel surrounding. On the other hand, university hostel is located inside the campus. It is surrounded by trees and scanty free savannah. Cleaning facilities as well as water and electricity are provided by the university authorities.

Between January and April, 2007, a cross sectional survey was carried out. A total of 460 students in the three hostels (Mgbajaka, 150; Lan, 150; University, 160) provided fresh stool samples. Batch of students were given universal sterile container with identification numbers each time it was their turn to provide stool samples. Information on their food habit was also obtained at submission of the stool samples.

Direct smear technique (Cheesbrough, 1999) was used for the examination and identification of the sporozoites and cysts of *E. histolytica*. The dysenteric/diarrhea/watery stool were grouped under soft stool while the semi-formed and formed stool were grouped under formed stool. The soft stool were examined for *E. histolytica* trophozoite without delay to avoid loss of viability and extrusion of food vacuoles containing red cells. Formed faeces were also examined fresh with a drop of saline to emulsify the faeces. The smears were made sufficiently thin and then examined, at $\times 10$ and $\times 40$ objective to identify the cysts and the trophozoites.

Results

Of the 460 students examined 118 (25.7%) were infected with *E. histolytica*. Lan Hostel recorded the highest number [54 (36.0%)] of infected students, followed by University hostel [38(23.7%)] and then Mgbajaka Hostel [26(17.3%)]. The difference in prevalence rate among the hostels was significant ($\chi^2_{cal} = 14.07$, $\chi^2_{tab} = 5.99$, $df=2$, $p<0.05$). Of the 215 males examined, 52 (24.2%) were infected while of the 245 females examined 66 (26.9%) were infected. However the difference in infection between sexes was not significant ($\chi^2_{cal} = 0.48$, $\chi^2_{tab} = 3.84$, $df = 1$, $p<0.05$). Table 1 shows that soft stools were more infected than formed stools and this was significant ($\chi^2_{cal} = 45.66$, $\chi^2_{tab} = 3.84$, $df=1$, $p<0.05$). Information on diet showed that most students frequently patronize road-side food vendors (Table 2). The difference in feeding habit with majority of students patronizing road side food vendors was significant ($\chi^2_{cal} = 20.76$, $\chi^2_{tab} = 9.488$, $df = 4$, $p<0.05$)

Table 1: Prevalence rate of *E. histolytica* by stool sample.

Stool type	No. examined	No./% infected
Soft stool (dysenteric, diarrhea/watery)	68	40 (58.8%)
Formed stool (formed and semi-formed)	392	78 (19.9%)

Table 2: Food habit of students in the three hostels.

Source of food/snacks/ drinking water	No. examined	Percentage
Road side food vendors		
mama put)	102	22.2%
Hawkers	61	13.3%
Canteens	74	16.1%
Mama put/hawkers/ canteens	151	32.8%
Cook by students	72	15.7%

Discussion

From this study, a prevalence value of 25.7% was established for *E. histolytica* infection among the students living in the three hostels of Nnamdi Azikiwe University. This figure is higher than 8.4% recorded in Owerri by Asinobi *et al* (2007) among school children. It is also higher than 14.9% recorded in Equatorial Guinea by Roche and Benito (1999) among household-based samples. It is however lower than 32.7% recorded by Roche and Benito (1999) among in and out-patients of the General Hospital of Malabo, Equatorial Guinea. Lan Hostel had the highest prevalence, followed by University, Hostel while Mgbajaka Hotel had the least value. It is pertinent to note that all the hostels recorded a minimum prevalence of 17.3%. This could be due to poor sanitary condition in the hostels coupled with poor personal hygiene among the students. According to Okpala (1966), the key factors disposing man to *E. histolytica* infection is poor environmental sanitation and poor personal hygiene. Visual observation showed that Lan Hostel was the most unhygienic of the three hostels. Due to lack of water, the toilets were not kept clean, consequently most students resort to defecating in the surrounding.

Findings show that both males and females are at risk, thus the disease is not related to gender. Watery/dysenteric stools harbour more parasite than formed stools. This seem to be a feature in this infection as it is in agreement with some reports (Haque *et al* 2003;

Okeke *et al* 2003). It was reported by Haque *et al* (2003) that children who had recovered from a diarrheal episode with *E. histolytica* had half the chance of developing subsequent *E. histolytica* associated diarrhea, consistent with the development of species-specific acquired immunity. They concluded that *E. histolytica* contributed to overall morbidity from illness.

Responses from the students showed that they eat from road-side food sellers with doubtful hygienic environment. Some are in the habit of eating African salad, *Abacha* (mixed vegetables with sliced cassava) carried about by hawkers. All these unhealthy eating habits expose them to *E. histolytica* infection.

The implication of these findings suggests that management of the refectories by university authorities as was done in the seventies and eighties is desirable. This would reduce eating unwholesome food. It is therefore suggested that health education campaign be organized by the relevant organs to the students and food vendors around the hostels. This education will dwell on lack of toilet facilities and water as well as poor waste disposal in the environment, coupled with indiscriminate defecation. This will go a long way in reducing *E. histolytica* infection as well as other parasitic infections associated with poor sanitary and poor personal hygiene.

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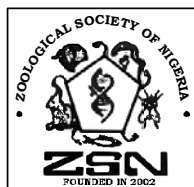
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