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ORIGINAL RESEARCH

A Survey of Helminth Infections in Amakakala, Ogbia Local Government Area, Bayelsa State, Nigeria

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ABSTRACT
This survey was carried out among school children in Amakalakala community in Ogbia Local Government area of Bayelsa State to determine the prevalence of intestinal helminthic infections. 100 faecal samples from the schools made up of 41 males and 59 females were collected and analyzed using direct smear method. In all, 19(19.00%) were infected, with 15(15.0%) having *Ascaris lumbricoides* followed by 4(4.0%) having *Necator* sp. Males, 19.51%, were more infected than the females, 18.64% ($p<0.05$). By age, the 8-10year old children had the highest prevalence rates – 20.00% and 21.67% for *A. lumbricoides* and *Necator* sp respectively followed by those within the 5-7 year old range with 11.11% and 6.67% for *A. lumbricoides* and *Necator* sp respectively ($p>0.05$). Most of the children used the waterside for defaecation. There was no significant difference (P>0.05) in the infection pattern for the socio-demographic data. Most of the children used the waterside for defaecation but no significant difference (P>0.05) in the infection pattern for the socio-demographic data was recorded. It is recommended that periodic surveillance of school children for intestinal helminthiasis should be part of the public health activities.

KEY WORDS: *Bayelsa state, Helminths, Parasites*

Introduction

Helminthiasis is a pathogenic disease caused by multicellular parasitic worms which affect a vast number of human and animal hosts. To class of helminthic worms exist viz: intestinal helminthes (the group that affect the gastrointestinal or alimentary canal of humans or animals) and tissue or visceral helminthes (the group that affect the tissues and organs of the human and animal system). Young children are particularly affected by intestinal helminthes. Poor sanitation and failure to use latrines increase the spread of these worms. Amaechi *et al*. (2013) reported that insufficient basic social amenities are a contributing factor to the spread of parasite.

Majority of this helminthes are transmitted via soil. Soil-transmitted helminths depend on environment contaminated with egg-carrying feaces for transmission of the parasite (Salawu and Ughele, 2015). Helminthes infection is a global phenomenon. Globally, approximately 2 billion people are infected with intestinal helminths (Simarmata *et al*., 2015; Uneke *et al*., 2006). World health organization reported a lower prevalence of 1.5 billion (approximately 24% of global population), are affected by soil-transmitted helminth infections (WHO, 2017). According to Simarmata *et al*. (2015), Amaechi *et al*. (2013), Soil-transmitted helminth infections is a public health challenge in developing nations. Typically, intestinal parasites is a major source morbidity and mortality globally especially in under developed nations and in persons with comorbidities (Awolaja and Morenikeji,

2009). Some of the intestinal helminthes include *Ascaris lumbricoides, Stronyloids stercolaris, Enterobius vermicularis, Trichuris trichiura, Necator americanus, Teania saginata, Teania solium*, etc. The tissue or visceral helminthes include filarial worms, hydatid infection, Schistosomes and Kala-azar to mention a few.

These parasites are more common in rural areas in the developing countries of Asia (mainly China and India), Sub-Sahara Africa, and Central America are often linked to poverty and other social problems such as poor sanitation and lack of clean water (WHO, 2017; Adefioye *et al*., 2011; Uneke *et al*., 2006; Edogiawerie *et al*., 2016).

The World Health Organization estimated that more than one billion of the world's populations including at least, 400 million school-age children are chronically infected with soil transmitted helminthes (Egwunyenga and Ataikiru, 2005; Edogiawerie *et al*., 2016). Furthermore, WHO (2017) reported that about 270 million preschool-age children and over 600 million school-age children residing in countries where these parasites are found need intervention and treatment.

The severity of the disease caused by these soil transmitted helminthes has consistently been found to depend on the number of worms present in the affected person. Intestinal helminthes rarely cause death but impair physical and mental growth of children, thwart educational achievement, and hinder economic development (Adefioye *et al*., 2011). Also, morbidity is related to the number and type of worms harboured (WHO, 2017). When the amount of egg of the worm is much the person tend to experience several symptoms such as intestinal manifestations (diarrhoea and abdominal pain), general malaise and weakness, and impaired cognitive and physical development (WHO, 2017) The nutritional damage caused by soil-transmitted helminths leads to major significant impact on growth and physical development (WHO, 2017). The aim of this survey was to investigate the prevalence of intestinal helminthiasis in school children in Amakalakala community in Ogbia Local Government Area of Bayelsa State.

Materials and Methods

Amakalakala community is in Ogbia Local Government Area of Bayelsa State, Nigeria. The community is a rural settlement and lack basic amenities such as standard hospitals, well treated pipe born water, good toilet system, and adequate facilities for refuse dumps and sewage disposal. Inhabitants of the community are predominantly farmers, some engage in fish farming, trading and some are Civil Servants. The only Cottage hospital and Police post have been overtaken by bushes. There are 61 children in the primary school in the community and 39 in the Basic Junior Secondary School.

The survey was preceded by a pre-survey contact during which permission was sought from the headmaster of the primary school and the Junior Secondary School. Verbal consent was also sought from the parents of the participating pupils through the Parent Teachers Association (P.T.A) of the schools. Questionnaires were administered on each subject so as to collect socio-demographic data including age, sex, type of latrines used, family size, source of drinking water, and toilet system. These were done with the help of their teachers.

Sample Collection and Analysis

The pupils were educated on how to collect the fresh stool samples that were passed in the morning into the plastic containers provided. Stool samples were collected between the hours of 10.00 am and 14.00 p.m. The samples were then transported to the Medical Microbiology and Parasitology laboratory, Niger Delta University. Each faecal sample was carefully examined microscopically for consistency, presence or absent of blood and mucus.

The faecal samples were then examined microscopically for parasites by direct sweat saline method as recommended by WHO (2003), Adefioye *et al*. (2011). A small proportion of the stool sample was collected with the aid of applicator sticks and placed on one side of a clean slide with a drop of normal saline (0.85% Nacl) while a drop of lugol's iodine (1% solution) was placed on the other side of the slide. They were mixed thoroughly to ensure that the film was thin enough. Then a cover slip was placed on it and was examined thoroughly under the microscope for the presence of Helminth eggs/ova.

Data Analysis

The data were subjected to Chi-square statistics at P=0.05.

Results and Discussion

Out of 100 faecal samples examined, 19 (19.0%) were infected. Two species of helminthes were recorded in the

survey namely *Ascaris lumbricoides* (roundworm) and *Necator* sp. (hookworm)

Table 1 shows the prevalence of helminth infections among school children in Amakalakala community primary school, and the basic junior secondary school Amakalakala by sex. The highest prevalence rate of 19.51% was observed among the males and 18.64% was observed among the females. However, there was no significant difference in the pattern of infection between sexes ($p<0.05$).

Table 1: Prevalence of helminth infection by sex among school children in Amakalakala community in Ogbia L.G.A Bayelsa State.

Sex	Number examined	Number infected	% prevalence
Male	41	8	19.51
Female	59	11	18.64
Total	100	19	19.00

Table 2: Prevalence of Helminthes infection among school children in Amakalakala by age.

Age group	No examined	*Ascaris lumbricoides*		*Necator sp*	
		No+ve	%prev	No+ve	%prev
0-4	5	1	20.00	0	0.00
5-7	15	2	13.33	1	6.67
8-10	40	8	20.00	2	21.67
11-13	27	3	11.11	1	3.70
14-16	13	1	7.69	0	0.0
Total	100	15	15.00	4	4.00

Table 2 shows the prevalence of helminthes infection among school children in Amakalakala by age. From the table, by age, the 8-10year old children had the highest prevalence rates – 20.00% and 21.67% for *A. lumbricoides* and *Necator* sp respectively followed by those within the 5-7 year old range with 11.11% and 6.67% for *A. lumbricoides* and *Necator* sp respectively. There was a significant difference in the infection rates between the age groups (*p>0.05*).

From the questionnaires, most of the children used the waterside for defaecation (Table 3). There was no significant difference ($p>0.05$) in the infection pattern for the socio-demographic data.

Table 3: Socio-demographic data of school children in Amakalakala community in Ogbia Local Government Area, Bayelsa State.

Means of Toilet	Number Examined	Number Infected	% Prevalence
Bush	35	7	20.00
Pit latrine	10	3	30.00
River (waterside)	55	9	16.36
Total	**100**	**19**	**19.0**

The high prevalence of intestinal helminthes infection among school children in Amakalakala community may be attributed to poor environmental sanitation, poor personal hygiene practices in the study area and among the school children. The most prevalent among this helminthes was *A. lumbricoides* (15.00%), followed by hookworm infection (4.00%). This result is consistent with reports of Adeyaba and Akinlabi (2002), showing that intestinal helminthiasis caused by round worms and hookworms is a common disease among school children in Nigeria. Typically, the occurrence of parasite such as *A. lumbricoides* in school children may be associated with nutritional status and cognitive development (Hadidjaja *et al*., 1998; Adefioye *et al*., 2011). In this survey, males were more infected than females. It is however important to affirm that more females were enlisted in this study than males. Based on the findings of this study, helminthes associated infection decreases as age increases. Since socio-economic influences affect the prevalence intestinal helminthiasis in developing countries especially in Sub-Sahara African, it may have adverse effects on the educational performance of school children (Adefioye *et al*., 2011). As such examination of intestinal helminths infection should also be extended to non-school children as well.

Conclusion

The assessment of helminthiasis among school children in Amakalakala indicated the presence of *Necator sp* and that the prevalence of *Ascaris lumbricoides* was high among the school children. Sex had no association with infection of the helminthes. Also, the infection rate decreased as the age of the children increased. Since intestinal helminthes infection is attributed to poor personal hygiene and environmental

contaminants, improvement of hygienic status of the individuals and well as general community sanitation could aid in reduce the prevalence of the helminths in the study area. Frequent deworming could also reduce the health risk associated with the helminthes.

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