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THE PREVALENCE OF INTESTINAL PROTOZOAN PARASITES AMONG THE UNDERGRADUATE STUDENTS OF AKANU IBIAM FEDERAL POLYTECHNIC, UNWANA, EBONYI STATE NIGERIA

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ABSTRACT
The incidence of intestinal protozoan parasites among the undergraduate students of Akanu Ibiam Federal Polytechnic, Unwana was carried out between May and December 2009. One thousand specimen bottles were distributed randomly to the students, and the same number were recovered from the students. Parasitological analysis was carried out on the stool samples, using the wet preparation method, and concentrated zinc sulphate solution. The following protozoan parasites were recovered; *Entamoeba histolytica, Gairdia lamblia* and *Balantidium coli. E. histolytica* had the highest prevalence of 64.5%, while the least prevalence was *B. Coli* with 5.5%. However, the results also show that 73.8% of the total number of students sampled was infected with various intestinal protozoan parasites. The prevalence between male and female were 38.6% and 61.4% respectively. Students within the age range of 16-20 years had the highest prevalence of 80.0% while students within the age range of 31-35 years had the least prevalence of 3.5%. The results show that 44.0% of the female students and 28.5% of both females and males had co-infections of *E. histolytica* and *B. Coli* respectively. Co-infection of *G.lamblia* and *E. histolytica* was also recorded among the males and females. No single individual was found to harbor the three intestinal protozoan parasites recorded in this work. Therefore, poor personal hygiene was observed among the students, and this led to the high prevalence of 73.8% of infections among the students.

KEYWORDS: Intestinal protozoan, *Entamoeba histolytica, Gairdia lamblia* and *Balantidium coli. E. histolytica etc.*

INTRODUCTION

A parasite is an organism that is entirely dependent on another organism refers to as its host, for all its metabolic requirements. A parasite is an organism that for all or some of its life derives its food from living organisms of another species (the host) (Cheesbrough, 1999). Usually parasite lives in or on the body or cells of the host, which is usually harmed to some extent by the association or may cause death. Parasitism is therefore, a relationship in which a parasite benefit and the hosts provide the benefits (Brumpt, 1996). Human intestinal protozoan parasites are organisms that live inside the small or large intestine of humans. Recovery of an independent status becomes increasingly difficult (Brumpt, 1996). Protozoans parasites have several adaptations that ensure their survival in their hosts (Saudra, 1994)). It has been said that, they are remarkably capable of avoiding or counteracting host defensive mechanisms as well as adapting easily to new host species and new habitat situation (Saudra, 1994). Among the intestinal parasitic protozoans, are the *Entamoeba histolytica, Girdia lamblia, Balantidium coli, etc*. The infective stage of the intestinal protozoans are the cysts which usually gets into man either through drinking contaminated water, food, fruits, vegetables etc (Cheesbrough, 1999; Duncan *et al*., 1996). Intestinal protozoan parasites can be controlled through the maintenance of proper personal hygiene. In the research the main aims and objectives are to determine the prevalence of intestinal protozoan parasites among the undergraduate students of Akanu Ibiam Federal Polytechnic, Unwana and find out the courses of protozoan parasites among the students. To determine ways of controlling the infections.

MATERIAL AND METHOD

Study Area

The study was carried out among the students of Akanu Ibiamn Federal Polytechnic Unwana, Ebonyi State, Nigeria. The school is situated in Unwana, Afikpo North Local Government Area Ebonyi State. Fresh stool samples were collected with sterilized specimen bottles from the students of Akanu Ibiam Federal Polytechnic, Unwana. These samples were transported to the laboratory for parasitological analysis. The methods as described by Cheesbrough, 1999 was used for the identification of the intestinal protozoan parasites (3).

Normal saline method (Wet preparation method)

With the aid of a dropper a drop of physiological saline was placed on a clean slide using an applicator stick, a small portion of the stool was mixed with the normal saline drop by drop until a homogeneous mixture was obtained. This was covered with a cover slip and mounted on the microscope for observation of cyst or ova and trophozoites of protozoan parasites. The saline method (wet mount) is not a confirmatory test for intestinal protozoans but served as a general test. It is a form of scanning test to check for intestinal protozoans.

The concentration method using zinc sulphate solution

A small amount of fecal sample was emulsified with glass rod. The mixture was centrifuge for one minute at 2,600 revolutions per minute (rpm). The supernatant fluid was

discarded. The fresh saline was added and mixed before centrifuging. It was repeated three to four times the saline was discarded and resuspended in 33% zinc sulphate solution.

The suspension was centrifuged for one-minute at 2000rpm, after that the supernatant was discarded while the sediment was transferred into a microscope to look out for the cyst, ova etc. of the intestinal protozoan. Iodine solution was used in staining the slide for proper identification of the parasite ova, cysts etc.

RESULTS

One thousand students participated in the investigation, 500 (50.0 %) were females while 500 (50.0%) also were males. After the investigations, a total of three different intestinal protozoan parasites were discovered. The incidence of the common intestinal protozoan parasites by age distribution is presented in table 3.1. Students within the age bracket 21-25 years old were the most infected 170 (68 .0%) while the least infected 103(41.2%) were students within the age group 31-35 years old. The total number of students infected with the various intestinal protozoan parasites was 543(54.3%).

Table 3.1: Prevalence of intestinal protozoan parasites by age in Akanu Ibiam Federal Polytechnic Unwana (A.I.F.P.U.)

Age	No examined	No positive	% Positive
16-20	250	150	60.0
21-25	250	170	68.0
26-30	250	120	48.0
31-35	250	103	41.2
Total	1000	543	54.3

TABLE 3.2: Different types of protozoan parasites recovered from the students and their prevalence

Age range of students	No Examined	No infected with *E. histo lytica*	No infected with *G. lam blia*	No infected with *B.coli*
16-20	250	82	55	18
21-25	250	70	51	16
26-30	250	60	41	10
31-35	250	53	37	8
Total	1000	265(26.5%)	18 4(18.4%)	52(5.2%)

NOTE: *E. his = Entamoeba histolytica, G. lam. = Giardia lamblia, B.coli = Balantidium coli*

From table 3.2, most students were infected with *Entamoeba histolytica* 265 (26.5%), while the least protozoan infection among the students was *Balantidium coli* 52(5.2%). The table also reveals a co-infection of *Entamoeba histolytica* Plus *Giardia lamblia* 29(2.9%) and also a co-infection of *E. histolytica* plus *B. coli* 13(1.3%) among the students.

TABLE 3.3: co-infections of intestinal protozoan parasites among the students.

Age range of students	No examined	No Co-infected	% with	No Co-infected	% with
		E. Histolytica	*G. lamblia*	*E. histolytica*	B. coli
16 – 20	250	10	1.09	5	0.5
21 – 25	250	9	0.9	4	0.4
26 – 30	250	6	0.6	3	0.3
31 – 35	250	4	0.4	1	0.1
Total	1000	29	(2.9%)	13	(1.3%)

Table 3.3 reveals a co-infection of intestinal protozoan parasites among the students. From the table, 29(2.9%) were co-infected with *Entamoeba histolytica* and *Balantidium coli*.

TABLE 3.4 prevalence of intestinal protozoan parasites in relation to sex.

Sex	No examined	No positive	% positive
Male	500	183	18.3
Female	500	360	36.0%
Total	1000	543	54.3

From the table, 3.4 above, more females were infected with various intestinal protozoan parasites 360(36.0%) out of 500 females examined than males 183 (18.3%) out of 500 males examined.

DISCUSSION

The prevalence of intestinal protozoan parasites among the undergraduate students of Akanu Ibiam Federal Polytechnic, Unwana was carried out between June, 2008 and May, 2009 to investigate the occurance of intestinal protozoan parasites among the students. From the results, a total of 250 students within the age bracket 16-20 years were examined for various intestinal protozoan parasites (table 3.1). One hundred and seventy (68.0%) within the age group 21-25 years old were most infected with different protozoan parasites, while the least infected were within the age group 31-35 years of age (41.2%). Ezeama, 2007 had similar findings from his work carried out among student at Enugu where 32-36 years old students

were found to harbour the least of intestinal protozoan parasites (42.3%) as against those within 17-21 years old who were most infected for intestinal protozoan parasites. The reason for the differences being that those within 16-20 years old had low level of personal hygiene as against those within 31 – 35 years of age who are more matured and had better understanding of personal hygiene than those within 21-25 years of age (Okeke *et al*; 2001). In table 3.2, different species of protozoans parasites of intestinal origin that affect the students were recorded and a co-infection of the protozoan parasites were equally recorded in table 3.3. *Entamoeba histolytica* had the highest prevalence of infection (26.5%) among the students, as against (5.2%) prevalence of *Balantidium coli* which was the least among the students. *Balatidium coli* infection is commonly found where pigs are reared or where pig feaces are used in manuring farms. Akanu Ibiam Federal Polytechnic Unwana where the research was carried out has no history of pig rearing. Unlike *Entamoeba histolytica* which is transmitted through houseflies and cockroaches which carry the infective cysts depositing it on human foods and water mainly in unhygienic or dirty environments. The students' hostels are quite unkept and houseflies and cockroaches are commonly seen within the environment. Duncan *et al*; 1969 and Roberton *et al*., 1999; Reported that poor environmental sanitation encourages the transmission of *Entamoeba histolytica.*

Infections with the intestinal protozoan parasites were highest among the age brackets 16-20 years old while the least was found within the age brackets 31-35 years. Table 3.4 shows the prevalence of intestinal protozoan parasites among the students in relation to sex. Females were more infected (36.0%) than males 18.3%. The females were engaged in dirty habits like keeping of long nails, where the infective stages (cysts, eggs etc) of the parasites can easily hide, common sharing of under wears etc. The males were rarely involved with such dirty habits. Similar observations were made by Ezeama and Umeche from their different works (Ezeama, 2007)

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