

# Studies On Knowledge, Attitudes And Practices Concerning Control Of Soil-Transmitted Helminth Infections In Parts Of Imo State, South Eastern Nigeria

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## Abstract

To encourage community intervention in the control of soil transmitted helminths, a study was undertaken to investigate STH related Knowledge, Attitudes, Practices (KAP) in 3 areas, Ikenegbu layout (Urban), Amakohia-Uratta (Semi-Urban) and Egberede Nguru (Rural) of Imo State. Pre-tested questionnaires were administered to a total of 600 mother/Care givers of which 573 were returned and analyzed. Of the respondents, 450(78.5%) and 235(51.1%) had the knowledge and ability to identify STH. However, respondents claimed to have knowledge about STHs but did not have knowledge about their causes and mode of transmission. A total of 30.0% respondents attributed the major causes to eating of sugary food, 38.4% to via breast milk. According to indigenous perception, the diseases (STHs) are not thought to be contagious or worrisome but congenital. A total of 29.8% and 25.0% were of the opinion that STHs which they called “*Mkpurumkpu*” are congenital and natural intestinal worms. The knowledge of the respondents on the control, prevention and treatment was naïve and nonchalant. Personal hygiene/sanitation were embarrassed by all of the respondents, 30.4% and 27.8% did not adopt health education and chemotherapy as means of control and treatment. Participatory community health education was suggested to help enlighten the populace to modify their cultural and behavioural attitudes and practices.

**Keywords:** KAP, Soil Transmitted Helminths

## Introduction

Soil transmitted helminthiasis refer to a group of parasitic diseases in human, caused by intestinal round worms collectively called soil-transmitted helminthes (STHs) which are transmitted through contaminated soil. More than one dozen different species of soil transmitted helminthes infect humans. According (Hotez *et al.*, 2003); four nematodes in particular stand

out because of their widespread prevalence and distribution that result in hundreds of millions of human infections. They include the large round worm (*Ascaris lumbricoides*), the whipworm (*Trichuris trichura*), and two species of hookworm, namely; (*Necator americanus*) and (*Ancylostoma duodenale*).

The world over, prevalence of these infections has been quoted as follows:

*Ascariasis* – 800million to 1.4 billion, *Trichuriasis* is – 600million to 1billion and Hookworm infection – 580million to 1.2 billion (Crompton, 1999; Bethony *et al.*, 2006).

Soil transmitted helminth infections are widely distributed in tropical and sub-tropical areas. They have been linked to lack of sanitation, poverty, malnutrition and ignorance. These STHs are considered Neglected Tropical Diseases (NTDs) because they inflict tremendous disability and suffering, yet can be controlled or eliminated (Strunz *et al.*, 2014).

The gastrointestinal tract of a child living in a less developed country is likely to be parasitized with at least one, and in many cases all three soil-transmitted helminths (Bethony *et al.*, 2006).

STH infection is also found mainly in areas with warm and moist climates like Africa, Americas, Eastern Mediterranean, South East Asia and Western pacific region including 130 countries/territories worldwide (WHO, 2008).

Children growing up in these communities can be infected soon after weaning and to be infected and reinfected constantly for the entire period of their lives (Awasthi *et al.*, 2003). Soil-transmitted helminths is recognized as one of the important public health issues on endemic areas. WHO recommendations emphasized that pre-school age children (PSAC, aged 5-14years) are highly risk groups for STH (WHO, 2008). PSAC comprises between 10%-20% of the 3.5 billion people living in STH endemic areas (WHO, 2006).

Although these STH infections are among the big killers, they endanger children's health in a subtle and debilitating way and chronic infections comprise healthy growth. Growth faltering typically occurs between 6months and 2years of age overlapping with the time when STH infections begin to establish themselves. Again, STH infections affect negatively cognitive development in SAC (Drake, and Bundy, 2001; Ezeamama *et al.*, 2005). It has also been proved that STH infections (Hookworm) affects the iron status (Stolzfus *et al.*, 2000) as well as affect

the immune response of infected children (Wani *et al.*, 2002). WHO recommendations encourage governments and policy makers to invest in helminths control as an asset for development (WHO, 2005). However, (Ekundayo *et al.*, 2007) submitted that intestinal helminth infections (*Ascariasis*, *Trichuriasis* and hookworm) remain as prevalent as they were in the 1970s. Majority of those infected are young children between the ages of 5 and 14 years in rural areas and urban slums. Cultural, socio-economic and environmental factors are majority contributors to the persistence of these infections.

This study therefore sought to assess the KAP status on the burden of control associated with STHs in Ikenegbu Layout (Urban), Amakohia-Uratta (Semi-Urban) and Egberede Nguru (Rural) areas of Imo State, Nigeria.

## **MATERIALS AND METHODS**

### **Study Area**

This study was carried out in 3 distinct areas namely; Ikenegbu Layout (Urban) in Owerri Municipality, Amakohia-Uratta (Semi-Urban) in Owerri North Local Government Area and Egberede Nguru (Rural) in Aboh Mbaise L.G.A. all study areas are located in Eastern Zone of Imo State.

Ikenegbe layout is located approximately between Latitude  $5^{\circ}34^{\circ}$  and Longitude  $7^{\circ}30^{\circ}$  within the Owerri capital territory of Imo State. Majority of the residents are civil servants and middle level business men.

Amakohia-Uratta is a suburban community. It is located between Latitude  $5^{\circ}N36'51''$  and Longitude  $7^{\circ}E1'08''$ . There are many growing small scale industries, hotels and bars, government and private schools, churches and a mini market. Source of drinking water is bore hole. Refuse disposal is very poor and most refuse dumps are sited very close to residential areas.

Egberede Nguru (Latitude  $5^{\circ}27'N14^{\circ}E$  and Longitude  $5^{\circ}450'N7.233^{\circ}E$ ) is a community of rural dwellers and the types of settlement are linear, cluster forms and family groups. Presence of basic social amenities is poor. Schools are not properly equipped. Fresh vegetables and fruits are directly sold in the farm. Subsistence farming and petty trading is the major occupation of the people. These rural farmers working in primitive conditions are frequently infected by STHs due

to their unhealthy eating habits with contaminated hands. Consequently, helminth infection in the area is by residential proximity or occupational exposure.

The entire study area has a temperature range of 20°C to 35°C with a very high relative humidity of about 75% reaching 85% during the wet season.

### Data collection and analysis

The study involved the use of structured pretested questionnaire. Questionnaire was designed on mother/care givers knowledge, attitudes and practices template on the control of STHs. Six hundred (600) questionnaires were administered to mothers/care givers as follows; 200 questionnaires each was given to Amakohia-Uratta women at the primary school, Egberede Nguru women at the market square and Ikenegbu-Layout women by house to house.

Five hundred and seventy three (573) were returned giving a return rate of 95.5%. The rest were either incorrectly filled or not returned.

Personal and focal group discussions were held to explain more facts and to strengthen the responses of the respondents. Their answers were recorded directly into individual questionnaires and analyzed.

Data obtained was expressed as percentages in MS Spread sheet and analyzed using the Z test,

## RESULTS

**Table 1: Maternal Status of Mother/Care givers in the study areas**

Marital statues	Urban (I) %	Semi-urban (AU) %	Rural (EN) %	Total %
Married	120(35.1)	97(28.4)	125(36.6)	342(59.7)
Single Mother	37(46.3)	22(27.5)	21(26.3)	80(14.0)
Divorced	0(0.00)	29(100.0)	0(0.00)	29(5.1)
Widowed	29(23.8)	40(32.8)	53(43.4)	122(21.3)
Total	186	188	199	573

**Table 2: Occupation of Mother/Care givers in the study areas**

<b>Occupation</b>	<b>Urban %</b>	<b>Semi-urban %</b>	<b>Rural area %</b>	<b>Total %</b>
Civil Servant	96(45.3)	87(41.0)	29(14.0)	212(37.0)
Teacher	44(35.0)	43(34.1)	39(31.0)	126(22.0)
Farmer	0(0.00)	17(33.3)	34(67.0)	51(9.0)
Business/Trading	17(16.1)	19(18.1)	69(66.0)	105(18.3)
Self employed	29(37.0)	22(28.0)	28(35.4)	79(14.0)
<b>Total</b>	<b>186</b>	<b>188</b>	<b>199</b>	<b>573</b>

**Table 3: Knowledge of soil transmitted helminthes (STHs)**

<b>Variables</b>	<b>Urban %</b>	<b>Semi-urban %</b>	<b>Rural %</b>	<b>Total %</b>
Yes	90(200)	178(39.6)	182(40.4)	450(78.5)
No	96(78.1)	10(8.1)	17(13.8)	123(21.5)
<b>Total</b>	<b>186</b>	<b>188</b>	<b>199</b>	<b>573</b>

Table 1 above shows that 59.7% of the study population are married women. A total of 21.3% mothers are widowed. While mothers that are single are 14.0% and divorced mothers (5.1%) were the least in the sampled population.

37.0% of the study population are civil servants. A total of 22.0% are teachers. 18.3% are into trading while 9.0% and 14.0% are farmers and self employed mothers respectively as shown in Table 2.

More than fifty percent (78.5%) of the respondents from the entire study areas had knowledge of STHs (Table 3). Respondents from Egebrede Nguru (40.4%) and Amakohia-Uratta (39.6%) had more knowledge about STHs than respondents from Ikenegbu layout (20.0%).

**Table 4: Major Sources of Information about STHs**

<b>Variables</b>	<b>Urban %</b>	<b>Semi-urban</b>	<b>Rural %</b>	<b>Total%</b>
Health personnel	48(51.6)	27(29.0)	18(19.4)	93(16.2)
Radio	13(13.8)	18(19.2)	63(67.0)	94(16.4)
Television	43(33.6)	61(47.7)	24(18.8)	128(22.3)
Self-knowledge	11(21.2)	24(46.2)	17(32.7)	52(9.1)
Inherited knowledge	0(0.00)	20(29.0)	49(71.0)	69(12.0)
School	71(51.8)	38(27.7)	28(20.4)	137(23.9)
<b>Total</b>	<b>186</b>	<b>188</b>	<b>199</b>	<b>573</b>

**Table 5: Major Causes of STHs**

<b>Variables</b>	<b>Urban %</b>	<b>Semi-urban %</b>	<b>Rural %</b>	<b>Total %</b>
Witch craft	0(0.00)	4(18.2)	18(81.8)	22(4.9)
Eating of sugary food	15(8.7)	72(41.9)	85(49.4)	172(30.0)
Eating of unwashed fruit/vegetable	0(0.00)	0(0.00)	0(0.00)	0(0.00)
Inherited/Inborn	34(28.8)	39(33.1)	45(38.1)	118(20.6)
Eating with unwashed hands	33(44.0)	28(37.3)	14(18.7)	75(13.1)
Farming barefooted	13(43.3)	10(33.3)	7(23.3)	30(5.2)
Dirty habits	85(59.4)	33(23.1)	25(17.5)	143(25.0)
No idea	6(46.2)	2(15.4)	5(38.5)	13(2.3)
<b>Total</b>	<b>186</b>	<b>188</b>	<b>199</b>	<b>573</b>

Respondents did not show appreciable knowledge of the sources of information about STHs (Table 4). The major sources of information for those who knew STHs were schools (23.9%), television (22.3%), Radio (16.4%), Health personnel (16.2%), inherited knowledge (12.0%) and self-knowledge (9.1%), which is the least reported in the study areas.

The knowledge on the correct cause of STHs was poor ( $p > 0.05$ ). None agreed that it could be contacted via eating unwashed fruits/vegetables (Table 5). 30.0% said that the major cause of STHs is by eating sugary food while these were consistent with the views of Amakohia-Uratta and Egberede Nguru. Those from Ikenegbu Layout thought otherwise. 25% of people in the rural area said it is by dirty habits. 20.6% of the entire sampled population said it is inherited or inborn, 3.1% said it is by eating with unwashed hands. According to 4.9%, witchcraft is the culprit. Those who have no idea were the least reported (2.3%).

In Table 6, 38.4% opined that STHs can be transmitted via breast milk. 23.4% reported congenital as mode of transmission. 20.1% attributed the transmission to eating of dirty food and 12.6% incriminated faeco-oral as the mode of transmission respectively. In Amakohia-Uratta, 39.1% were in support of transmission via breast milk while 43.5% believed it is dirty food consumption. Respondents from Ikenegbu Layout stated that faeco-oral was the mode of transmission (38.9%) as well as inborn (38.1%).

Table 7 contains the respondents perception or belief on STHs. 29.8% are of the view that soil transmitted helminthes are congenital, 25.0% said it is natural while 19.2% and 14.8% perceived it to be playing in contaminated soil/water and eating of vegetables sprayed with pesticides. However, 10.1% and 1.1% of the respondents believe that eating of boiled and contaminated food and excessive consumption of particular vegetables.

**Table 6: Knowledge of Mode of Transmission**

<b>Variables</b>	<b>Urban %</b>	<b>Semi-urban %</b>	<b>Rural %</b>	<b>Total %</b>
Via breast milk	71(32.3)	88(39.1)	63(28.6)	220(38.4)
Faecal oral	28(38.9)	27(37.5)	17(23.6)	62(12.6)
Bare footing	0(0.00)	0(0.00)	0(0.00)	0(0.00)

Dirty food	27(23.5)	50(43.5)	38(33.0)	115(20.1)
Inborn	51(38.1)	16(11.9)	67(50.0)	134(23.4)
No idea	9(28.1)	9(28.1)	14(43.8)	32(5.6)
<b>Total</b>	<b>186</b>	<b>188</b>	<b>199</b>	<b>573</b>

**Table 7: Respondents perception or belief on STHs**

Variables	Urban%	Semi-urban %	Rural%	Total%
Excessive consumption of particular vegetables	0(0.00)	0(0.00)	6(100.0)	6(1.1)
Eating vegetable sprayed with pesticides	55(64.7)	18(21.2)	12(14.1)	85(14.8)
Playing in contaminated soil and water	76(69.1)	22(20.0)	12(10.9)	110(19.2)
Congenital	11(37.9)	73(42.7)	87(50.9)	171(29.8)
Worms are natural	10(7.0)	63(44.1)	70(49.0)	143(25.0)
Eating soiled and Contaminated food	34(58.6)	12(20.7)	12(20.7)	58(10.1)
<b>Total</b>	<b>903</b>	<b>178</b>	<b>182</b>	<b>450</b>

There is no significant difference among the respondents on the control and preventive measures against STHs ( $P > 0.05$ ). 69.6% and 72.3% of entire respondents adopted health education and chemotherapy as a means of control, only 30.4% and 27.8% thought otherwise (Table 8).

From Table 9, chemotherapy from drug stores (37.4%) were the preferred treatment option by the respondents. 32.3% used doctor's prescription in treating STHs. 15.7% and 14.7% of the respondents take to self-medication and herbal medication respectively.



**Table 8: Respondents Control/Preventive measures**

Measures	Urban%		Semi-urban		Rural %		All %		Total
	Yes	No	Yes	No	Yes	No	Yes	No	
Sanitation	186 (32.5)	0.00 (32.8)	188 (0.00)	0.00 (0.00)	199 (34.7)	0.00 (0.00)	573 (100)	0 (0.00)	573
Personal Hygiene	186 (32.5)	0.00 (32.8)	188 (0.00)	0.00 (0.00)	199 (34.7)	0.00 (0.00)	573 (100)	0 (0.00)	573
Health Education	131 (22.9)	55.0 (9.60)	148 (25.8)	40.0 (7.0)	120 (20.9)	79.0 (13.8)	399 (69.6)	174 (30.4)	573
Chemotherapy	148 (25.8)	38.0 (6.6)	141 (24.6)	47.0 (8.20)	125 (21.8)	74.0 (12.9)	414 (72.3)	159 (27.8)	573

**Table 9: Respondents Knowledge of the Treatment of STHs**

Variables	Urban%	Semi-urban%	Rural%	Total %
Use of Doctors prescription	87(47.0)	78(42.2)	20(10.8)	185(32.3)
Buy drug from chemist	47(22.0)	55(25.7)	112(5.6)	214(37.4)
Self-medication	23(25.6)	31(34.4)	36(40.0)	90(15.7)
Herbal medication	29(34.5)	24(28.6)	31(37.0)	84(14.7)
<b>Total</b>	<b>186</b>	<b>188</b>	<b>199</b>	<b>573</b>

## DISCUSSION

The main purpose of this research was to evaluate the knowledge, attitude and practices of mothers/Care givers with regard to STHs. Data collected through this survey shows that most mothers in the study areas have knowledge about helminth infections but did not know it's causes and mode of transmission and their knowledge appears to be evenly distributed amongst the three areas. Although most respondents (78.5%) said they have knowledge and are familiar with intestinal worms which is in agreement with the work of (Awasthi *et al.*, 2003).

Results from this study showed that 30% of the respondents thought that worms were caused by eating sugary foods. The findings are in agreement with those of (Jennifer *et al.*, 2014) who observed that 23% of those who said they knew how worms are spread thought intestinal worms are caused by eating sweets and junk food. This seems to be a common misconception about worms in the three areas. In a community like Egberede Nguru and Amakohia-Uratta where most information come from family members and elders, individuals are susceptible to having information passed down to them that might be serving more than one purpose. (Ekejindu *et al.*, 1999) in their study highlighted the impact of health education on knowledge and practices in relation to disease transmission.

Respondents who eat with unwashed hands were 13.1% and farming barefoot 5.2% respectively. (Udonsi and Ogan, 1993) revealed that adults in different occupational group such as school teachers, traders and artisans that engage in part time farming, hunting and recreating, bathing as well as fishing activities are known to have high infection prevalence.

Most of the respondents are aware that worm infections have adverse effects on the health of a individual. However, recognizing the negative effects of intestinal worms did not equate to taking measures to prevent infection. Statistics from this survey show that 38.4% of the entire respondents said helminth infections are transmitted or spread via breast milk when breast feeding. This might be due to the idea that most pregnant mothers eat a lot of sugary food when pregnant whereby they do not deworm prior to delivery, the child get infected via breast milk. (Damen *et al.*, 2011) Opined that the voracious eating habits of pregnant women and children had been observed to expose them to intestinal parasitic infections than any group.

Respondents who said worm infections are spread via dirty food and faeco-oral are 20.1% and 12.6% respectively. Nock and Geneve (2002), showed that 8.1% of the water closet handles examined had cysts and eggs of intestinal parasites, an evidence of faecal contamination traceable to contaminated hands during clean-up process that accompanies defecation.

Nevertheless, 78.5% of respondents appeared knowledgeable about helminth infection and 51.1% who can identify the worm still do not take care to prevent transmission. This could be attributed to cultural and behavioural lifestyle, economic limitations, lack of proper sanitation facilities and inability to maintain personal hygiene. (Adeyeba and Essiet, 2002), submitted that

relative contributions of host factors such as behavioral lifestyle, socio-economic status have received little attention.

However, several misconceptions, erroneous beliefs and perception of mode of transmission were predicated on their beliefs on the causes of the disease. (Abraar *et al.*, 2012). in a pilot study revealed a local perception that everyone always has parasites in their body. The study revealed that 14.8% respondents perceptions were eating vegetables sprayed with pesticides, 1.1% excessive consumption of particular vegetables, 19.2% playing in contaminated soil and water and 10.1% eating soiled and contaminated food.

In this study, it was noted that mothers who practice herbal medication and self-medication were 14.7% and 15.7% for the treatment of STHs infection. Self medication here includes visiting patent medical stores to obtain drugs, also going to an herbalist, individuals resorting to taking plant leaves, roots and herbs as an unorthodox method of treatment for intestinal worms. Some of the leaves taken include scent leaf (*Ocimum grattisimum* Linn.) and bitter leave (*Vernonia amygdalina* Del.) mixed with local gin.

From focal group discussions, it was deduced that respondents in the respective areas are only concerned and conscious about their sanitation and personal hygiene which they say is the road to good health.(Esrey *et al.* (1991) observed that better hygiene through hand washing, food protection and domestic hygiene brought a reduction of 33.0% in diarrhoea incidence whereas improved water supply led to an average reduction of only 15.2%. Health education and chemotherapy is not an ultimate contributor to control and treatment rather it is secondary, prevention is better via good personal hygiene and sanitation.

Finally, it was found that the entire respondent actions towards control and prevention in terms of sanitation and personal hygiene is encouraging going by health education (69.6%) and chemotherapy (72.3%).

Based on this study, it is therefore concluded that although awareness of soil transmitted helminths infection is high, the attitude and practices are very poor. It is recommended that chemotherapy should be targeted at primary health centre services and further health education on STH should focus on community information and prevention techniques being converged to fill the gap in knowledge. The community should be involved in identifying the risk behavior

and possible solution of STH control strategies including regular hand washing with soap, at all levels, taking antihelminthic drugs once in a while. This will enhance the adherence and sustainability of the health intervention programmes to make people modify or change those attitudes, belief and cultural or behavioural attributes which expose humans to infection.

### **Ethical Approval and Consent**

The Imo State Ministry of Health and the Academic Board of Animal and Environmental Biology Department, Imo State University, Owerri approved the study. Further, informed oral consent was equally obtained from women leaders and individual respondents before responses were obtained.

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