

KNOWLEDGE OF CAUSES, SYMPTOMS AND PREVENTION OF MALARIA IN CHILDREN LESS THAN FIVE YEARS OF AGE AMONG MOTHERS IN NASARAWA STATE, NORTH CENTRAL, NIGERIA.



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Abstract

A mother's inability to correctly recognize malaria will contribute substantially to child morbidity and mortality due to the disease. An assessment of the ability to identify the causes, symptoms and preventive measures for malaria in children under-five was carried out between September and November 2011 among mothers in Nasarawa state, north-central Nigeria. A cross sectional sample survey was adopted. A multi-stage systematic random sampling technique was adopted and a pre tested structured questionnaire was administered to 1416 respondents from six local government areas. Both quantitative and qualitative data were collected through Focus Group Discussions, In-depth Interviews and illness narratives. One-way analysis of variance and Chi-square were used to test for differences within categories of independent variables. The study findings showed that the most commonly mentioned disease was malaria (96.2%) and 98.9% of the respondents considered high body temperature as a common symptom of the disease in children. Majority (82.5%) reported knowing the use of bednets as a strategy for preventing mosquitoes. Knowledge score of symptoms of malaria in children was generally high (70.1%) and it differs significantly between the LGAs (f=13.58, df=5, p<0.05) compared to knowledge of prevention skewed towards medium (43.9%) which also differs significantly between the LGAs (f=23.16, df=5, p < 0.05). The disease was believed to be caused by some factors other than mosquitoes alone. The study concludes that malaria is recognize as a major health problem by mothers of children under- five in the study community and that it is not just a biomedical explanation that people give to malaria but also other alternative cultural explanations. Appropriate educational campaign strategy directed at removing these misconceptions about malaria should be promoted to improve knowledge and facilitate the control of the disease.

Key words: Knowledge, Causes, Symptoms, Prevention, Malaria

Introduction

Malaria caused by blood parasites transmitted from person to person through the bites of infected mosquitoes is the most virulent parasitic disease in the tropics, and public remains of highest health importance. It is responsible for a large burden of disease in endemic countries. World Health Organization (WHO, 2010) reported that malaria is found throughout the tropical and subtropical regions of the world, and causes more than 300 million acute illnesses and at least one million deaths annually. Its economic costs are also with evidence enormous. strongly suggesting that malaria obstructs overall economic development, particularly in endemic countries.

Malaria is a continuing problem in Nigeria, and for interventions to be effective, a comprehensive understanding of people's knowledge about causes, symptoms and prevention related to malaria is required. Thus, in Nigeria, and indeed in most part of tropical Africa, the success in the eradication of malaria will depend largely on changing the people's attitude and behaviour towards efforts at preventing the disease (Iwelumor 2010). et al.. Furthermore, success in this direction will be contingent on how much the people know about the disease, particularly, its causes, symptoms, and prevention. Since the creation of Nasarawa state in 1996, governments have formulated so many health policies of intervention at the childhood level for the prevention and treatment of malaria such as environmental

sanitation. distribution of Insecticide Treated Nets (ITNs) and increased supply of drugs to government hospitals and clinics. Yet, in spite of these efforts, the National Malaria Control Programme of the Federal Ministry of Health (2010) reported that Nigerian culture affects decision making in respect of health-seeking behavior as 2005 to 2010 statistics still showed insignificant reduction in malaria incidence. National Population Commission (2012)also reported that malaria in the North Central Geo-Political Zone-which Nasarawa state is part, is endemic and perennial. This is suggestive of the need to focus on the state to ascertain the community knowledge about the disease. Thus, it is necessary to know what mothers know about malaria in the study area because understanding what they know when their children are sick with the disease will be useful in designing an effective intervention strategy for its treatment (Osagbemi, 1998; RBM, 2005; Aurelien and Richard; 2008: Daboer, et al., 2010).

Mothers and other caretakers are of foremost importance in recognizing mild or severe malaria disease and seeking treatment for their wards (Jane et al., 2010). This is more so that, treatment often begins at home, mother's inability to correctly thus. will recognize malaria contribute substantially to child morbidity and mortality due to the disease. In western Nigeria, studies show that mothers were unable to recognize severe malaria despite perceiving the signs and symptoms of onset of childhood malaria as including high temperature and loss of appetite (Akogun et al., 2005).

Environmental factors and behavioural patterns of vectors and human populations combine to provide favourable conditions for malaria transmission. Most research in tropical diseases has focused on the biomedical aspect while several authors have stressed the need for studies on sociocultural and socio-economic factors (WHO, 2003; Susanne et al., 2004). However, failure to consider knowledge regarding malaria has contributed to the inability of programmes to achieve sustainable control. This is more so that studies on knowledge are becoming important to design and improve malaria control activities; to establish epidemiological and behavioural baselines; and to identify indicators for monitoring programmes. The objective of study is to describe mothers the understanding of malaria, recognition of signs and symptoms, protective practices and perception of cause to identify areas of misconception that would be the focus of enlightenment about the disease.

Methodology

The study setting

The study setting is Nasarawa State. It is situated in the North-Central geo-political Zone of Nigeria, otherwise known as the Middle Belt region. The State is predominantly agrarian with land area of 27,116.8 square kilometers. Adopting the medium variant the population of projections (NPC, 2002), the population of the state is estimated to be 2,101,069. The vegetation is Guinea savanna and experience average rainfall of 328 mm/year from April through November (Binbol, 2007). The state is well endowed with enormous water resources. The climatic and ecological conditions of the state also favour high malaria transmission with mosquitoes all year round around the rivers. The State Ministry of Health (2010) reported that mosquito bites are common and malaria is the major cause of morbidity and mortality in the state. There are two groups of healthcare providers in the study area; the modern western health and the traditional healthcare practitioners. There are also those who combine traditional medicine with modern medicine.

Study population

The study population consisted of 1416 mothers aged 15 - 49 years with at least a child less than five years within the period of data collection in Nasarawa state; comprising of 231(16.3%) in Akwanga, 233(16.5%) in Lafia, 237(16.7%) in Karu, 242(17.1%) in Nasarawa, 234(16.5%) in Nasarawa Eggon and 239(16.9%) in Keana LGAs.

Sampling technique

The study population was contacted through a multistage systematic sampling procedure. In the first stage, was the stratification of the state into Senatorial Districts: two LGAs were systematically selected in each of the senatorial districts. This systematic sampling exercise resulted in the selection of Nasarawa and Karu LGAs in Nasarawa West Senatorial District; Nasarawa Eggon and Akwanga LGAs in Nasarawa North Senatorial District and Keana and Lafia LGAs in Nasarawa North Senatorial District. In the second stage; each LGA was further stratified into urban and rural areas. Each local government headquarters was categorized as urban and was stratified into three residential zones. These are the high, medium and low class areas: based on the socio-economic attributes/status of their residents. The third stage was the selection of settlements and respondents in the LGAs using the updated version of the 20006 National Population Enumeration Areas (EAs). A total of six EAs in each LGA were purposively and systematically selected (3 urban and 3 rural) giving an overall total of 36 EAs sampled for the study. Sampling at the EA level proceeded with the listing of all the buildings in the EA and thereafter the selection in each EA at specified intervals of either every third or fifth building from a starting number (determined randomly) depending on the length of the street or on the total number of houses on each street or area.

Study design and method of data collection

This was a descriptive cross sectional study, conducted between September to November 2011.

Ouantitative and qualitative research methodologies were employed to generate data for the study. Qualitative data was sourced through Focus Group Discussions (FGDs), in-depth interviews, and illness narratives while the quantitative component was and an open-ended questionnaire used to source data from 1416 mothers. A total of 18 FGDs with an average of ten participants were conducted and each lasted 30-45 minutes. Information obtained from FGDs included knowledge the of symptoms, prevention and causes of malaria. The selection was done to ensure broad representation of the participants in terms of age, ethnicity and educational status. Groups were as follows:-No formal education, primary school and Secondary; and Post secondary school education; young aged 35 years and below and old; 36 years and above. Discussions were done separately for each group. Twelve in-depth interviews were conducted with community health care providers on community knowledge of malaria. These health workers were selected purposefully based on their involvement in malaria treatment and prevention. Narrators of past and current malarial episodes in children were selected from three groups of mothers: The first category was 6 mothers with past illness episodes who lost their children as a result of illness diagnosed/perceived as malaria. The second category were 6 mothers whose children were sick and receiving treatments either in the hospital or at home for illness diagnosed/perceived as malaria during this study. The third category included 6 mothers whose children had been successfully treated for illness diagnosed/perceived as malaria. They were randomly selected from the list of mothers who had indicated that they had at the time of study children below 5 years who had suffered from malaria. The village heads, village clinic staff and other community health providers assisted in identifying such mothers. The selected narrators were informed in advance and met in their homes or at the clinics. Each narrator was asked to tell the story of the perceived cause, symptoms and prevention of the disease.

Data analysis

The data generated from the questionnaire were subjected to both descriptive and inferential analysis. The individual correct views based on the medically known knowledge of the diseases were scored to respondent's assess the knowledge. Differences in the level of knowledge scores among the respondents were determined using one-way analysis of variance while chi-square statistic was used to test for statistical differences within categories of the independent variables and p-values less than 0.05 were considered significant.

Analysis of the knowledge of malaria symptoms and prevention was scored by creating dummy variables in which those who responded in the preferred direction were coded as 1 and 0 otherwise. The ten and six items for knowledge of malaria symptoms and prevention respectively were validated and their correlation (Spearman) stood at 0.72 which was considered high enough for the study. Each of the items had three categorical variables and were scored, 1, 2 and 3; measured cumulativelv using item analysis. Knowledge of malaria symptoms was scored on a 3-scale of Low (0-3 points), Medium (4-6 points) and High (7-10 points). These are determined as follows: High knowledge score on malaria symptoms: to correctly mention seven or more symptoms of malaria. Medium knowledge score on malaria symptoms: to correctly mention four to six symptoms of malaria. Low knowledge score on malaria symptoms: to correctly mention at least three symptoms of malaria or not at all.

The ten knowledge of malaria symptom variables measured are: high body temperature/shivering or hot body; vomiting; diarrhea; convulsions; child looks whitish; one lung is swollen; headache; weakness; loss of appetite and abdominal pain.

The knowledge of prevention was also scored on a 3-scale of Low (0-2 points), Medium (3-4 points) and High (5-6 points). High knowledge score of malaria prevention: to correctly mention five to six malaria preventive strategies. Medium knowledge score of malaria prevention: to correctly mention three to four malaria preventive strategies. Low knowledge score of malaria prevention: to correctly mention at least two malaria preventive strategies

The six knowledge of malaria prevention variables measured was to affirm that: Malaria is preventable; cleaning the environment reduces mosquitoes; clearing grasses reduces mosquitoes; putting nets on doors and windows reduces mosquitoes; filling up pots and pools of water that do not flow reduces mosquitoes and use of bednets prevents mosquitoes.

Verbatim transcriptions were made for all tape-recorded FGDs and interviews conducted in local language, and finally translated into English.Thereafter, the transcripts were coded and prepared by themes. The textual data was used to support the quantitative findings and where appropriate, quotes that best explained mother's knowledge about malaria were identified and used in parallel with the quantitative findings.

Ethical considerations

The safety of the respondents was of paramount interest to the study and oral consent from the respondents was sought directly while in some cases because of cultural considerations, the husbands consent was sought and obtained before the mothers participated. The study made efforts to collect ethical clearance in the state, but it was non-existent.

RESULTS

About half of the respondents (50.3%) were urban residents. One third (33.4%) were 30-34 years old while 40.3% had post primary education. The Eggon ethnic group comprised 21.9% of the study sample, while Alago and Mada ethnic groups constituted 19.4% and 15.5% of the population respectively. The respondents' main occupation was business/trading (33.8%).Only 15.5% of the respondents earn N15, 000.00 and above monthly. The marital status of the study population was very high. Roughly 93.4% were married and had between 3 and 4 children (Table 1).

Characteristics	Variable	Frequency	Percentage
La cal Physical and a la cal		710	50.2
Locality status	Urban	/13	50.3
Aco aroun		703	49.7
Age group	10-19	190	3./ 12.2
	20-24	189	13.3
	25-29	300	25.8
	30-34 25-30	4/3	33.4
	33-39	214	15.1
	40-44	90	0.4
	45-49 No formal advection	31	2.2
Educational status		347	24.5
	Prillidry Dest primory	525	22.0
	Tortion	165	40.5
	Others	105	0.7
Boligion	Christianity	10 710	0.7 E0.2
Religion	Islam	626	30.3
	Traditional	63	44.9
	Others	5	4.4
Ethnic group	Eggon	310	21.0
	Mada	220	15 5
		220	19.4
	Нацеа	158	11 2
	Fhira	97	69
	Ghagi	96	6.8
	Afo	110	7.8
	Fulani	56	3.9
	Others	94	6.3
Occupation	Farming	267	18.9
o coupation	Business/Trading	479	33.8
	Civil Servants	328	23.2
	Housewife	328	23.2
	Others	14	1.0
Income per month(in Naira)	Below 5,000.00	464	35.3
	5,000.00-10,000.00	449	34.2
	10,100.00-15,000.00	197	15.0
	15,100.00-20,000.00	77	5.9
	20,100.00-25,000.00	47	3.6
	25,100.00-30,000.00	26	2.0
	30,100.00-35,000.00	28	2.1
	35,000.00-40,000.00	10	0.8
	Above 40,000.00	15	1.2
Marital status	Married	1323	93.4
	Single parent	25	1.8
	Others	68	4.8
Number of children	1-2	535	37.8
	3-4	595	42.0
	5-6	257	18.2
	7-8	29	2.0

Table 1: Socio-economic and demographic characteristics of respondents

Prevailing Childhood Illnesses in the study area

The results of prevailing childhood illnesses are presented in Table 2. The most mentioned diseases commonly were malaria (96.2%),diarrhea/dysentery (89.9%), (66.1%), pneumonia catarrh/cough (55.5%), measles (50.8%), worms (45.4%), cholera (28.5%),sore throat (14.7%) and 14.2% reported skin diseases. Majority of the respondents interviewed and all the FGDs participants acknowledged malaria as one of the most important and commonest ailments among children in their locality. They reported that malaria affects children, adults and the were elderly but differently. Infants considered the most vulnerable group, as explained by a participant in a FGD that;" adults have stronger blood while children are weaker".

Discussants during FGDs reported that malaria is also known to have severe health, economic and social consequences on affected individuals, the entire family and community in general. These include social stress, fatigue and inability to perform one's duty and responsibilities. The rural respondents reported that malaria attacks them at the peak period of agricultural activities when they have depleted all their stockpiles of agricultural products and have no money or even the energy to work. The seriousness and prevalence of malaria in the study community was summarized by a discussant that: "Malaria affects children a lot and it is the number one disease in this community. It is like a natural illness affecting children, it kills them".

The study respondents had local terms used to describe febrile illness that correspond with malaria. It is referred to as *Okaki Uwu Ijuju* among the Aho ethic group. The Gbagi refer to it as *Nainagnu* or *Emunyasna*; Eggon ethnic group refer to it as *Ezin Ololoezin*. It is call *Oshun Khigbano* among the Alago; the Mada call it *Khetso*; the Ebira call it *Oruwangara*; the Hausa's refer to it as *Zazzabi* while the Fulani call it *Paboje*.

Illness	Frequency(n=1416)	Percentage
Malaria	1368	96.2
Diarrhea/Dysentery	1273	89.9
Pneumonia	936	66.1
Catarrh/Cough	786	55.5
Measles	720	50.8
Worms	643	45.4
Cholera	403	28.5
Skin disease	203	14.2
Sore throat	208	14.7

Table 2: Most common childhood illnesses in the study area.

Multiple responses allowed.

Knowledge of signs and symptoms of malaria

The knowledge of the respondents about malaria signs and symptoms are presented in Figure 2. In total, 98.9% of the respondents considered high body temperature as a common symptom of malaria in children. This was followed by vomiting (92.4%) and weakness of the body (89.7%). Other commonly cited symptoms of malaria in children are headache (85.9%), loss of appetite (81.1%),

abdominal pain (70.9%), convulsion (70.7%) and diarrhea (63.0%). The least well known symptoms are anemia (35.7%) and one swollen lung (25.1%). The figure also shows that most of the respondent's identified the clinical symptoms of malaria in children. For example, 98.9% of mothers indicating high body temperatures as symptoms of malaria is an indication that the study respondents have a good knowledge of signs and symptoms of malaria in children. This is because high body temperature of a child is clinically sensitive in diagnosing the disease. Whereas hotness and fatigue are early signs of the illness, diarrhea and vomiting are signs of its severity.



Figure 1: Knowledge of signs and symptoms of malaria in children.

Some of the responses on the signs and symptoms of malaria as explained by some mothers in the FGDs are noted below:

You will know that a child has malaria when the body is very hot. It is also accompanied by vomiting and loss of appetite.

The onset of malaria is characterized by chills and fever on alternate days.

The child will have headache. This sign or symptom signals the approach of malaria attack.

I will know a child has malaria when I start noticing that he has high body temperature, sleeping problem and will not be willing to eat and suck breast as usual.

Anytime my children have malaria I normally notice changes in the child's body; the body will be hot, he will sweat a lot, no appetite and vomiting.

The views expressed by respondents in the survey and in the FGD sessions suggest that mothers in the study area could accurately diagnose malaria. However, what may not be certain is how parents assess for instance, high body temperature and how they also distinguish between malaria and other illnesses; for instance, other types of fever like typhoid fever and pneumonia that have fever as a common symptom. Some incorrect views on signs and symptoms of malaria in children emerged during FGDs. For instance, some discussants think that sneezing marks the onset of malaria in children. Other cited clinical symptoms were the appearance of blood in the stool of children, running nose and sore throat.

A further analysis was carried out on the knowledge of malaria symptoms by scoring the 10 item assessment question by low, medium and high(Table 3).Respondent's knowledge of symptoms of malaria in children is generally high (70.1%). Only 23.6% and 6.3% had medium and low knowledge, respectively.

Knowledge of symptoms of malaria	Frequency	Percentage
Low	89	6.3
Medium	335	23.6
High	992	70.1
Total	1416	100

Table 3: Knowledge score of symptoms of malaria

The level of knowledge was further considered according to respondents LGA and locality status (Table 4).The Table shows that in all the LGAs, high knowledge score was above half. This high knowledge is an indication that health education messages have been disseminated in the study area. However, there was enough evidence to show that knowledge of symptoms of malaria differs significantly between residents of the different LGAs (F=13.58, df=5, p<0.05) and between residents of urban and rural areas (X^2 =13.86, df =5, p<0.05).The ruralurban differences may be expected considering that urban population is more exposed to advocacy and regular information from the media on the disease than is the case with rural residents.

Table 4: LGA, locality status and knowledge score of malaria symptoms

Characteristics	Variable		Low		Medium		High	
		Ν	Frequency	%	Frequency	%	Frequency	%
LGA	Lafia	233	16	6.9	67	28.8	150	64.4
	Karu	237	9	3.8	43	18.1	185	78.1
	Keana	239	5	2.1	33	13.8	201	84.1
	Nasarawa	240	18	7.5	67	27.9	155	64.6
	N/Eggon	234	5	2.1	54	23.1	175	74.8
	Akwanga	231	36	15.6	70	30.3	125	54.1
Locality status	Urban	713	10	1.4	92	12.9	61	85.7
	Rural	703	79	11.3	242	34.5	380	54.2

Source: Author's Field survey, 2011.

Knowledge of prevention of malaria

Information on respondent's knowledge of malaria prevention is presented Figure 2. About three-fourth (72.7%) of them believed that malaria could be prevented, while majority (82.5%) reported knowing the use of bed-nets as a strategy for preventing mosquitoes. This was followed by those who believed that malaria is a preventable disease (72.7%). Knowledge about cleaning environment to prevent mosquitoes was less than half (48.8%) while 62.7% and 68.3% knew that putting nets on doors and windows and clearing

grasses respectively will prevent Unlike the symptoms of mosquitoes. malaria which is more or less a recollection of individual experiences about the disease with relatively higher correct responses, the same cannot be said of the respondents about prevention of the disease. A critical look at figure 2 shows that even though the major form of malaria prevention was the use of bed-nets, the result also indicates the level of ignorance of how mosquitoes can be prevented. This is further supported by the fact that the six preventive strategies were not affirm by all the respondents.



Figure 2: Knowledge of malaria prevention Table 5 shows respondents percentage distribution of scores on the 6-question test on the prevention of malaria by low, medium and high knowledge. The figure shows that knowledge of malaria prevention was below average (43.9%) among the respondents. This shows that the preventive behavior of the respondents was found to be poor when compared with knowledge of symptoms of the disease.

This poor knowledge of malaria prevention may be as a result of a combination of many factors in which misconception about the transmission of the disease may be one. For instance, 72.7% of respondents who believed that malaria could be prevented (figure 2) indicates that 27.3% hold the view that it could not. Only 35.2% had high knowledge score while 20.9% had low knowledge score.

Table 5: Knowledge score of prevention of mala	ria
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Knowledge of prevention	Frequency	Percentage
High	499	35.2
Medium	622	43.9
Low	295	20.9

The level of malaria prevention knowledge discussed according is further to respondents LGA and locality status. Table 6 shows that it is only in Karu LGA (53.3%) that about half of the respondents had high knowledge score. This could be attributed to the fact that Karu LGA is the closest LGA to the Federal Capital Territory and may be more exposed to information on malaria prevention. The analysis of variance showed that knowledge of malaria prevention differs significantly between the LGAs (f=23.16, df =5, p<0.05) and between urban and rural communities(X^2 =12.95, df=13, p<0.05).This difference is not unexpected. This is because the urban areas are more exposed to health sensitization programmes in which malaria prevention in children could be one.

knowledge score of malaria prevention				
Characteristics	Variable	Low		
		Frequency	%	
LGA	Lafia	46	20.4	
	Karu	21	9.2	
	Keana	26	11.1	
	Nasarawa	56	23.8	
	N/Eggon	68	30.2	
	Akwanga	68	31.6	
Locality status	Urban	74	10.8	
	Rural	211	31.1	

Table 6: LGA, locality status and

Source: Author's Field survey, 2011

Knowledge about causes of malaria in children

Malaria was perceived to be caused by various factors (Figure 3).Majority(96.3%) of the respondents believe that the disease is caused by the bite of mosquitoes, 5.2% believe that malaria is natural while 7.2% attribute it to God. Other beliefs about the



Figure 3: Beliefs about the causes of malaria in children

Discussion

People in the study area have local terms used to describe febrile illness that corresponds with the biomedical term malaria. However, because of the infiltration of the Hausa culture and language into the communities, most mothers of the different ethnic groups in the drinking or wading through dirty water (21Mediunfever or highighfever (11.8%). wikebarrefue (12.3%) and the guesting amerson wi**kh** malaria (5329/4). 91 40.3 Thes FGDs eligited other informations on beliefs about 45alaria 102 children 4.56me discussants thought they malaria costs be constructed by children6by eating diffeoent types of food within asvery short time, or living in a rural 390 9 iron and to by eating a restiticted and 47709notom421s diet, 20.90ld food or too much food. Others reported that malaria was contagious for children especially if a child is close to or shared a bed or sleeping mat with another child who has malaria. Thus, there exist diverse believes among the study population about the causes and transmission of malaria. While some of these beliefs are similar to the common knowledge on malaria epidemiology, others are entirely different. study area used the Hausa equivalent of Zazabbi for malaria. The most commonly mentioned diseases which respondents considered most common in their locality and problematic in children is malaria (96.2%). This is similar to previous studies conducted in Nigeria where majority of the respondents reported malaria as a common childhood ailment (Afolabi, 2005; Akogun, 2003; Akogun and John, 2005; Okeke and Okafor. 2008).Interestingly, the respondents reported that malaria affects children and infants are considered the most vulnerable group. This corroborates Akogun and John (2005) findings in Northeastern Nigeria where majority of the respondents reported that malaria was a common illness among children because they have an increased susceptibility to malaria infections.

cause of malaria are hot sun (32.2%),

Most of the respondent's identified the correct clinical symptoms of malaria. For example, the high percentage (98.9%) of mothers indicating high body temperature (fever) as symptoms of malaria is an indication that the study respondents had a good knowledge of signs and symptoms of malaria and could accurately diagnose malaria in children. This finding was very high in comparison to the finding of Daboer et al. (2010) study in an Urban Slum in Jos, Nigeria where they reported only 49.6% of respondents being able to recognize the symptoms of the disease. Majority (70.1%) of the respondents have high knowledge score of malaria symptoms. This finding is encouraging as it is an indication of acceptance of biomedical knowledge introduced through health education promotion and communication in the study community. There was enough evidence to show differences in the level of knowledge of symptoms of malaria among respondents based on their LGAs and locality status. The rural-urban differences are expected considering that urban population is more advocacy exposed to and regular information from the media on the disease. It may be explained by the fact that urban communities have better access to multiple source of information on malaria such as magazines, radio, and television and from school education. In addition. their invariable accessibility of health materials and infrastructure might explain the observed difference (Okafor, 2008).

A substantial proportion of the mothers (82.5%) mentioned that they know that bed nets can be use to prevent malaria. Afolabi (2005) reported similar results in Nigeria. This may be due to increased health promotion by health workers and the Knowledge government. of clinical manifestations and causation of malaria in children satisfactory. is However. knowledge of preventive practices especially of filling up pools of water that do not flow which serve as breeding sites for mosquitoes as a strategy for preventing mosquito and knowledge of environmental measures were lower and need to be systematically strengthened. Satisfactory community knowledge of malaria symptoms is very important for malarial control. The poor knowledge of prevention of the disease may be as a result of a combination of many factors in which misconception about the transmission of

to ignorance of malaria prevention methods among community members and lack of sensitization on the part of health workers to communities on the appropriate malaria preventive measures. There was enough evidence to show differences in the level of knowledge of prevention of malaria between urban and rural areas. This difference is not unexpected because the urban areas are more exposed to health sensitization programmes in which malaria prevention in children could be one. Urban mothers are more likely to purchase malaria preventive products and adopt measures that would keep their environment clean. This supports Ovewole and Ibidapo (2007) study in a Nigerian urban centre and Chibwana *et al.* (2009) findings in Malawian households on the use of preventive measures where urban and rural respondents were compared on their judgment about malaria preventive products; the findings found that the urban respondents were five times more knowledgeable than the rural respondents. Although a very high proportion of respondents knew that the mosquito was a vector for malaria, a few respondents mentioned unlikely mechanisms of the cause of malaria, such as hot sun, drinking or wading through dirty water, witchcraft and by greeting a person with malaria. This is an indication of the existence of diverse beliefs among respondents about the causes and transmission of malaria. While the biomedical model has a prominent influence on malaria treatment practices in the study area, traditional models still play an important role in how people understand the disease. For example, the finding that 96.3% of the respondents believed that the disease is caused by the bite of mosquitoes does not mean it is considered as an etiological factor. This is because during the FGDs, some of those that reported that mosquitoes were the cause of malaria reported mosquitoes with other causal factors. The findings are also an indication

the disease may be one (Osagbemi, 1998

and WHO, 2008). It could also be attributed

that some people still have some misconceptions concerning malaria which can have negative impact on efforts aimed at controlling the disease in the study area if it is not addressed appropriately. Also if mosquitoes are not associated with malaria transmission, the need to prevent mosquito bites using appropriate strategies cannot be **Conclusion**

Conclusion

Malaria is recognized as a major health problem by mothers of children under- five and the disease is prevalent in the study community. Mother's knowledge of preventive measures was lower than the knowledge of symptoms of the disease and need to be strengthened. The identification of mosquitoes as the cause of malaria is a step in the right direction in changing knowledge and practice; all the same, there exists some misconceptions about the This calls for community disease. intervention programmes that should be directed towards correcting these misconceptions and for locally adapted health campaigns with the aim of transmitting biomedical information about cause, symptoms and prevention of malaria effectively. The implicit expectation is that widespread knowledge of malaria will encourage people to use health services appropriately and promptly. If this is done, it will complement the existing medical and sanitary effort now in place to control. and eradicate the malaria in the state.

properly appreciated (WHO, 2003). However, it is surprising that despite the several years of contact with and exposure to modern health education on the mosquito as the vector that transmit malaria parasite to human beings, such information is still not convincingly accepted by some mothers who have heard it.

References

- Akogun, O. B.(2003).Malaria Illness Experience and Sociopolitical Determinants of Health Service Utilization in North-Eastern Nigeria. UNDP/WORLDBANK/ HO Special Programme for Research and Training in Tropical Diseases (TDR) Final Report.
- Akogun, O. B & John, K. K. (2005). Illnessrelated Practices for the Management of Childhood Malaria Among the Bwatiye People of North-eastern Nigeria; Malaria Journal, 4:13
- Aurelien, F. & Richard, L. (2008). Health-Seeking Behaviour for Childhood Malaria: A Retrospective Study of two Districts in Ghana. Journal of Biosocial Science 41(1): 1-19.
- Afolabi, B. M. (2005). Knowledge, Attitude and Practices of Malaria in an Isolated community on the Atlantic Coast of Lagos, Nigeria. Infectious Diseases in Africa, 4:6-13
- Binbol, N .L. (2007). Climate of Nasarawa State. In: Akwa, A., Binbol, N. L., Samaila, K. I. and Marcus, N. D. (eds).Geographical Perspectives of Nasarawa State, Nigeria. Onaivi, Press Keffi.
- Chibwana A., Mathanga, D. P., Chinkhumba, J., Campbell, C. (2009). Socio-cultural Predictors of Health Seeking Behaviour for Febrile Under five Children in Mwanza Neno District, Malawi. Malaria Journal, 8: 219.
- Daboer, J. C, John, C., Jamda, A. M, <u>Chingle, M. P</u> & <u>Ogbonna, C</u>. (2010). Knowledge and Treatment Practices of Malaria Among Mothers and Caregivers of Children in an Urban Slum in Jos, Nigeria. <u>Nigerian</u> Journal of Medicine. 19(2):184-7.
- Federal Ministry of Health (2005). Roll Back Malaria. Training Manual on

Community Based Promotion of the Use of Insecticide Treated Nets (ITNs) in Nigeria. FMOH, Abuja.

- Federal Ministry of Health (2010). National Malaria Control Programme in Nigeria. Annual Report. FMOH, Abuja.
- Iwelunmor, J., Oladipo, I., Adeniyi, A., & Collins, O. (2010). Child malaria Treatment Decisions by Mothers of Children less than Five Years of Age Attending an Outpatient Clinic in South West Nigeria. An Application of PEN-3 Cultural Model. Malaria Journal, 9:354
- Jane, C. Vincent, O. & Catherine, M. (2010). Barriers to Prompt and Effective Malaria Treatment Among the Poorest Population in Kenya. Malaria Journal 9:144
- National Population Commission (2012): National Malaria Control Programme(NMCP) and ICF. *Nigeria Malaria Indicator Survey* (2010). Final Report, Abuja, Nigeria.
- National Population Commission (NPC, 2002). National and State Population Projections. NPC, Abuja, Nigeria.
- Okafor, S. I. (2008).*Location, Distribution and Question of Justice*. An Inaugural Lecture. University of Ibadan. Ibadan University press.
- Okeke, T. A & Okafor, H. U. (2008). Perception and Treatment Seeking Behavior for Malaria in Rural Nigeria: Implications for Control J. Hum. Ecol., 24(3): 215-222.
- Osagbemi, M. O. (1998). Knowledge Concerning the Control, Transmission and Treatment of Malaria Among the Residents of the Riverine Area of Kogi State. Journal of Environmental Sciences,1 (2):94-103.
- Oyewole & Ibidapo (2007). Attitudes to Malaria, Prevention, Treatment and

Management Strategies Associated with the Prevalence of Malaria in a Nigerian Urban Center. African Journal of Biotechnology. 6 (21): 2424 -2427.

- Philip, B. A., Betty. K. & Carl, K. (2005). How Local Community Knowledge about malaria affects Insecticide-Treated Net use in Northern Ghana. Tropical Medicine and International Health, 10 (4):366-378.
- Susanne, H. M, Joan, M. R. & Isaac, N. (2004). Health Seeking Behaviour and the Health System Response. DCC Working paper No:4.
- WHO (2003) *World Health Report 2000.* Geneva: World Health Organization.
- WHO (2008) *World Health Report 2008*: Geneva; World Health Organization
- WHO (2010) *World Health Report 2010*: Geneva; World Health Organization