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Knowledge Attitudes and Perception about Malaria and Soil-transmitted Helminthes in Rural Community in Imo State Nigeria.

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Abstract

Malaria and Soil transmitted helminthes are co-endemic and have major public health significance. The study was aimed to ascertain the people's knowledge, attitudes and perception about malaria and soil-transmitted helminthes in Ndeama village in Ulakwo autonomous community, Owerri North Local Government Area. Survey method was adopted using questionnaires for data collection. A total of 500 questionnaire were shared and a total of 441 (88.2%) was retrieved. Also, focal group discussions (FGDs) and in-depth interviews (IDIs) were conducted in order to determine the level of participants' knowledge on transmission, treatment and approaches to control. Results from the distribution showed that more than half of the participants (65.9%) believed that exposure to mosquito bite was the major cause of malaria, 17.9% had no idea, 9.5% was attributed to eating of oily foods and 4.3% to drinking of unclean water. The results also showed that 53% respondents believed that eating of Dirty food is the major cause of soil-transmitted helminthes, 23.5% had no idea, 11.3% attributed the disease to bare footing, 7.7% fecal oral contamination and 4.3% inborn. In their actions, the respondents adopted three practices, self-medication, use of herbal drugs and Doctor's prescription. This study shows that there are misconceptions due to poor standard of living, inadequate water supply, poor environmental sanitation and the cost of medical and preventive practice of the participants on malaria and soil-transmitted helminthes. Therefore, this study highlights a critical need for targeting health messages towards poorly educated rural dwellers in order to empower them with the knowledge and resources to recognize and manage their health problems.

Keywords: Malaria, Soil transmitted Helmiths, Practices, Knowledge

Introduction

Malaria and Soil-transmitted helminthes are among the most prevalent endemic parasitic diseases in sub-tropical and tropical areas in the world. Both diseases have similar geographical distribution and co-infections are common. (Snow *et al*, 2005; Mwangi, *et al*, 2006). They are responsible for increased morbidities and associated consequences in vulnerable populations, including young children, pregnant women and school age children (Iwunze et al., 2015; Brooker*et al*, 2000). School children living in an environment with inadequate sanitation (Ziegelbauer*et al*, 2012), usually in deprived communities in rural areas are likely to be infected with at least one of the three soil-transmitted helminthes (*Ascarislumbricoides,* *Trichuristrichiura*and hookworms (*Ancylostomaduodenale*and *Necatoramericanus*) as well as other helminthes species (Tchuem*et al, 2003;* Bethony *et al*, 2006).

There have been a considerable number of studies about knowledge, attitudes and perceptions (KAPs) relating to soil-transmitted helminthes and malaria in different parts of the world, especially in tropical and sub-tropical areas as shown that they co-occur (Brooker*et al*, 2000). That human co-infection, with *Plasmodium falciparum* and helminthes has public health significance, and both school age and pregnant women groups have the highest risk of anaemia.

Co-infection of malaria and STHs may have public health impact during the developmental stages of children, affecting the child's development, slowing down their growth and reducing the productivity and work capacity, it can also pose a threat to immune responses through the effects on immune system (WHO, 2002; WHO, 2005; Bethony*et al*, 2006; Hotez, 2008). However, in these studies KAP has conferred on either diseases (i.e differential) and no study is known to have assessed their combination in terms of perception.

Materials and Method

Study Area

The study was carried out in Ndeama community, Ulakwo, Owerri North Local Government Area of Imo State from February to July 2017. The area lies between latitude$5^{o}15^{1}$- $5^{o}34^{1}$N, and Longitude $7^{o}15^{1}$ - $7^{o}30^{1}$E. It has an area of 198 square km and a population of 175,395 at the 2006 census. Owerri

North is semi-urban government area. It encircles Owerri Municipal like a peninsular. Six major roads that lead out of the municipal cuts across Owerri North Communities. In the North, Orlu road leads to Amakaohia and Akwakuma communities. In the East, Okigwe road leads to Orji Community. In the West, MCC road off Wetheral to ObibiUratta and Ihitaoha communities. In the South, Mbaise road leads to Egbu and Emekuku communities, while Aba road leads to Naze, Agbala and Ulakwo communities.The people lack some basic and social facilities such as good toilet systems, sewage disposal, health facilities which predispose them to diseases of parasitological importance. Majority of the inhabitants defecates indiscriminately, and also uses pit latrine which is usually uncovered aiding in the transmission of the disease. Also there is no pipe borne water in the area, the main source of water is bore-hole, rain water whose surrounding are often polluted with feacal materials. Drainage systems in the area are very poor as a result of this, the sanitation is poor. Hence, it can encourage the transmission or dissemination of parasites. Farming and Trading is the main occupation of the study population. The farmers use poultry and pet animals' droppings as fertilizers to improve the soil fertility for the production of vegetables and other products for human consumption.

Research Design

The survey method was used in the research design. The population size constitutes the population of people living in Ndeama village during the time of the research, which cuts across men, women and youths in the village. The sample size was randomly selected and invited to the town hall on different days as it would be difficult getting them in their houses individually.

A Focal Group Discussion (FGD) was organized to ascertain their knowledge and to explain more facts about malaria and soil transmitted helminthes, followed by an In-depth Interview (IDI) with each individual and then a questionnaire was administered to collect their demographic data and other necessary information. Those who could not fill the questionnaires were assisted by the researcher. A total of 500 questionnaires were shared of which 441 was retrieved.

Ethical Consideration

Study Topic was approved by the Board of the Department of Zoology, Imo State University Owerri ethical committee. Consent was obtained from both village heads before commencement of the research.

Study Population

The study populations were people residing in Ndeama community of Ulakwo, Owerri North Local Government Area. Due to the difficulties in going from house to house, the study participants were assembled at their different town halls. The study population was 441 participants, 168 males and 273 females which were as follows Umuekwea 159,Umueshiukwu 115, Umuodukwu 88 and Umuoketa 79.

Data Analysis

Data obtained from the questionnaire were analyzed using percentage and formula respectively. Values were tested using Anova.

Results

Demographic characteristics of the respondent table 1 shows that more than half of the participants were female (69.1%) while the remaining (38.0%) were male. Female participants in each village were greater than male participants. Their age group ranged from 15 – 56^{+} years, with more participants belonging to 56^{+} years. The least populated was 15 – 25 years. More than half of the participants (63.7%) were married while non from the villages were divorced. The major occupation of the respondents was farming (33.3%). These were consistent in the villages Umuekwea (35.8%), Umueshiukwu (35.5%), Umuodukwu (20.4%) and Umuokeata (39.2%). Other occupations were traders (26.7%), artisans (17.4%), civil servants (16.5%) and students been the least (5.8%). Education showed that 36.2% attended primary education followed by those that had no education (31.7%) while the least qualification was tertiary education (9.2%)

Respondents knowledge on source of information about malaria and soil transmitted helminthes table 2 shows that, for malaria, majority of the participants claimed to have obtained their information through health personnel (69.8%), while these claims were consistent with Umuekwea (75.4%), Umueshiukwu (44.4%), Umuodukwu (88.6%) and Umuokeata (74.6%). The least claimed source of

information on malaria from all the villages was churches. Also, majority of the respondent claimed that their source of information about soil transmitted helminthes was from health personnel (58.2%). This was consistent in Umuekwea (79.2%), Umuodukwu (52.2%), and Umuokeata (68.3%) while Umueshiukwu claimed otherwise. In Umueshiukwu, 43.4% claimed they don't know their source of information. The least source of information was the church (4.5%)

Respondent's knowledge care seeking behaviour for malaria and soil transmitted helminthes table 3. For malaria, majority of the participants (35.8%) practice self-medication. This was consistent in Umuekwea (44.6%) and Umueshiukwu (44.3%) while Umuodukwu and Umuokeata claimed otherwise. In Umuodukwu and Umuokeata, (38.6% and 29.1%) respectively, claimed to go to the hospital. Other care seeking behaviour were use of herbal (21.9%) and don't know (14.9%). In the other hand, majority of the participants (40.5%) practice self-medication for soil transmitted helminthes. This was consistent in Umuekwea (49.0%), Umueshiukwu (41.7%) and Umuokeata (30.5%), while Umuodukwu claimed otherwise. In Umuodukwu, going to the hospital was the major care seeking behaviour. Other care seeking behaviour were use of herbal (23.3%), go to hospital (18.1%) and don't know (17.9%)

Respondent approaches towards prevention and control on malaria and soil transmitted helminthes table 4 showed that; for malaria, participants that claimed that using door/window as prevention and control of malaria was the highest. This was consistent in Umuekwea (40.2%), Umueshiukwu (38.2%), and Umuokeata (36.7%) while Umuodukwu claimed otherwise. In Umuodukwu, sanitation was the highest (40.9%), the least prevention was use of repellent (19.9%). On the other hand, 30.1% of the participants claimed they don't know the approach towards prevention and control of soil transmitted helminthes. This was consistent in Umueshiukwu (42.6%) and Umuodukwu (42.0%) while Umuekwea and Umuokeata claimed otherwise. In Umuekwea and Umuokeata, sanitation was the major form of prevention and control (29.5% and 22.7%) respectively.

The least prevention and control practice was hand washing (11.5%)

Respondent's knowledge on the causes of malaria and soil transmitted helminthes table 5 shows that, for malaria, majority of the participants claimed that exposure to mosquito bite was the major cause of malaria. These were consistent in the villages Umuekwea (66.6%), Umueshiukwu (51.5%), Umuodukwu (60.2%) and Umuokeata (56.8%). Other causes were drinking of unclean water (65.9%), no idea (17.9) and eating of oily food (9.5%). Also, majority of the participants claimed that drinking dirty water was the main cause of soil transmitted helminthes. This was consistent in all the villages Umuekwea (55.9%), Umueshiukwu (50.4%), Umuodukwu (56.8%) and Umuokeata (46.8%). Other causes were No idea (223.5%), walking bare footed (11.3%), fecal oral (7.7%) and inborn (4.3%).

Respondent's mode of defecation and source of water table 6 shows that majority of the participants (47.8%) uses pit latrine as toilet facility. This was consistent in all the villages (52.8%, 28.6%, 56.8% and 55.6%) respectively. Other toilet facilities were open ground (20.8%), bush system (19.0%) and water closet which was the least used (12.2%). Also, more than half of the respondents (60.9%) makes use of ordinary paper and leaves for cleaning up after defecation. This was consistent in all the villages (67.2%, 70.4%, 55.6%, and 40.5%) respectively. In Umueshiukwu, no participant uses ground system. On the other hand, more than half of the respondent uses river (54.8%) as their source of water supply. This was consistent in all the villages (49.0%, 44.3%, 67.0%, and 69.5%) respectively. None of the villages uses tap water. Other source of water supply were roof catch/harvested rain (33.3%), borehole (11.7%) and tap (0.0%)

Discussion

In sequence of the result of the research work carried out on the Knowledge, Altitude and Practice, study shows misconception about the causes and control of malaria and soil transmitted helminthes of Ndeama village in Ulakwo community, Owerri North L.G.A. Some indicated that eating oily foods, exposure to mosquito and drinking of dirty water, Faecal oral, Bare footing and dirty food were suggested as causes of soil

transmitted helminthes(Vundule, *et al*; 1996).

The research has noted that the people in Ndeama villages in Ulakwo community have not yet been introduced on education of malaria and soil transmitted helminthes in the community. Hence the knowledge (table 3) on the source of information of the people in Owerri North L.G.A could be a proxy of their media (radio and television), Health education, churches, friends and relatives or based on whether they have suffered from the disease or not. Focus group discussions confirmed that participants also have misconceptions on the causes of modes of the transmission of malaria and soil transmitted helminthes. The fact that a greater proportion of the people do not know the causes and mode of transmission and also the control and treatment measures of malaria and soil transmitted helminthes indicates lack of health education regarding soil transmitted helminthes and malaria in the study area. There has been great improvement in the control of malaria with time due to the advertisement for treatment options for the disease on radio and television, and it appeals it failing to reach this target due to probably poor socio-economic status of the rural population where only a few in some villages own either a radio or television set which could be a barrier to the flow of health information to the rural dwellers(Vundule, *et al*; 1996). Thus, the area should have health centres and organize health education to strategize existing channel for communicating health information to the susceptible area.

People in general lacking knowledge about the causes and prevention measures of malaria and helminthiasis are less likely to take preventive measures to protect themselves from acquiring or transmitting such diseases. For example, studies had shown that the villagers who had poor knowledge of malaria and its causes reported not taking measures of their own to protect themselves (Vundule, *et al*; 1996). The findings on the sources of water used by participants showed that a greater proportion of participants use river (54.8%) and it is unsafe water for drinking. Also, their mode of defecation and disposal of faeces have shown and could contribute to the transmission of soil transmitted helminthes in this study area.

This study has demonstrated a critical need for targeting health messages through health centres/clinics by health personnel's in order to reach the most susceptible people. This will empower high risk group of people with the basic knowledge and skills ultimately protecting from acquiring malaria and soil transmitted helminthes. Hence, all efforts should be made to correct their misconceptions, by improving the standard of living through provision of good house, water supply and environmental sanitation and also complete, comprehensive information on malaria disease and soil transmitted helminthes as a whole.

Table 1: Demographic characteristics of the respondent

Variables	Communities %				
	N= 159 Umuekwea	N= 115 Umueshiukwu	N= 88 Umuodukwu	N= 79 Umuokeata	N= 441 Total
Sex					
Male	63 (39.6%)	48 (41.7%)	29 (32.9%)	28 (35.4%)	168 (38.0%)
Female	96 (60.3%)	67 (58.2%)	59 (67.0%)	51 (64.5%)	273 (69.1%)
Age					
15-25	11 (6.9%)	16 (13.9%)	7 (7.9%)	5 (6.3%)	39 (8.8%)
26-35	23 (14.4%)	13 (11.3%)	9 (10.2%)	13 (16.4%)	58 (13.1%)
36-45	18 (11.3%)	21 (18.2)	16 (18.1%)	16 (20.2%)	71 (16.0%)
46-55	44 (27.6%)	11 (9.5%)	5 (5.6%)	21 (26.5%)	81 (18.3%)
>56	63 (39.6%)	54 (46.9%)	51 (57.9%)	24 (30.3%)	192 (43.5%)
Marital status					
Single	31 (19.4%)	24 (20.8%)	18 (20.4%)	21 (26.5%)	94 (21.3%)
Married	96 (60.3%)	80 (69.5%)	63 (71.5%)	42 (53.1%)	281 (63.7)
Widow	32 (20.1%)	11 (9.5%)	7 (7.9%)	16 (20.2%)	66 (14.9%)
Divorced	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Occupation					
Farmer	57 (35.8%)	41 (35.5%)	18 (20.4%)	31 (39.2%)	147 (33.3%)
Traders	48 (30.1%)	21 (18.2%)	30 (34.0%)	19 (24.0%)	118 (26.7%)
Students	6 (3.7%)	8 (6.9%)	7 (7.9%)	5 (6.3%)	26 (5.8%)
Civil servants	21 (13.2%)	27 (23.4%)	14 (15.9%)	11 (13.9%)	73 (16.5%)
Artisans	27 (14.2%)	18 (15.6%)	19 (21.5%)	13 (16.4%)	77 (17.4%)
Education					
No education	46 (28.9%)	21 (18.2%)	44 (50.0%)	29 (36.7%)	140 (31.7%)
Primary	58 (36.4%)	48 (41.7%)	21 (23.8%)	33 (41.7%)	160 (36.2%)
Secondary	42 (26.4%)	29 (25.2%)	16 (18.1%)	13 (16.4%)	100 (22.6%)

Tertiary	13 (8.1%)	17 (14.7%)	7 (7.9%)	4 (5.0%)	41 (9.2%)

Table 2: Respondent knowledge o source of information

Variables	Communities %				
	N= 159 Umuekwea	N=115 Umueshiukwu	N= 88 Umuodukwu	N= 79 Umuokeata	N= 441 Total
Malaria					
Health personnel	120 (75.4%)	51 (44.3%)	78 (88.6%)	59 (74.6%)	308 (69.8%)
Radio/TV	10 (6.2%)	21 (18.2%)	5 (5.6%)	0 (0.0%)	36 (8.1%)
Friends/family	6 (3.7%)	18 (15.6%)	3 (3.4%)	6 (7.5%)	33 (7.4%)
Churches	2 (1.2%)	7 (6.0%)	0 (0.0%)	3 (3.7%)	12 (2.7%)
Don't know	21 (13.2%)	18 (15.6%)	2 (2.2%)	11 (13.9%)	52 (11.7%)
STHs					
Health personnel	126 (79.2%)	31 (26.9%)	46 (52.2%)	54 (68.3%)	257 (58.2%)
Radio/TV	2 (1.2%)	18 (15.6%)	11 (12.5%)	0 (0.0%)	31 (7.0%)
Friends/family	11 (6.9%)	7 (6.0%)	2 (2.2%)	11 (13.9%)	31 (7.0%)
Churches	0 (0.0%)	9 (7.8%)	5 (5.6%)	6 (7.5%)	20 (4.5%)
Don't know	20 (12.5%)	50 (43.4%)	24 (27.2%)	8 (10.1%)	102 (23.1%)

Table 3: Respondent attitude towards Malaria and STH

Variables	Communities %				
	N= 159 Umuekwea	N= 115 Umueshiukwu	N= 88 Umuodukwu	N= 79 Umuoketa	N= 441 Total
Malaria					
Self-medication	71 (44.6%)	51 (44.3%)	17 (19.3%)	19 (24.0%)	158 (35.8%)
Go to hospital	34 (21.3%)	29 (25.2%)	34 (38.6%)	23 (29.1%)	120 (27.2%)
Use of herbal	36 (22.6%)	24 (20.8%)	21 (23.8%)	16 (20.2%)	97 (21.9%)
Don't know	18 (11.3%)	11 (9.5%)	16 (18.1%)	21 (26.5%)	66 (14.9%)
STHs					
Go to hospital	16 (10.0%)	11 (9.5%)	32 (36.3%)	21 (26.5%)	80 (18.1%)
Don't know	23 (14.4%)	22 (19.1%)	18 (20.4%)	16 (20.2%)	79 (17.9%)
Use of herbal	42 (26.4%)	34 (29.5%)	9 (10.2%)	18 (22.7%)	103 (23.3%)
Self-medication	78 (49.0%)	48 (41.7%)	29 (32.9%)	24 (30.3%)	179 (40.5%)

Table 4: Respondent practices in the treatment and control of Malaria and STH

Variables	Communities %				
	N= 159 Umuekwea	N= 115 Umueshiukwu	N= 88 Umuodukwu	N= 79 Umuokeata	N= 441 Total
Malaria					
Insecticides	28 (17.6%)	26 (22.6%)	21 (23.8%)	13 (14.4%)	88 (19.9%)
Sanitation	29 (18.2%)	21 (18.2%)	36 (40.9%)	14 (17.7%)	100 (22.6%)
Door/Window	64 (40.2%)	44 (38.2%)	13 (14.7%)	29 (36.7%)	150 (34.0%)
Don't know	38 (23.8%)	24 (20.8%)	18 (20.4%)	23 (29.1%)	103 (23.3%)
STHs					
Sanitation	47 (29.5%)	18 (15.6%)	19 (21.5%)	18 (22.7%)	102 (23.1%)
Hand washing	21 (13.2%)	16 (13.9%)	10 (11.3%)	12 (15.1%)	59 (11.5%)
Health education	16 (10.0%)	20 (17.3%)	13 (14.7%)	17 (21.5%)	66 (14.9%)
Personal hygiene	39 (24.5%)	12 (10.4%)	9 (10.2%)	21 (26.5%)	81 (18.3%)
Don't know	36 (22.6%)	49 (42.6%)	37 (42.0%)	11 (13.0%)	133 (30.1%)

Table 5: Respondents' knowledge on the causes of Malaria and STH

Variables	Communities %				
	N= 159 Umuekwea	N= 115 Umueshiukwu	N= 88 Umuodukwu	N= 79 Umuokeata	N= 441 Total
Malaria					
Eating of oily foods	21 (13.2%)	11 (9.5%)	3 (3.4%)	7 (8.8%)	42 (9.5)
Exposure to mosquito bite	106 (66.6%)	82 (51.5%)	53 (60.2%)	50 (56.8%)	291 (65.9)
Drinking of unclean water	3 (8.1%)	6 (5.2%)	11 (12.5%)	9 (11.3%)	19 (4.3)
No idea	29 (18.2%)	16 (13.9%)	21 (23.6%)	13 (16.4%)	79 (17.9)
STHs					
Inborn	3 (1.8%)	6 (5.2%)	1 (1.1%)	9 (11.3%)	19 (4.3%)
Faecal oral	13 (6.9%)	11 (9.5%)	3 (3.4%)	7 (8.8%)	34 (7.7%)
Bare footing	11 (6.9%)	23 (20.0%)	11 (12.5%)	5 (6.3%)	50 (11.3%)
Dirty food	89 (55.9%)	58 (50.4%)	50 (56.8%)	37 (46.8%)	234 (53.0%)
No idea	43 (27.0%)	17 (14.7%)	23 (26.1%)	21 (26.5%)	104 (23.5%)

Table 6: Respondents' mode of defecation and source of water

Variables	Communities %				
	N= 159 Umuekwea	**N= 115 Umueshiukwu**	**N= 88 Umuodukwu**	**N= 79 Umuokeata**	**N= 441 Total**
Toilet facilities					
Pit latrine	84 (52.8%)	33 (28.6%)	50 (56.8%)	44 (55.6%)	211 (47.8%)
Water closet	11 (6.9%)	32 (27.8%)	8 (9.0%)	3 (3.7%)	54 (12.2%)
Bush system	43 (27.0%)	21 (18.2%)	11 (12.5%)	9 (11.3%)	84 (19.0%)
Open ground	21 (13.2%)	29 (25.2%)	19 (21.5%)	23 (29.1%)	92 (20.8%)
Mode of cleaning up after defecation					
Tissue paper	16 (10.0%)	23 (20.0%)	18 (20.4%)	21 (26.5%)	78 (17.6%)
Washing method	31 (19.4%)	11 (9.5%)	21 (23.8%)	23 (29.1%)	86 (19.5%)
On the ground	5 (3.1%)	0 (0.0%)	2 (2.2%)	3 (3.7%)	10 (2.2%)
Ordinary paper/With leaves	107 (67.2%)	81 (70.4%)	49 (55.6%)	32 (40.5%)	269 (60.9%)
Source of water					
Tap	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
River	78 (49.0%)	51 (44.3%)	59 (67.0%)	54 (69.5%)	242 (54.8%)
Roof catch/harvested rain	65 (10.0%)	43 (37.3%)	23 (26.1%)	16 (20.2%)	147 (33.3%)
Borehole	16 (10.0%)	21 (18.2%)	6 (6.8%)	9 (11.3%)	52 (11.7%)

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