Adamawa State University Journal of Scientific Research
Volume 9 Issue 2, 2021; Article no. ADSUJSR 0902020
ISSN: 2705-1900 (Online); ISSN: 2251-0702 (Print)
http://www.adsujsr.com

Prevalence of Intestinal Helminthes among Patients visiting General Hospital Uba, Borno State

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(Received in November 2021; Accepted in December2021)

Abstract
This study was carried out to determine the prevalence of intestinal helminthes among patients visiting General Hospital Uba, Borno. A total of 400 samples were collected from the patients comprising of 260 females and 140 males, the samples were examined in the parasitology laboratory of the Hospital. Data collected were analysed using SPSS version 16.0. The result showed that (67.7%) of females were infected while (55.7%) of male were infected. The age group that was mostly infected was 10-25 years. They had the percentage of (70.7%) followed by 26-35 years with the percentage of 63.0%. Lowest infection rate occurred in the age group of 56 and above, infection decreased with increase in age group. Farmers were mostly infected with the total of 68.8% infection, civil servant were least infected of all the species of helminthes, horkworm with (24.7%). Prevalent by sexes, occupation and age groups show that *Trichura trichuris* was the least prevalent. High prevalence rate in the study area were attributed to poverty, ignorance and poor environmental hygiene. The study recommended the use of health education enlightenment campaign programme together with provision of free medical test and treatment in the study area.

Keywords: Prevalence, Patients, Intestinal, Helminths and Sanitation, General Hospital Uba

Introduction

A parasitic disease is an infectious disease caused or transmitted by a parasite. Many parasites do not cause disease. Some parasite like *Taxoptasma gondi* and plasmodium *Spp* can cause disease directly, but other organisms can cause disease by the toxins they produce (Jones *et al*., 2001). Mammals can get parasites from contaminated food or water, bug bites or sexual contact. Ingestion of contaminated water can produce Girdia infections. Other risk that can lead people to acquire parasites are walking bare feet, inadequate disposal of faeces, lack of hygiene, close contact with someone carrying specific parasites and eating undercooked or exotic foods (Keen, 2013) According to Bethony *et al*., (2006),

1. Hookworm disease is a common warm infestation in the developing world cause by *Ancylostoma duodenali* or *Necator americanus*. The illness leads to anemia and malnutrition.
2. *Dracunculiases* is caused by the guinea warm or *Dracunculus medinenses*, which is transmitted through contaminated water. It lies burrowed within the skin and cause severe inflammatory reaction.
3. Biosis or African eye warm disease is caused by the filaria ba-ba warm, which is contracted through deer fly or mango fly bites. The adult warm move through substances tissue toward the sub conjunctiva of the eye. The illness caused swelling in the skin referred to as caliber swelling.
4. Cysticercosis is cause by the park tapeworm or Taenia salamis. Symptoms often do not present for years, but eventually painless bumps develop in the skin and muscles or cause neurological problems.

Echinococcosis is cause by *Echinococcus* tapeworms. The liver is usually affected first, followed by the lungs and brain. Liver disease may cause abdominal pain and jaundice while lungs disease lead to the breathlessness and coughing (Abraham, 2002). Parasitic disease whether soil transmitted vector borne or resulting from particular social habits provide some of public health problems to man (Longhlim, 1998). The public hazard of these diseases includes effects on mortality rate, impairment of growth and development among children. Significant inhibition of productivity resulting in low output anemia and intestinal obstruction which lead to death, in tropic. Generally contamination of water and contact with such contaminated environment present a risk to people especially children in communities with poor water supply and sanitary condition; studies have shown that owing to socio-economics background of the people, the environment which is constantly polluted and socio cultural behavior which encourage continual interplay between man and parasites (Gundiri and Akogun, 2000). Fashuyi

(2015) recorded high rate of helminthes among individuals without toilet facilities in Ibadan. The report further revealed a strong association between parasite transmission and sanitary condition within residential areas. Gundiri *et al*., (2005) reported 83.3% prevalence of intestinal parasites among 0-6 year age group children, 69.2% among 69 years age group, 91.7% in 10-13 and 78.9% among 18-21 years age group in Kwampe, Langtang North, Nigeria. Adenusi *et at*, (2003) recorded 93.9% *Necator americanus* and 1.9% *Ancylostoma duodenale* species of hookworm in an urban community in Osun state, while Madsen *et al.*, (2004) show 20.9% *Ascaris*, 34.0% *Trichuris trichura* and 11.2% hookworm in Leogane Haite Indiana. Okpala *et al.*, (2000) reported that 1.10% of male and 0.55% of female were infected with *Schistisoma mansoni*. They further reported that only 0.55% of male had *Schistosma haematobium* in Apata Laranto Area in Jos, Plateau state.

A study conducted by Luke *et al*., (2000) revealed 11.4% hookworm, 6.6% S. *Mansoni*, 1.7% *E.coli*, 1.6% *Taenia Spp*, and 0.04% Trischuris infection in Lare Local Government Area of Kaduna state. Also Nack *et al*., (2000) reported 9% Taenia, 0.3% Tricuris 4.0% *Taxocara canis* and 21.39% hookworm infection in Zaria Kaduna State While Abdullahi *et al*., (2001) reported 0.56%. *S. steccoralis*, 11.1% hookworm, 3.33% Ascaris and 1.67% S. *mansoni* infections in hospital patients in the same area. Turaki *et al.*, (1987) recorded 82% intestinal helminth infection in two villages (Dumne and Zumo) in Song Local Government Area of Adamawa state. Prevalence of infection however varies from one endemic area to another. For instance, Alo *et al.*, (1993) reported 43.0% prevalence of intestinal parasites among students of post primary institutions in Adamawa state.

Intestinal infection appear to be prevalent among the patient visiting General Hospital Uba, Borno, yet no research work has been conducted to determine the degree of the prevalence of the intestinal helminthes among the patients visiting the hospital in the study area. This study is very paramount not only to the public but also the government as the result of this study will be useful to both researchers and health authorities in the diagnosis, planning and implementing control programmes for intestinal helminthes infection in the study area.

Materials and Methods

The Study Area

Uba district is in Askira/Uba Local Government Area of Borno State which was created in the year 1976 with total land area of about 3,786 square kilometer. Askira/Uba is situated geographically between latitude 10°N and 11°N and longitude 11°E and 13°E. It is situated in the southern part of Borno state bordered with Gwoza Local Government in the north, Hawul Local Government to the south, Chibok Local Government to the west and Michika Local Government in Adamawa state to the east. Uba General Hospital is located in Uba District which is about Five (5) Kilometer along Askira road toward the western part of the town (Borno State Diary, 2011)

Study Population

This study involve children, young and adult of both male and female sexes visiting the General Hospital Uba. 400 specimens were randomly selected from all the classes of patients visiting the Hospital.

Stool Specimen Collection

Wide mouthed specimen container with tight fitting covers was used for specimen collection. The specimen bottles were labelled corresponding with the patient names, date of collection, age and sex of subject. Direct oral interview was conducted to obtain information about the parent's occupation, type of waste disposal and source of water. Patients were provided with clean newspaper and stick of matches, and instructed to pass out stool directly on the piece of paper and the stick was used to transfer small amount of the stool into the specimen bottles. The stool sample was preserved in 10% formalin before taken into laboratory for examination (Chessbrough 2014).

Laboratory Examination

Specimen was examined in the laboratory of General Hospital Uba Askira Borno State. The formal ether concentration technique was used for effective collection of parasites.

1. 10ml of 10% formalin was added to approximately 1 g of faeces. Rent applicator stick was used to stir it, until a cloudy suspension was obtained.
2. A gauze filter fitted into a funnel and the funnel was placed on top of the centrifuge tube.
3. The faecal suspension was passed through the filter into the centrifuge tube till the 7m 1 mark was reached.
4. The filter was removed and discarded with its lumpy residue.
5. 3m1 of ether was added and was well mixed for 1 minute.
6. The taffy plug (debris) was loosed with an applicator stick and the supematant poured away.
7. The tube was replaced in its rack and the fluid allowed on the sides of the tube to drain down to the sediment. It was mixed and a drop transferred to a slide for examination under a cover slide.

8 x 10 and x 40 objective lens was used for the examination of the whole area under the cover slide for ova, cysts and larvae (Chessbrough, 2014).

Data Analysis

Data collected was analyzed using chi-square (X^2) test to assess the association between prevalence of infection in relation to age, sex, and occupation at 95% confidence.

Result

Result obtained from this study shows that out of the 400 samples examined, 254 (63.5%) were infected with one or more gastrointestinal parasites. (Table 1). The table shows the prevalence of gastrointestinal parasite with respect to sex. Out of the 260 females examined in the study, 176 (67.7%) were positive and out of 140 males examined, 78 (55.7%,) were positive. However, there is no significant association between the rate of infection and sex (X2=3 .209, df= 1, p value=0.73)

Table 1: Prevalence of gastrointestinal parasites among different sexes.

Gender	Uninfected	Infected	Total
Females	84 (32.3%)	176 (67.7%)	260
Male	62 (44.3%)	78 (55.7%)	140
Total	146(36.5%)	254 (63.5%)	400

X^2 = 3.209, df = 1, P value = 0.73

Table 2 shows the prevalence of gastrointestinal parasites with respect to age. Out of 184 samples of 10-25 years, 130 (70.7%) were infected. Out of 124 samples of 26-35 years, 78 (63.0%) were infected. In the 26 samples examined of age 36-45 years, 16 (61.5%) were infected. For the 42 people examined of 46-55 years, 22 (52.4%) were infected and the 24 people examined of 56 years and above, 8 (33 .5%) were infected. However, there was no significant association between age and rate of infection ($X^2$7.00, df= 4, p value = 0.135).

Table 2: Prevalence of gastrointestinal parasite with respect to age.

Age	Uninfected	Infected	Total
10-25	54 (29.3%)	130 (70.7%)	184
26-35	62 (37%)	78 (63.0%)	124
36-45	10 (38.5%)	16 (61.5%)	26
46-55	20 (47.6%)	22 (52.4%)	42
56 <	16 (66.5%)	8 (33.5%)	24
Total	146 (36.5%)	254 (63.5%)	400

X^2 = 7.00, df = 4 , P value = 0.135

Table 3 revealed that out of 112 students examined, 74 (66.1%) were infected. Out of 152 farmers examined, 104 (68.4%) were infected, within the 36 housewives examined, 22 (61.1%) were infected, whereas for the 74 traders examined, 42 (56.8%) were infected and out of 26 Civil servants examined, 12 (46.2%) were infected: However, there was no significant association between infection rate and occupation (X^2 =3.895, df = 4, p value = 0.420).

Table 3: Prevalence of gastrointestinal parasites with respect to occupation.

Age	Uninfected	Infected	Total
Students	38 (33.9%)	74 (66.1%)	112
Farmers	48 (31.6%)	104 (68.4%)	152
Housewives	14 (38.9%)	22 (61.1%)	36
Traders	32 (43.2%)	42 (56.8%)	74
Civil Servants	14 (53.8%)	12 (46.2%)	26
Total	146 (36.5%)	254 (63.5%)	400

X^2 = 3.895, df = 4, P value = 0.420

Table 4 showed that Hookworm had the highest prevalence rate of 64 (24.6%) in female while *taenia* had the highest prevalence rate of 26 (18.6%) in male. *Strongyloides* gave least infection in male with 6 (4.3%) while *trichura* have recoded least infection in female, with 14 (5.4%). There was no significant association between species and sex (X^2 = 18.185, df= 2. p-value = 0.794).

Table 4: Prevalence of Species with Sex.

Species	Female	Male	Total
Ascaris lumbricoides	30 (11.5%)	12(8.6%)	42
Hookworm	64 (24.6%)	20(14.3%)	84
Not infected	84 (32.3%)	62(44.3%)	146
Strongyloides	30 (11.5%)	6(4.3%)	36
Trichura trichuris	14 (5.4%)	14(10.0%)	28
Teaniasp	3 (14.6%)	26(18.6%)	64
Total	260 (65%)	140(35%)	400

$X^2 = 18.185$, $df = 2$, P value = 0.794

Table 5 depicts that *Ascaris lumbricoides*, hookworm, *strongyloides* and *trichura* spp, recoded the highest inflection rate with 24 (13.0%), 38 (20.7%), 22 (12.0%), 14 (7.8%) and 32 (17.4%) respectively under the age group of 10-25 years. The age group of 56 and above were least infected by the parasite. There was no significant association between parasite species and age($X^2 = 17.667$, df = 20, p-value = 0.609).

Table 5: Prevalence of Parasite Species with Respect to Age Group.

Species	10-25	26-35	36-45	46-55	56 >	Total
Ascaris	24(13.0%)	14(11.3%)	4(15.4%)	6(14.3%)	0(0%)	48
Hookworm	38(20.7%)	18(14.5%)	4(15.4%)	4(9.5%)	2(8.3%)	66
Not infected	54(29.3%)	46(37.0%)	20(38.5%)	20(47.6%)	16(66.7%)	146
Strongyloides	22(12.0%)	14(11.3%)	4(15.4%)	2(4.8%)	2(8.3%)	44
Trichura	14 (7.8%)	20 (8.1%)	2(7.7%)	6(14.3%)	2(8.3%)	34
Teania sp	32(17.4%)	22(17.7%)	2(7.7%)	4(9.5%)	2(8.3%)	62
Total	184(46%)	124(31%)	26(6.5%)	42(10.5%)	24(6%)	400

$X^2 = 17.667$, $df = 20$, P value = 0.609

Table 6 above showed that 36.5% were not infected while 63.5% were infected. The study also revealed that hookworm has the highest inflection rate of 86 (21.5%) among the occupation sampled, which is followed by teania spp 58 (14.5%), *ascaris lumbricoides* 42 (10.5%), *strongyloides* 36 (9%) and *trichuris* 32 (8.0%)

Table 6: Prevalence of species with respect to occupation

Occupation	*Ascaris lumbricoides*	***Hookworm***	***Not infected***	***Strongyloides***	***Trichura***	***Teania sp.***	**Total**
Student	18(16.1%)	22(19.6%)	38(33.9%)	8(7.1%)	8(7.1%)	18(16.1%)	112
Farmers	18(11.8%)	36(23.7%)	48(31.6%)	20(13.2%)	12(7.9%)	18(11.8%)	152
Housewives	4(11.1%)	8(22.2%)	14(38.9%)	4(11.1%)	2(5.6%)	4(11.1%)	36
Traders	2(2.7%)	14(18.9%)	32(43.2%)	4(5.4%)	6(8.1%)	16(21.6%)	74
Civil Servant	0(0%)	6(23.1%)	14(53.8%)	0(0%)	4(15.4%)	2(7.7%)	26
Total	**42(10.5%)**	**86(21.5%)**	**146(36.5%)**	**36(9%)**	**32(8%)**	**58(14.5%)**	**400**

Discussion

This study reflects high prevalence (63.5%) of intestinal helminthes among the patients that visited the general hospital Uba, Borno. This is attributed to poverty, ignorance, and poor environmental hygiene. This is in agreement with the work of Adeyaba *et al*., (2002) who reported that there are more prevalence of intestinal helminthes in the tropics that provide optimum condition for their propagation and are closely correlated with poverty, ignorance, poor environmental hygiene, lack of toilet and improper health care services. Other reports from parts of tropical Africa have shown very high (70%) inflection rates of intestinal helminthes (Dada *et al*., 1993). The prevalence of gastrointestinal parasites with respect to sex shows that there was higher infection rate among female (67.7%) than in the male (55.7%). The result further shows that hookworm had the highest prevalence rate of (24.6%) in female while teania had the highest prevalence rate of 18.6% in the male. Trichura recoded least infection in female with 5.4% while s for their male counterpart strongyloides was the least with 4.3%. More over the result revealed

that female are more infected than the male this agrees with the findings of Narain *et al*., (2000), that earlier observed the level of female infection to be higher than in the male gender. They attributed this to the level of exposure of women to domestic work. As for the prevalence of gastro intestinal helminthes with respect to age. Children aged between 10 and 25 years had higher infection than other age groups. It may be as a result, this group of people are being exposed to outdoor plays and coming into contact with infected areas. It is worth noting that people of age between 26 and 35(63.0%) were next in terms of higher prevalence of infection. This may be as a result of this group of persons are exposed to infected areas during agricultural and other activates. The relative low infection rate between 36-45 and 46-55 year respectively may be as a result of them knowing the Cause of infection and thereby avoiding infected areas and vectors of the infection. The lower prevalence was recorded in people with age between 56 and above with infection rate of (33.5%) this may be as a result of this group being old and always at home there by limiting their chance of having the infection (Divine, 2008). The pattern of infection rate observed in the study area is in line with the report of Nwoso *et al*., (1999) where prevalence rate decreases with increase in host age. Under the prevalence of gastrointestinal helminthes with respect to occupation. The study revealed that the highest infection rate was within the farmers (68.4%). This may be as a result of their contact with infected water bodies during agricultural activities. It was followed by students (66.1%) and the least infected were civil servant (46.2%) this difference in infection rate may be because of their different level of exposure to source of affection. This result concur with the report of Adeyaba *et al*., (2002).

Conclusion

The finding of this study reveals that there was high prevalence of intestinal helminthes in the study area, this is attributed to poverty, ignorance, poor environmental hygiene. It was observed that female has the highest prevalence than males. It was also observed that infection rate among the patients decreased with increase in age, the lower prevalence was recorded in the age group 56 years and above and this could be associated with a higher level and awareness of personal hygiene.

Recommendations

The present investigation shows a relatively high prevalence of intestinal parasite among patients attending General hospital Askira Uba. In view of this free medical tests and treatment in this community are justifiable and should be promoted or sustained, by government and non-governmental organization. The use of health education enlightenment campaigns programmes in rural communities and improved socioeconomic conditions will no douth enhance the control of intestinal parasite and morbidity caused by these worms.

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