

NISEB 2010035/11105

Prevalence study of intestinal helminthic infections among inmates of Blind Rehabilitation and Vocational Centers in Bida, Niger State, Nigeria

B. B. Barnabas*, G. A. Jiya, N. Dan'Azumi and D. Ijeh

Science Laboratory Technology Department, Federal Polytechnic, Bida, Niger State, Nigeria

(Received August 25, 2010; Accepted November 17, 2010)

ABSTRACT: Survey of intestinal helminth infections was carried out among the physically challenged inmates of the Dokoza rehabilitation and the blind centers, both in Bida; Bida LGA of Niger State. Faecal and urine samples were collected for microscopic examination, for the presence of common intestinal helminth parasites. The results obtained showed that the common intestinal helminth parasite is *Ascaris lumbricoides* (24.0%), mixed infection (infection with more than one parasite types) (22.0%), hookworm (4.0%), *Strongyloides stercoralis* (4.0%). The study also showed increasing trend of infection with longer duration in both centers. Plausible reasons for this observed high trend of infections could be, in exposure of the inmates to contaminated living environment coupled with low personal hygiene. Other reason lies in the fact that these groups are handicapped, indigent and often neglected thus, increasing their vulnerability to these infections. The public health implications of negligence of rehabilitation centers in the country as a whole are discussed in this paper.

Key Words: Prevalence, Intestinal helminths, The Physically Challenged.

Introduction

Human intestinal helminthic infections are among the most prevalent of human infections worldwide and are recognized as major public health problems which often cause significant malnutrition, decrease in muscle strength and impaired cerebral function leading to decreased motivation and energy. The prevalence and intensity of the infections are associated with the risk of morbidity and tend to be highest among handicapped and disabled individuals (Savila *et al.*, 1992; Chan *et al.*, 1994).

Intestinal helminthic infections caused by a variety of helminth worms are commonly acquired through faeco-oral route from contaminated food, fluids and fingers. Handicapped and disabled individuals are generally more vulnerable to these parasitic diseases than the rest population. Among factors advanced for this high vulnerability, is their life of limitation thus, often dependent on others. More often level of personal, living environmental hygiene and socio- economic status are always below the expected standard (Awogun *et al.*, 1995; Elekwa and Ike, 1996; Chong and Sonny, 2001).

*To whom correspondence should be addressed.
Email: banjibarnabas@yahoo.com

High prevalence of parasitic infection and polyparasitism affects health (Cooper *et al.*, 1995), although the interaction is not straightforward. Parasites may decrease nutrient uptake by the host or functionally increase the host's nutrient requirements (Eve *et al.*, 1998). Infections with intestinal helminth parasites are usually asymptomatic, especially if the number of worm is small. Usually intestinal infections may however, be accompanied by inflammation, abdominal cramp followed by diarrhea. There may also be an experience of fever, loss of appetite, nausea, vomiting, weight loss, dehydration, mucus or blood in the stool as well as anaemia and evidenced high eosinophilia count (WHO, 1981).

Materials and Methods

The Study Area

The study was carried out among the in-mates of the Rehabilitation-Vocational centers for the blind and home for the mentally retarded children both located in Bida, Bida LGA, Niger State. Bida is about 85km away from Minna-Niger State capital. Bida is an ancient town, the seat of Etsu Nupe, the traditional head of the Nupe Kingdom and Niger State Council of traditional rulers. The source of water for both drinking and domestic chores by the in-mates is well. Although there is facility for pipe borne water but, its supply is epileptic and not reliable. There is no special health care center for the in-mates except for serious health challenges where such cases are attended to at the Federal Medical Center or the General hospital both in Bida metropolis. Available toilet facility in both centers is pit latrine.

Protocol

Official consent and approval was received from the State Ministry of Women Affairs, Minna, Niger State which has the oversight functions over the two studied centers. Although participation in the study was voluntary, the in-mates were however, educated and encouraged to participate in the study. Two sample containers with tight cover well labeled with the following information: names, age, sex and duration of sojourn in the centre were given for the collection of urine and faecal samples.

Parasitology

Urine samples were centrifuged and examined for the eggs of *Schistosoma haematobium*. Stool samples were microscopically studied using formol-ether concentration method as described by Cheesbrough (Cheesbrough, 1987). Conclusive diagnosis was made with the identification of the characteristic eggs in the samples.

Results

A total number of 50 stool and urine samples were examined for intestinal helminth parasites. Fifty four (54.0%) percent of the handicapped in-mates were infected with one or more intestinal helminth parasites. Common parasites observed were *Ascaris lumbricoides*(24.0%), mixed infection(22.0%), *Strongyloides stercoralis*(4.0%) and hookworm (4.0%). Although the female handicapped in-mates had lower prevalence of infection (30.0%) however, the observed difference is not statistically significant ($P>0.05$).

TABLE 1: Prevalence of Intestinal Helminth Infections among the handicapped In- mates of the Rehabilitation-Vocational and Blind centers in Bida.

SEX	Numbers (% INFECTED)				
	No. Examined	<i>Ascaris lumbricoides</i>	Hookworm	<i>Strongyloides stercoralis</i>	Mixed infection
Male	35	10 (20%)	1(2%)	0	8(16%)
Female	15	2(4%)	1(2%)	2(4%)	3(6%)
Total	50	12(24%)	2(4%)	2(4%)	11(22%)

TABLE 2: Prevalence of urinary schistosomiasis among the handicapped in-mates according to sex in Bida.

Sex	Numbers (% INFECTED)	
	No. Examined	<i>Schistosomia haematobium</i>
Male	35	5(10%)
Female	15	3(6%)
Total	50	8(16%)

TABLE 3: The Table shows the Prevalence of Intestinal Helminth Infection among the Handicapped In-mates in the Rehabilitation-Vocational and Blind Centers in Bida

Age (yrs)	Numbers (% INFECTED)				
	No. Examined	Ascaris lumbricoides	Hook worm	Strongyloides stercoralis	Mixed Infection
10-14	2)	2(4%)	0	0	0
15-19	14	3(6%)	0	0	4(8%)
20-24	6	1(2%)	0	0	1(2%)
25-29	3	0	0	0	0
30-34	6	2(4%)	1(2%)	1(2%)	0
35-39	4	2(4%)	0	0	1(2%)
40-44	8	1(2%)	1(2%)	0	2(4%)
45-49	7	1(2)	0	1(2%)	3(6%)
Total	50	12(24%)	2(4%)	2(4%)	11(22%)

TABLE 4: The Table Depicts the Prevalence of Urinary Schistosomiasis among the Handicapped In-mates in the Rehabilitation-Vocational and Blind Centers in Bida

Age (yrs)	Numbers (% INFECTED)	
	No. Examined	Nos/ % infected with <i>Schistosoma haematobium</i>
10-14	2	0
15-19	14	4(8%)
20-24	6	1(2%)
25-29	3	0
30-34	6	1(%)
35-39	4	1(2%)
40-45	8	0
46-49	7	1(2%)
Total	50	8(16%)

TABLE 5: The Table Shows the Prevalence of Intestinal Helminth Parasites among the In-mates according to Years of Sojourn in the Rehabilitation-Vocational and Blind Centers in Bida.

Duration	No. Examined	Numbers and % Infected			
		Ascaris lumbricoides	Hookworm	Strongyloides stercoralis	Mixed infection
1-10months	2	1(2%)	0	0	0
1-4years	28	6(12%)	1(2%)	0	7(14%)
5-10years	20	5(10%)	1(2%)	2(4%)	4(8%)
Total	50	12(24%)	2(4%)	2(4%)	11(22%)

TABLE 6: The Table Shows Prevalence of Urinary Schistosomiasis among the In-mates according to Years of Sojourn in the Rehabilitation-Vocational and Blind Centers in Bida.

DURATION	No. Examined	Numbers (%Infected)
		<i>Schistosoma haematobium</i>
1-10months	2	1(2%)
1-4years	28	4(8%)
5-10years	20	3(6%)
Total	50	8(16%)

Discussion:

The study has further confirmed the existence of intestinal helminthic infections in Bida and increased vulnerability of the handicapped to parasitic infections. Ramay (1934) had reported earlier, a high prevalence of intestinal helminth infections and urinary schistosomiasis in Bida. Among reasons advanced for this include, low level of environmental hygiene. The handicapped in-mates in Rehabilitation and Vocational Centers must have been exposed to the same contaminated environment hence the observed prevalence of these infections. Another plausible reason for the increased vulnerability of the handicapped is the unavoidable limitation that their health challenges must have placed on them. Prevalence of infections generally was higher among the males than the females however, the observed difference is not statistically significant ($P>0.05$).

The most prevalent parasites among the two sexes are *Ascaris lumbricoides* in males (20.0%), females (4.0%). Although the observed difference is not of statistical significance ($P>0.05$), there is a high prevalence percentage among the males. Ascariasis often times has been linked with poor hygiene and increasing level of environmental

contamination (Mafiana, 1995). Mixed infection (i. e. infection with more than one parasite types) male (16.0%), female (6.0%) was high. The male in-mates must have had higher exposure to the reported contaminated environment. WHO (1987) opined that man manipulates and contaminate the environment through unsanitary habits and practices. The environment in turn becomes conducive for the development, transmission and dissemination of such parasites.

The prevalence of urinary schistosomiasis infection (16%) was unacceptably high since available information strongly implicates an association between *S. haematobium* infection and the induction of bladder cancer and other serious medical consequences (Fontanet *et al.*, 2000). The association of bladder cancer with schistosomiasis seems to be related to the endemicity of the parasite (Chen and Mott, 1989). The association between bladder cancer and chronic urinary schistosomiasis is very strong and the hospital incidence appears to be rising. (Mungadi and Malami, 2007). Most of the in-mates are said to have often resulted to the use of running river around their centers especially where water supply has been steady and regular. Therefore, majority of the infection must have been through that water source.

Conclusion:

The present study has not only confirmed the existence of intestinal helminthiasis and urinary schistosomiasis infections in Bida, but also corroborates earlier report on the vulnerability of the handicapped to these common parasitic infections. Although the present study do not investigate the available infrastructural facilities in these centers for obvious political under-tone and possible mis-interpretation of intention. The result has strongly implicated lack of adequate or decline in the hygiene status of these centers. However, in order to reduce the observed prevalence, the following recommendations are hereby suggested.

Recommendations:

1. There is need for regular deworming programme among the in-mates, this will reduce the worm burden and minimize the potential of transmission to the others in the community.
2. Available facilities in the centers should be maintained and those lacking should be provided such that the in-mates could live with minimal comfort.
3. Private partnership with governmental and non-governmental agencies should be introduced and encouraged, this will minimize the increasing cost of maintenance on the Federal and State governments.

References

- Awogun I.A, Okwerekwu, E.E.O. Oyawoye, O.A. and Bello, A.B 1995: Helminthic infections and anaemia among pregnant women attending antenatal clinic in Ilorin, *Nigeria Bioscience research communication* **7** (1) 41-45.
- Chan, M.S, Medley, G.F, Jamison D & Bundy, D.A.P 1994: The evaluation of potential global mortality attributable to intestinal nematode infections *Parasitology* **109**, 373-387.
- Chen, M. G. and Mott, K. E. 1989: Progress in the assessment of morbidity due to *Schistosoma haematobium* infections: a review of the recent literature. *Trop. Dis. Bull.* **48**:2643-2648.
- Chong and Sonny 2001: Gastroenterology and nutrition, *Current Opinion in Pediatrics* **13**(5):441-446.
- Cooper, E. S.; Duff, E. M. W.; Howell, S. and Bundy, D. A. P. 1995: "Catch-up" growth velocities after treatment for *Trichuris* dysentery syndrome. *Trans. of Royal Society of Tropical Medicine and Hygiene*, **89**: 653.
- Elekwa D.E and Ikeh E.I. 1996: A survey of incidence of intestinal parasites among primary school children in relation to socio-economic factors in Jos, Nigeria. *Nigeria Medical Practitioner*. **31** (4), 60-61.
- Eve E.; Ferraz, E. and Thatcher, V.E. 1998: Parasitic Infection in Villagers from three districts of the Brazilian Amazon. *Liverpool School of Tropical Medicine*. 79-80.
- Fontanet, A. L.; Sahlu, T.; Rinke de Wit, T.; Messele, T. ; Masho, W.; Woldemichael, T.; Yeneneh, H. and Coutinho, R. A. 2000: Epidemiology of infections with intestinal parasites and human immunodeficiency virus (HIV) among sugar-estate residents in Ethiopia. *Ann. Trop. Med. Parasitol.* **94**: 269-278.
- Mafiana, C.F; Sam Wobo, S.O & Akinsete, A.A. 2002: Epidemiology of Ascaris in some Rural communities in Ogun State. *Global Journal of Pure and Applied Sciences*.**6**, 23-26.
- Mafiana, C.F 1995: Intestinal Helmintheasis (With particular reference to Ascaris). *Among school children in Ilewo, Orile Ogun-State, Nigeria, Nigeria journal of Parasitology*. **16**, 47-53.
- Mungadi, I.A. and Malami, S. A. 2007: Urinary bladder cancer and schistosomiasis in North-Western Nigeria. *West African Journal Med.* **26**(3):226-9.

NISEB Journal Volume 11, No. 1 (2011)

- Ramsey, G.W.C. 1934: A Study on Schistosomiasis and certain other helminthic infections in Northern Nigeria. *The West African Medical Journal* **(8)**:2-10.
- Savila L; Bundy D. and Tumkins A. 1992: Intestinal parasite infection, a soluble health problem. *Transaction of the royal society of tropical medicines and hygiene*. **86**, 353-354.
- World Health Organization 1981: Intestinal Protozoan and Helminth Infection. Report of a world health organization scientific group. *WHO Technical Report*. series **666**, Geneva, World Health Organization.
- World Health Organization 1987: Prevention and Control of Intestinal Parasitic Infection. *Technical Report Series* **749**, 86.