

## ASPECTS OF THE EPIDEMIOLOGY OF INTESTINAL PARASITOSE (IP) IN CHILDREN: KNOWLEDGE, PRACTICES AND PERCEPTIONS OF MOTHERS

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### ABSTRACT

**Background:** Intestinal parasitoses (IP) have been demonstrated to pose a major public health problem in the tropics. It is hypothesized that children are continually exposed to re- infection despite interventions. We conducted this hospital-based study to investigate knowledge, practices and perceptions among mothers of children seen at the hospital.

**Method:** The study focused on knowledge, practices and perceptions of mothers concerning intestinal parasitoses in children. Questionnaires, which were interviewer administered, were used to generate qualitative data. Stool samples were collected from the study participants into labelled bottles for examination.

**Results:** Majority of mothers belonging to the lower classes did not have access to good drinking water as demonstrated by 39%, 32% in classes III and II respectively while no mother in class V got water from reliable sources:

The low level of knowledge about IP was demonstrated by the claim that it was inevitable with the following 68.9% , 56.5%, 44.0% of mothers in social classes V, IV and III respectively. Infection rates increased with lowering social status. More males than females were infected but the difference was not significant ( $P > 0.05$ ). Peak infection was among children aged between 3 + and 4 years.

**Conclusion:** The low level of knowledge, practices and perceptions of mothers concerning IP is a major cause for worry. Urgent consideration should therefore be given in order to periodically treat infected children, enlighten mothers about mode of transmission of IP and also to improve sanitation in deprived areas so as to reduce the rate of transmission.

**Key words:** Intestinal Parasitoses, (IP); Epidemiology, children, Benin City.

### INTRODUCTION:

According to Crompton and Savioli<sup>1</sup> many surveys have demonstrated a high prevalence of intestinal parasitic infection in children. Among the pathogenic effects attributed to round worm, *Ascaris lumbricoides*, is the ability to cause nutritional disturbance<sup>2</sup>. Studies on intestinal parasitoses in children are therefore of immense importance in the surveillance of Public Health. Numerous reports exist in the literature designed to report the significance of intestinal parasites studies in children.<sup>2,6</sup> Human gastro intestinal infections in developing countries are rampant because of favorable climatic and socio cultural factors, which permit transmission during the

greater part of the year<sup>7</sup>. The design of this study is to report the prevalence and pattern of intestinal parasitoses in children who attend hospital regularly and also to evaluate knowledge, practices and perceptions of mothers about intestinal parasitoses.

### PATIENTS AND METHODS

#### Study Area:

The work was done at the University of Benin Teaching Hospital (UBTH) which is a tertiary hospital located in Benin City which lies within the tropical rain forest zone in Edo State. It has a warm and humid weather with laterite moisture retaining soil. The drainage system is poor with open gutters that are repeatedly flooded during the rains and littering of refuse and other wastes is a common phenomenon.

Two hundred and four children attending the paediatric out patient clinics of UBTH for various illnesses aged sixteen years and below were enrolled

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into the study between January 2003 and June 2004. This was done by total sampling after obtaining the full consent of their parents or care providers. There were 107 males and 97 females from different socioeconomic classes as shown below following a previous classification<sup>8</sup>

Social Class	(Occupation of parents)
I Upper and Middle	Higher professionals e.g. Medicine, Lawyers, engineering Architecture, Authors, Scientists, Large Employer, Directors of Businesses.
II Intermediate Lower	professionals e.g. teachers, Social workers, Owners of small businesses and managers, farmers.
III Skilled workers	Artisans, Clerks, Farmers, Supervisor sand clerical workers
IV Semi-Skilled workers	Factory workers and operators, Agricultural workers.
V Unskilled workers	labourers etc, market women, domestic servants and casual workers.

After initial clinical evaluation, the following investigations were carried out. Stool samples were examined for helminthic eggs, protozoan cysts and trophozoites by direct microscopy

Stool samples were collected into labelled containers from the children and examined immediately. Diagnoses of *Ascaris*, *Trichuris* and hookworm were based on the examination of 50mg of Kato smear of faeces<sup>9</sup>. Parasite ova and cysts were identified based on characteristic morphological features of helminth ova and protozoan cysts respectively<sup>10</sup>

Structured pretested questionnaires were interviewer administered on mothers to elicit the following information

- i. The ages and sex of children
- ii. The education of both parents
- iii. The social status of family
- iv. The knowledge, practices and perception of parents as regards to standard of living..
  - a. Knowledge about the need of good water supply
  - b. Knowledge about the control of intestinal parasitoses
  - c. Method of sewage disposal
  - d. Good toilet facilities essential for control of intestinal parastoses
  - e. Method of water storage
  - F. If intestinal parasitoses is inevitable

Clinical symptoms and presenting complaints of the patients were recorded.

## STATISTICAL ANALYSIS:

Data analysis examined statistical differences in prevalence of infection according to social classes and age using the student t-test  $P < 0.05$  was considered significant<sup>11</sup>

## RESULTS:

Two hundred and four children (107 males and 97 females) aged between 6 months and 16 years were seen during the period of study. Among the males, there were 12 (25.2%) 26 (24.3%), 29 (27. %), 22 (20.6%) and 18 (16.8%) aged 6 months 2 years, >2 years 3 years > 3 years-4 years, > 4 10 years and > 10 16 years respectively. Of the 97 females 10 (10.3%) were aged between 6 months 2 years, 25 (25.8%) aged > 2 years 3 years, 26 (26.8%) aged > 3 years 4 years while 17.5% and 19 (19.8%) were aged 4 10 years and > 10- 16 years respectively.

Infection was recorded in 116 (56.9%) children made up of 62 males and 54 females. More males were infected compared to females but the difference was not significant ( $P > 0.05$ ). Peak infection was among children aged >3 years to 4 years. (Table I). Of the 204 respondents (mothers of study participants) all 39 mothers of the social class I had access to bore hole water, 18 (54.5%), 16 (39%), 15 (32.6%) of the classes II, III, IV had bore hole water supply while no mother in social class V had access to bore hole water.

Two mothers (5.1%) of the social class I said intestinal parasitoses is inevitable while 12 (30.8%), 18 (44.0%) 26 (56.5%) and 31 (68.9%) of the classes II, III, IV and V respectively also agreed that this infection was inevitable.

No mother in social classes I, II and III said their children defecated indiscriminately, however this was not the case with 11 (23.9%) and 26 (57.7%) of mothers in classes IV and V respectively who admitted that their children defecated indiscriminately. Concerning the control of intestinal parasitoses, all 39 (100%) mothers in social class I believe IP is controllable, while 12 (36.4%) in social class II said it was controllable. Seventeen (41.5%), 10 (21.7%) and 2 (4.4%) mothers in class III, IV and V respectively said there it could be controlled. None of the mothers in classes IV and V had waste bins at home, all 39 (100%) mothers of the social class I had waste bins, 29 (87.9%) in class II, 2 (4.9%) in class III have waste bins at home. Respondents said borehole water was either from in door or outdoor standpipes. There was a decrease in prevalence rate with higher social class.

Ten (8.6%) infection rate was recorded among children from social class I, 19 (16.4%) in class II, 22 (19.0%) in class III 24 (25%) in class IV and 36 (31.0%) in class V. The lowest infection was among children in class I, and the highest among children in class IV. Only 39 f the 204 of the respondents, had bore hole water all year round of the respondents, 39 (86.7%), 33 (84.8%) and 36 (87.8%) in classes V, IV and III respectively admitted to having wastes dumped on the streets, while only 5 (15.2%) in class II said they did not dump wastes, no mother in class I

dumped wastes on the street Table III Infection pattern according to class is shown in fig 3. among children in class IV. Only 39 f the 204 of the respondents, had bore hole water all year round of the respondents, 39 (86.7%), 33 (84.8%) and 36 (87.8%) in classes V, IV and III respectively admitted to having wastes dumped on the streets, while only 5 (15.2%) in class II said they did not dump wastes, no mother in class I dumped wastes on the street Table II

**Table I: Population Characteristics of Children Sampled:**

Gender	No	6mos - 2 yrs	>3vrs - 3vrs	> 3vrs - 4vrs	> 4-vrs-10vrs	>10vrs - 16vrs
Male	107	12(25.2)	26(24.3)	9(27.1)	22(20.6)	18(16.8)
Female	97	10(10.3)	25(25.8)	26(26.8)	17(17.5)	19(19.8)
<b>TOTAL</b>	<b>204</b>	<b>24(24.7)</b>	<b>51(52.6)</b>	<b>55 (56.7)</b>	<b>39(40.2)</b>	<b>37(38.1)</b>
<b>Infected</b>						
Male	62*	8(12.9)	14(22.5)	16(25.8)	15(24.2)	9(14.5)
Female	54 *	6(11.1)	8.(14.8)	16(29.6)	14(25.9)	10(18.5)
<b>TOTAL</b>	<b>116</b>	<b>14(12.1)</b>	<b>22(19.0)</b>	<b>32(27.6)</b>	<b>29(25)</b>	<b>19(16.4)</b>

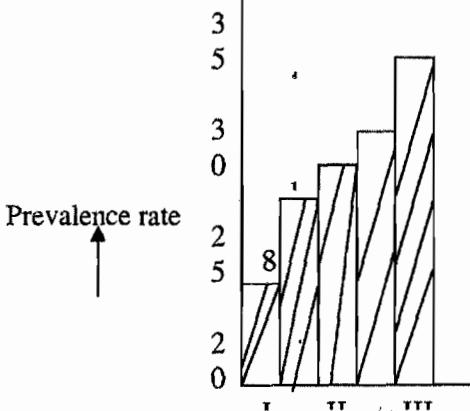
\*(P>0.05)

**Prevalence of Infection According to Class**

**Table II: Profile of Respondents on Knowledge, Perception and Practices about Intestinal Parasitoses:**

	I	II	III	IV	V
	N=39	N = 33	N = 41	N = 46	N = 45
Bore hole water supply	39 (100)	18 (54.5)	16 (39)	15 (32.6)	- (0.0)
Inevitable in children	2 (5.1)	12 (30.8)	18 (44.0)	26 (56.5)	31 (68.9)
Children defecate indiscriminately	- (0.0)	- (0.0)	- (0.0)	11 (23.9)	26 (57.7)
IP is controllable	39 (100.0)	12 (36.4)	17 (17)	15 (11)	2 (4.4)
Have waste bin at home	39 (100)	29 (87.9)	2 (4.9)	- (0.0)	- (0.0)
Dump waste on the street	- (0.0)	5 (15.2)	36 (87.8)	39 (84.8)	39 (86.7)

**Fig 1: Prevalence of Intestinal Parasitoses according to social class**



**SOCIAL CLASS** →

**KEY:**

CLASS	NO	%
I	10	8.6
II	19	16.4
III	22	19.0
IV	29	25
V	36	31.0

**DISCUSSION:**

Previous studies conducted to investigate intestinal parasitoses in children did not examine knowledge, perception and practices of mother of children seen at UBTH concerning intestinal parasitoses.

The present study was prompted by the need to document some of the factors that might be responsible for the continued transmission of intestinal parasitoses in children despite proper medicare.

This study confirms the paucity of information on the control measures against intestinal parasitoses in children; the respondents exhibited ignorance about the controllability of infection in children with only 36.4%, 17%, 11% and 4.4% of mothers in social classes II, III, IV and V respectively aware of the possibility of control of IP. Majority of respondents admitted that intestinal parasitoses is inevitable in children.

A high proportion of the respondents admitted to dumping wastes on the streets and having children defecate indiscriminately. The ultimate goal of any programme to control infectious disease is to eradicate the infection. It is therefore, advocated that environmental sanitation, health education, and public awareness campaign on sanitation and hygiene be intensified as efforts aimed at controlling the infection.

Our finding of higher prevalence of infection among children of lower socio-economic status corroborates an earlier report that intestinal parasitoses infections persist and flourish wherever poverty, inadequate sanitation, insufficient health care and over crowding are entrenched<sup>1</sup>. The peak prevalence of infection among children aged between 3 years and 4 years suggest that children in this age group are most exposed to infection.

This may be due to behavioral patterns as children within this age group are more exposed to factors, which predispose them to infection especially when at play in contaminated soil around dwelling places close to refuse dumps. Although respondents in social classes I, II and III said their children did not defecate indiscriminately 57.7% of respondents admitted that their children defecated indiscriminately around the yard.

The spread of intestinal parasite infections in children is usually at play, irrespective of social class<sup>12</sup>.

This probably explains why despite high hygienic standard of living in some high class homes, intestinal parasitoses is always reportable in such classes. Our finding of 8.6% infection among children belonging to class I, 16.4% and 19.0% in classes II and III compared to 25% and 31% in classes IV and V respectively supports an earlier report that children when at play exhibit exploratory

behaviors such as touching one another and placing fingers in the mouth<sup>12</sup>. Worthy of note is the fact that intestinal worms have long life span one to three years. It is likely that because there is no strong protective immunity to most species of worms in humans, Hall and Chan<sup>13</sup> these authors reported that worm burden is typically acquired slowly as a result of repeated exposure to eggs, Larvae and cysts.

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