THE PREVALENCE OF ASCARIASIS IN PRIMARY SCHOOL CHILDREN IN NANKA, ORUMBA NORTH LOCAL GOVERNMENT AREA OF ANAMBRA STATE

Obiukmi, M. O; Azubuike, G. C. and Ezeokoli, E. G.

Abstract

A study was conducted to determine the prevalence of *ascariasis* based on locality, age and sex of primary school pupils aged 5-15 years in Nanka, Anambra State, Nigeria. 450 pupils randomly selected from five primary schools in Nanka town were used. They included primary schools in Enugwu (85), Agbiligba (101), Amako (92), I Cite (89) and Nkwoagu (83). Fresh stool samples were collected from them and prepared on slides using direct smear method. A microscopic examination of the stool samples revealed the presence or absence of *Ascaris* eggs/larvae. Of the five primary schools surveyed, Primary school Amako, Nanka had the highest rate, 88% of *ascariasis*, followed by Isigwu Nwagu Central Primary School, Ifite Nanka, 84.3%, and then Holy Trinity Primary School, Nkwoagu Nanka, 81.9%. There was a significant difference in rate of infection between sexes ($P < 0.05$), females having a slightly higher (81.2%) prevalence than males (75.5%). Statistical analysis also showed that there was significant difference between age and prevalence of infection, the younger ones, 5-10 years, being more exposed to *ascariasis* than their older counterparts, 11-15 years

An integrated control measure was recommended to check an *Ascaris* infections.

Introduction

Geo-helminthes infections had been associated with a considerable amount of morbidity in children in developing countries (Ukoli 1990). *Ascariasis* is the most endemi ranking first in order of prevalence when compared with other intestinal nematodes of medical importance such as *Necator americanus, Ancylostoma duodenale, Trichuris trichura, Strongyloides stcrt oralis and Entcrobius vermicularis* (Ahmed et al 2004). The world-wide endemicity *of ascariasis* has an estimated 1000 million human cases (WHO 1987). The record from World Health Organisation (1990), on waste management showed that merely 30% of urban cities of less developed countries like Nigeria are connected to a sewage system, and 90% of the sewage that is collected is discharged without treatment. This implies that during rainy season the run-off drains waste even into houses and its surroundings. This explains the high prevalence of soil transmitted *ascar'asis* varies widely with attitude, climate and ecological or human factors and may exceed 80% in certain areas. (Ukoli 1984).

Pathological effects of *ascariasis* in man and its related morbidity and mortality have been extensively reviewed (Crompton and Savioli 1993). Some of these effects include abdominal complications (intestinal obstruction, biliary *ascariasis),* vomiting and coughing up of worms. *Ascariasis* has also been associated with childhood malnutrition (Crompton, 1992) and are known to affect mental processing in some children (O'Lorcain and Holland, 2000). It is most common in children of pre-school age who are most likely to succumb to protein-energy malnutrition, gastroenteritis and respiratory infection.

Considering the serious nature *of ascariasis* especially in children, there is therefore, need to access the prevalence of *ascariasis* in children in different localities with the hope of making appropriate recommendation. Hence this study was conducted to determine the prevalence of *ascariasis* in primary school children in Nanka, Orumba North Local Government Area of Anambra State.

Materials and Methods

The study was conducted in Nanka, Orumba North Local Government Area of Anambra State. Nanka, is a thickly populated town made up of seven villages. The majority of the inhabitants are peasant farmers. The rest are either traders or civil servants. Thus, they, chiefly earn their living by rearing of livestock, mainly sheep and goats, and by cultivation of yam, maize and cassava. Children

from the villages live under poor environmental sanitation and low socio-economic status.

450 children of primary school age (5-15 years) from five primary schools were randomly selected for the study. The five selected schools include: Primary school, Enugwu, Nanka Primary school, Amako, Nanka Community primary school, Agbiligba, Nanka Isigwu Nwagu Central Primary School, Ifite, Nanka Holy Trinity school, Nkwoagu, Nanka

Stool samples were collected from all the 450 pupils used, made up of 250 females and 200 males. They were given specimen bottles with tight fitting cover for the collection. The bottles were returned the following day with some fresh stool samples which were taken to the laboratory and examined for *Ascaris lumbricoides* larva and egg. The direct smear technique (wet mount), using normal saline, was used, according to Cheesbrough (1998), Ezigbo (1990) and World Health Organization (1990). Thus, a thin and smooth preparation was made. The emulsified sample on the slide was covered with cover slip and allowed to stay for about 10 minutes to avoid formation of bubbles. The prepared slide, which was also labeled for identification, was then mounted on the microscope stage for examination and identification. The prevalence of *Ascaris lumbricoides* among primary school pupils in Nanka was determined against locality, age and sex. The data was analysed using chi-square test and the statistical significance of any difference in compared values was considered significant at the level of $P < 0.05$.

Results

The study revealed that out of the 450 samples (44.5% males and 55.5% females) examined, 75.1% of the sampled school children were infected with *ascariasis.* It also showed that some pupils were infected with other intestinal helminthes such as hook worm and *Schistosoma mansoni.* The prevalence of *Ascaris lumbricoides* examined is presented in Table I for all the different study areas/localities. The result showed that the prevalence of *Ascaris lumbricoides* is high in all the schools studied, ranging from 72% to 88%. Primary school, Amako, Nanka has the highest prevalence 88%, followed by Isigwu Nwagu Central Primary School, Ifite Nanka, 84.3%. The least, 72.3%, which is still of a high prevalence is Community primary school, Agbiligba, Nanka.

Table 1: Prevalence of *Ascariasis* in Different Primary Schools in Nanka

S/N	Name Of School	No Examined	No Infected	No Uninfected	% Infected	% Uninfected
1.	Primary Sch. Enugwu Nanka	85	62	23	72.9	27.1
2.	Comm. Pri. Sch. Agbiligba, Nanka	101	73	28	72.3	27.7
3.	Pri. Sch. Amako Nanka	92	81	11	88.0	12.0
4.	Isigwu Nwagu Central Pri. Sch. Ifite Nanka	83	68	15	81.9	15.1
5.	Holy Trinity Primary Sch. Nkwoagu Nanka	83	68	15	81.9	18.1
	Total	450	359	91		

Table 2: Prevalence of *Ascariasis* with Age

Age Range	Total No Examined	No Infected	No Uninfected	% Infected	% Uninfected
5-10	240	190	50	79.2	20.8
11 -15	210	148	62	70.5	29.5
Total	450	338(75.1%)	112(24.9%)		

Table 2 shows that the younger pupils, 5-10 years, are more exposed to *ascariasis* infection (79.2%) than their older counterparts, 11-15 years, who have 70.5% prevalence.

There is a relationship between age and prevalence of infection (X^2 cal > X^2 tab). Alsd[v]4he

difference between the two values 5 - 10, 79.2% and 11-15, 70.5% is significant, P < 0.05.

Table 3: The	**Prevalence of *Ascariasis* with Sex**				
Sex	Total No Examined	No Infected	No Uninfected	% Infec ed	% Uninfected
Female	250	203	**47**	**81.2**	18.8
Male	200	**151**	**49**	75.5	24.5
Total	**450**	354	**96**		

Table 3 - The prevalence *of ascariasis* with sex, showed that preval no; in female, 81.2%, is higher than the prevalence in male, 75.5%. The chi-square test also reveals t mt here is a relationsh p between sex and prevalence of infection, females being the more affected. There is also significa it difference between prevalence *of ascariasis* infection in male and female, P < 0."5.

Discussion

The study has shown the prevalence of *ascariasis* in Nanka Orumba North Local Government Area, to be 75.1%. The high prevalence could be attri aitt d to high level of indiscriminate defecation in the area, the high biotic potential of *Ascaris tuvibi coides* as well as the ability to withstand adverse conditions (Schmidt and Roberts 2000). The highest level of infection (88%) recorded in Primary School Amako may be because the school and he uses in this area are very close to bushes. Bushes surround the school and the houses around more lhan is the case in other schools visited. This may likely predispose the pupil to defecating in bushe,[1] around, where they also enter to pick fruits (eg mangoes) which they eat most of the time without wa.' bin *2*,. Also rain flood can carry come of the faecal matters from the bushes into the school play ground (Soh et al 1973). After playing, children use their dirty hands to eat whatever comes their way (e.g. groundnuts).

The infection being more prevalent in children aged 5-10 years may be due to the fact that this group of children go bare footed during outdoor activities and they play mostly with sand. Moreover their understanding of the dangers of insanitation is low. These together with their custom of defecating and handling food are the behavioural factors involved in d sease transmission. This observation confirmed reports by Mafiana (1995).

The study also showed that females are more exposed to the infection than males. Sam -Wobo et al (2004), seems to have a contrary view, but the difference could result from differences in the occupation of the natives, the activities of the children and the job assigned d to boys and girls based d on the culture of the different tribes of the nation. In Anambra State for instance, the responsibility of cleanliness - of the kitchen, surrounding, toilet etc lies mostly on the girls. In the villages these girls is follow their mothers to weed the farm. The boys can assist their fathers in the farm but in most cases they are sent on errands. In Yoruba land (Ogun State) girls (more than boys) help their mothers in selling or hawking their goods. Therefore, apart from the general behaviour of children such as defecating indiscriminately and not washing hands, eating fruits and other foods without washing ete, the kind of work assigned to a boy or a girl outside the school activities can go a long way 10 determine the rate *of ascariasis* infection in the different sexes (Haswell-Elkins et al 1989).

Ascaris lumbricoides, the commonest intestinal helminthes parasite in children has caused a lot of harm in these children. According to Cowper (1966). it appears that the adult worms interfer with normal metabolism through - blockage of the lumen, reducing the absorptive area; absorption of intestinal contents, ingestion of blood by destruction of intestinal mucosa; probably by neutralizing pepsin and trypsin with an anti-enzyme, ascarase. Also *ascariasis* interferes wit 1 protein digestion in children, and in combination with hookworm infection, could cause, accompany or accentuale kwashiorkor. It therefore, becomes a matter of urgency for the government to en ighten the pupils and students of secondary schools, the peasants in the villages and the general public of the need to maintain good personal hygiene and proper environmental sanitation. This can be done by using different media like radio, television, films, as well as laying special emphasis on public health in curriculum development in primary schools.

Parents should be encouraged to deworm their children from time to time. The ministry of Health should take special interest in control programmes starting with (hose in the rural areas, moreso when the WHO has endorsed mass school based deworming programmes in areas with *Ascaris* infection prevalence over 50%. Mass chemotherapy or deworming of] re-school and school age children periodically reduces worm load (Zoakah et al 1999). Also mass treatment eliminates the

need for costly individual parasitology screening in developing countries (WHO 1987). Of importance too is the fact that stool microcopy should be included in routine evaluation of school aged children and infected individuals should be treated promptly. These strategies will help in reducing the prevalence and severity of *ascariasis* in Nigeria in particular and the world in general.

Recommendation

1. Improvement on the sanitary habits and condition of the children. Children should be taught the importance of personal hygiene and proper environmental sanitation.
2. Vegetables and fruits should be washed with enough water and table salt to dislodge the egg and larvae that may be clinging to the surface of the leaves.
3. Good sewage disposal system should be provided to avoid indiscriminate defaecation inside and outside school and home.
4. School- wide diagnosis be conducted and those infected treated with good anthelmintics promptly.
5. Parents should be encouraged to deworm their children from time to time.

Conclusion

In conclusion therefore, the high prevalence of ascariasis in Nanka Orumba North L.G.A Anambra State calls for urgent attention on the part of community, education authority as they are the future hope of arty nation and so any disease or otherwise which would disrupt the free growth and development of these little ones will not be taken kindly.

References

Ahmed, S.G., Ibrahim, U.A. and Ekemu E.D. (2004). Prevalence of Intestinal Parasites in Anemic and Non-anaemic Nigerian Patients with Acquired Immune Deficiency Syndrome, *Nigerian Journal of Parasitology.* 25:15-20

Cheesbrough, M. (1998). *Medical Laboratory Manual for Tropical Countries (2nd ed).* New York: Macmillan Publishing Company. Pp 221-225

Cowper, S.G. (1966) A Review of Helminthiasis in the Western Region of Nigeria with Special Reference to the Ibadan area, I, *West African Medical* J 15 (6), 203 - 209.

Crompton, D.W.T. (1992). Ascariasis and Childhood Malnutrition Transaction of the Royal Society of Tropical Medicine and Hygiene, 86: 577-579.

Crompton, D.W.T and Savioli, L. (1993). Intestinal Parasitic Infections and Urbanization. *Bulletin of the World Health Organization,* 71:1-7

Ezigbo, J.C. (ed) (1990). *Parasitology for Medical Students,* Lagos: New Frontier Pp 31-33.

Haswell - Elkins, M.R, Elkins, D. and Anderson, R.M. (1989). The Influence of Individuals, Social Groups and Household Factors on the Distribution of *Ascaris Lumbricoides* within a Community and Implications for Control Strategies. *Phraseology.* 98, 125-134.

Maflana, C.P. (1995). Intestinal Helminthes with Particular Reference to *Ascaris* Among School Children in Ilewoorile, Ogun State, Nigeria. *The Nigerian Journal of Parasitology.* 16(4); 47-53.

O'Lorcain, P.O. and Holland, C.V. (2000)'. The Public Health Importance of *Ascaris lumbricoides. Parasitology* 121: 551 - 571.

Sam - Wobo, S.O, Mafiana, C.E. and Idowu, A.B (2004). Re-infection Patterns of *Ascariasis* Among School Children in Ogun State, Nigeria. *Nigerian Journal of Parasitology;* 25: 7-14.

Crompton, D. W. T. (1992). Ascariasis and Childhood Malnutrition Transaction of the Royal Society of Tropical Medicine and Hygiene, 86: 577-579.

Schmidt, G.D. and Roberts, L.S. (2000). *Foundations of Parasitology, Sixth Edition.* McGraw-Hill Higher Education, Boston USA. Pg 421.

Soh, C.T., Kim, S.J., Chang, B.P., Youn, B.B. and Lee, J.H. (1973). Faecal Pollution in Relation to Soil Transmitted Helminthic Infections. *Korean Journal of Parasitology*, 11:133.

Ukoli, F.M.A. (1990). *Introduction to Parasitology in Tropical Africa.* Textflow Ltd, Ibadan Nigeria.

World Health Organization, (1987). Prevention and Control of Intestinal Parasitic Infections W.H.O. Technical Report Series, Geneva 749P.

World Health Organization (1990). Basic Laboratory Methods in Medical Parasitology ISBN 9241544104.

Zoakah, A., Idoko, I., Okonkwo, M. Adeleka, A. and Kpamor, Z. (1999). Intestinal Helminthes Infections and Malnutrition in Pre-primary School Children in Itan Village Jos, Plateau State. *Nigeria Medical Practitioner,* 77(5): 67.