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 stercoralis 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

<table>
<thead>
<tr>
<th>S/N</th>
<th>Name Of School</th>
<th>No Examined</th>
<th>No Infected</th>
<th>No Uninfected</th>
<th>% Infected</th>
<th>% Uninfected</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Primary Sch. Enugwu Nanka</td>
<td>85</td>
<td>62</td>
<td>23</td>
<td>72.9</td>
<td>27.1</td>
</tr>
<tr>
<td>3.</td>
<td>Pri. Sch. Amako Nanka</td>
<td>92</td>
<td>81</td>
<td>11</td>
<td>88.0</td>
<td>12.0</td>
</tr>
<tr>
<td>4.</td>
<td>Isigwu Nwagu Central Pri. Sch. Ifite Nanka</td>
<td>83</td>
<td>68</td>
<td>15</td>
<td>81.9</td>
<td>15.1</td>
</tr>
<tr>
<td>5.</td>
<td>Holy Trinity Primary Sch. Nkwoagu Nanka</td>
<td>83</td>
<td>68</td>
<td>15</td>
<td>81.9</td>
<td>18.1</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>450</td>
<td>359</td>
<td>91</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Prevalence of Ascariasis with Age

<table>
<thead>
<tr>
<th>Age Range</th>
<th>Total No Examined</th>
<th>No Infected</th>
<th>No Uninfected</th>
<th>% Infected</th>
<th>% Uninfected</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-10</td>
<td>240</td>
<td>190</td>
<td>50</td>
<td>79.2</td>
<td>20.8</td>
</tr>
<tr>
<td>11-15</td>
<td>210</td>
<td>148</td>
<td>62</td>
<td>70.5</td>
<td>29.5</td>
</tr>
<tr>
<td>Total</td>
<td>450</td>
<td>338(75.1%)</td>
<td>112(24.9%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Table 3: The Prevalence of Ascariasis with Sex</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Total No Examined</td>
<td>No Infected</td>
<td>No Uninfected</td>
<td>% Infected</td>
<td>% Uninfected</td>
</tr>
<tr>
<td>Female</td>
<td>250</td>
<td>203</td>
<td>47</td>
<td>81.2</td>
<td>18.8</td>
</tr>
<tr>
<td>Male</td>
<td>200</td>
<td>151</td>
<td>49</td>
<td>75.5</td>
<td>24.5</td>
</tr>
<tr>
<td>Total</td>
<td>450</td>
<td>354</td>
<td>96</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3 - The prevalence of ascariasis with sex, showed that prevalence in female, 81.2%, is higher than the prevalence in male, 75.5%. The chi-square test also reveals that there is a relationship between sex and prevalence of infection, females being the more affected. There is also significa difference between prevalence of ascariasis infection in male and female, P < 0.05.

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 attributed to high level of indiscriminate defecation in the area, the high biotic potential of Ascaris lumbricoides 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 the house in this area are very close to bushes. Bushes surround the school and the houses around more than is the case in other schools visited. This may likely predispose the pupil to defecating in bushes, around, where they also enter to pick fruits (e.g. mangoes) which they eat most of the time without washing hands. 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 barefooted 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 disease transmission. This observation confirmed reports by Mafiana (1995).

The study also showed that females are more exposed to the infection than males. Samuel-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 to boys and girls based on the culture of the different tribes of the nation. In Anambra State for instance, responsibility of cleanliness - of the kitchen, surrounding, toilet etc lies mostly on the girls. In the villages these girls 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 etc, the kind of work assigned to a boy or a girl outside the school activities can go a long way to 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 interfere 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 accentuate kwashiorkor. It therefore, becomes a matter of urgency for the government to enlighten 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, whereas 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 microscopy 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 any 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**


