

Behavior of Mothers for Malaria in Children Under Five Years of Age in Fobur, JOS East LGA, Plateau State.

Oahimire, Oise Joan *, Pofung, Zachariah Freejob **

Department of Geography and Planning, University of Jos, Plateau State, Nigeria

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Abstract- Malaria fever appears to be one of the leading causes of infant mortality in Nigeria. Improper health seeking behavior for effective treatment is still a great concern for health practitioners especially in rural areas. A sample of 200 mothers between ages 15-49 years with children ages 1-5 years in the community participated. The study examined the treatment seeking behavior of mothers for malaria in children under five years of age in Fobur, Jos East LGA, Plateau state, Nigeria.

Index Terms- Malaria,Public health,Infant mortality,Diagnosis,Morbidity,utilization,treatment,

I. INTRODUCTION

Background to the study. Malaria remains one of the greatest public health challenges of our time. The disease is a major health issue in several tropical and sub-tropical countries (Haque,*et. al*, 2012). World Health Organization (WHO, 2013),reported that in 2012, there were an estimated 207 million malaria cases and 627,000 malaria deaths, of which, 77% of deaths were children under age five. However, malaria mortality has decreased by more than 25% since 2000 due to extensive prevention and control measures (WHO,2012).Appropriate malaria treatment administered within 24 hours after the onset of fever can help lower it further (WHO,2014).

Federal Ministry of Health (2010), reported that malaria is the leading cause of mortality and morbidity in children aged less than 5 years. It is estimated that over 300,000 people, mainly pregnant women and children die of the disease each year in the country. Childhood mortality due to malaria has been attributed to poor health service delivery and ignorance associated with cultural beliefs.

It has been suggested that social and cultural determinants of behavior may account for the gap between awareness of modern health measures and health seeking behavior (Okeke and Okafor,2008). While some children are treated with malaria medications from biomedical facilities as the World Health Organization recommends, others receive treatment at home or from traditional healers. Investigating social and cultural issues regarding malaria treatment is integral in the development of effective public health responses to the disease.

Although malaria is typically treated at health facilities, diagnosis and treatment at community level is effective when access to such facilities is not limited. The effectiveness of community-level malaria control measures is influenced by early recognition of symptoms and subsequent treatment-seeking behaviors (Das, *et.al*, 2010). It is therefore important to obtain region-specific information on treatment seeking behavior for malaria.

Malaria treatment seeking behaviors are also associated with socio-economic, demographic and personal factors. Other important factors are proximity to health facilities, availability of transportation, knowledge of malaria, a history of malaria, cultural beliefs regarding traditional and herbal medicines, satisfaction with health services, and attitude towards health care providers(Haque, *et. al*,2012; Yadav, *et. al*, 2005).

Nigeria setting, being in the tropical region Most early treatments for fever and uncomplicated malaria occur through self-treatment at home with anti-malaria bought from patent medicine sellers (Okeke, *et. al*, 2006). Treatments are rarely sought at health facilities and are most often inappropriate or delayed (Muller, *et. al*, 2003; Guyatt and snow, 2004; Kofoed, *et. al*, 2004). Only less than 15 per cent of the malaria episodes treated at home is treated correctly. Most fevers in children (>60%) are treated with simple fever drugs, such as paracetamol and aspirin, but not with anti-malaria. Even when anti-malaria are purchased, they are commonly (<80% of cases) administered inappropriate doses (WHO, 2004).

Various existing development assistance programmes have funded nation-wide integrated malaria control projects in Nigeria, with the aim of accelerating scale-up of intervention and assessing the impact and sustainability of an integrated package of malaria control interventions on malaria-related morbidity and mortality among children under five and pregnant women. This included distribution and use of Insecticide Treated Nets (ITNs), improved management of sick children at the household level, improved management of malaria and anemia in health facilities, and prevention of malaria in pregnant women(WHO,2012).

Success in controlling malaria depends on understanding the pattern of malaria in the communities including factors that influence healthcare decision-making at household level, which has implications for policy on the promotion of healthcare services and utilization.

A number of studies highlighting behavior of mother's control of malaria have been carried out in Nigeria (Agu and Nwojiji, 2005; Marcus, 2014). It has been observed that healthcare

decisions are determined by, among others, individual, household and community factors. These include parental decisions, socioeconomic status, both at individual and household level, and availability of a health facility and drugs.

This study investigates mother's behavior Towards malaria in children less than five years in Fobur, a district in Jos East Local Government Area of Plateau.

II. METHODOLOGY

Study Area

Fobur is one of the districts in Jos East Local Government Area of Plateau State. Fobur is a rural area comprised of eight villages, which includes; laminga, Sabon gari, Biseki, Kerker, Furaka, Wada, Fobur Central, Fada Fobur Border area and Hardo Fulani. The major tribe is Afizere. However, the community has different settlers such as the Ibos, Yorubas, fulanis and other indigenous citizens and their major tribe is the Afizere. The physical environment is a serene environment. The area has not been affected by any crisis.

Population and Socio-Economic activities

The 2006 census figure gave the population of Jos East local government area as 85,602 people. It has a Land mass of 2,540sq km. The natives of the community are the Afizere even though it is a heterogeneous community with other tribes.

Agriculture is the major occupation of the inhabitants with only a few civil servants and many traders. The major crops produced are millet, sweet potatoes, tomatoes, maize, soya beans, cocoyam, cassava and carrots.

Social Amenities

Fobur has two private health facilities and a government secondary healthcare centre facility which are being used by the community. There are a few Nursery and primary schools. It also has a government secondary school and a private secondary school. It also has a police station.

Climate

The climate characteristics of the study area reflects the climate feature of Jos Plateau, which varies from North-South as presented in the work of Tuley and Alfred (1975). The study area is marked by alternating wet and dry seasons. Rainfall is both orographic and convectional and last between April to October. The mean rainfall is about 1400mm annually. Temperature is reduced because of the altitude. Average monthly Temperature range from 21°C – 25°C and daily temperatures range from 15°C – 24°C. The weather conditions are warmer during the rainy season (April - October) which encourages the breeding of mosquitoes, and much colder during the harmattan period (December – February).

Geology and soils

Geographically, the study area comprises of basement complex rocks. The area has undergone serious weathering and erosion. The landscape type is flat undulating plain with residual hills. The soils are generally reddish brown in colour, and are coarse in texture and are shallow in depth.

Vegetation

The vegetation of the area is associated with the soil type. The vegetation of the area is the northern guinea savannah which consists mainly of short trees and grasses and there is presence of gallery forest along the river valleys. The practice of irrigation farming during the dry season which dampens some areas is also a contributory factor to epidemics of malaria.

Sources and types of data required

Published data on social aspects of malaria in the state are not readily available. Thus, the study relied mainly on primary data gathered from mothers with at least a child less than five years old. Data was also sourced from secondary sources which included; Published books, internet materials and scientific journals on malaria.

Sample selection and Sampling technique

The study population was contacted through a systematic sampling procedure. The study was first, stratified into four residential zones. Sampling in each zone proceeded with the counting of all the buildings in the zone. The next stage was the selection in each zone at specified intervals of either every second or third building from a starting number (determined randomly) depending on the length of the street or on the total number of houses on zone. In each of the selected household, an eligible respondent for selection was a mother, aged 15 - 49 years with at least a child less than five years within the period of data collection. About 50 questionnaires were administered to all the identified eligible respondents in each zone; totaling 200 mothers participated in the questionnaire aspect of the study. The sample size is considered adequate because research statisticians would generally recommend at the minimum having between 150-200 participants per unit of analysis for a small scale study of this nature (Palumbo, 1969). Thus, the sampling strategy captured this sample size and provided adequate power and precision to determine differences in the behaviors of interest.

Data Analysis

The data management and analysis was purely descriptive analysis and Chi-square statistical was used to enter the data from the study questionnaire and to construct a data base. The quantitative data was summarized using tables and graphs for quick comparisons of values.

All the data generated at the end of every FGD and IDI were transcribed on return from the field. Verbatim transcriptions were made for all tape-recorded FGDs and in-depth interviews. The actual analysis was divided into two stages: analysis of the individual transcripts and all the group discussions. After that, all the transcripts were coded. The edited reports of each of the interviews were prepared by themes and the key findings were noted and sorted. This enabled the pooling of similar ideas and statements under a particular code across variables which was used to support the quantitative findings and where appropriate, quotes that best explained the knowledge and practices of the mothers about malaria were identified and used in parallel with the quantitative findings to elaborate more on the insights of the perceptions and practices of the community.

Results and discussions

III. KNOWLEDGE OF MALARIA

Table 2 contains information on respondent’s awareness of malaria. The table shows that all the respondents (100%) have heard about malaria. This is an indication the study population is aware of malaria and the disease is a common ailment in the study area. Respondents source of information about malaria varied; 34.5% heard about the disease from a health facility, 2.5% from Radio/TV/Newspaper, 58% from community health workers, 2% from family/relatives/friends, 0.5% through community meetings and 2.5% from other sources. Majority (95%) of the respondents had knowledge of the vulnerability of children under five to malaria attack. All discussants during the Focus Group Discussions and In-depth Interviews acknowledge malaria as one of the most important and commonest ailments among children in their locality. They perceived malaria as one of serious disease in

the area that imposes different spectra of bad consequences and believed that malaria could cause death unless proper treatment is sought. They reported that malaria affects children, adults and the elderly but differently. Infants were considered the most vulnerable group, as was explained, “*Adults have stronger blood while children are weak*”. The seriousness and prevalence of malaria in the study community is explained by these quotes from the respondents:

Malaria is the number one disease in this community. It is like a natural illness worrying children and it is killing them.
In this village, we sell malaria drugs more than any other drug.
In this clinic, we attend to malaria cases in children more than any other childhood illnesses.

Table 2: Awareness and vulnerability to malaria attack

Characteristics	Variable	No of Respondents	Percentage
Ever heard of malaria	Yes	200	100
	No	00	00
Source of Information about malaria	Health facility	69	34.5
	Radio/TV/Newspaper	5	2.5
	Community health workers	116	58
	Family/Relatives/Friends	4	2
	Community meetings	1	0.5
	Others	5	2.5
	Vulnerability of children under 5 to malaria	Yes	190
	No	10	5

Source: Author’s Field survey, 2019

Knowledge of signs and symptoms of malaria

The care a child less than five years receives when suffering from malaria is influenced by the caregivers understanding and recognition of the symptoms of the illness. It also depends on how the caregiver connects the signs with malaria. Figure 1 shows respondents knowledge of malaria signs and symptoms in under five children. The Figure show 92.2% of the respondents considered high body temperature as a common symptom of malaria in children. This was followed by fever (85.2%), headache (89.7%), vomiting(63.4), convulsion (35.8%).A high percentage 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 a high body temperature of a child is clinically sensitive in diagnosing the disease.

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

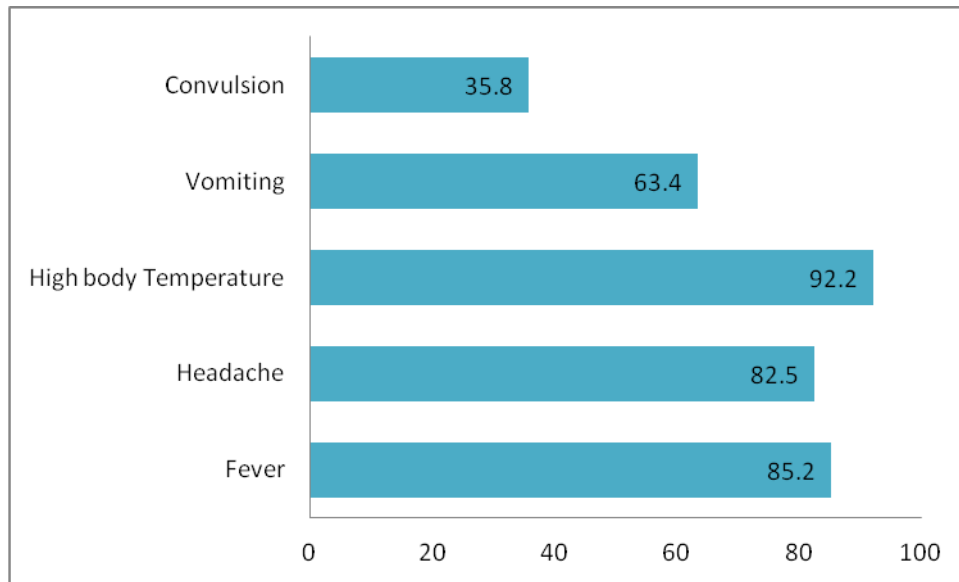
You will know that a child has malaria when the body is very hot.

Malaria is accompanied by vomiting and loss of appetite. Anytime my child vomits frequently, I know that he/she has fever.

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

Malaria in children is accompanied by changes in the child’s body; the body will be hot, he /she will vomit.

The views expressed suggest that mothers in the study area could accurately diagnose malaria. However, some incorrect views on signs and symptoms of malaria in children emerged during FGDs. Some discussants think that sneezing mark the onset of malaria in children. Other cited non-biomedical symptoms were the appearance of blood in the stool of children and running nose. Discussants also expressed malaria as dangerous, if the signs and symptoms are not identified on time and cured, it leads to further complications in the body and ultimately death.



Source: Author’s Field survey, 2019

Knowledge of causes of malaria

Regarding, knowledge of causes of malaria transmission (Table 4), 169(84.5%) of the study participants correctly associated the disease with bite of mosquitoes. This correct knowledge is not surprising because the presence of health facility in the study area and is expected to be exposed to intensive health information, and should be well aware of the malaria-mosquito link. Others felt that cold/climate change (0.5%), contaminated

water (2.5%), malnutrition (4%), hot sun (0.5%), witchcraft (3.5%), nature (2%) and other factors (2.5%) were the main cause of malaria. The identification of mosquito bite as the main cause of malaria is a positive attitude of the knowledge of the cause of malaria which invariably will determine their treatment seeking behavior for malaria in children under five.

Table 4: Main cause of malaria reported by respondents

Causes of malaria	No of Respondents	Percentage
Mosquito bite	169	84.5
Cold/climate change	1	0.5
Contaminated water	5	2.5
Malnutrition	8	4.0
Hot sun	1	0.5
Witchcraft	7	3.5
Natural	4	2.0
Others	5	2.5

Source: Author’s Field survey, 2019

IV. PERCEPTIONS AND BELIEFS ABOUT MALARIA

Understanding mother’s beliefs of the causes of malaria in children in the study community is important because it helps to identify the probable areas of intervention for the control of malaria in the under-fives. Table 5 show respondents perception and beliefs about malaria. Majority of the respondents (73.5%) had the correct perception and believe that it is not possible to contact malaria where there are no mosquitoes while 26.5% believed that it is possible to contact malaria where there are no mosquitoes. This indicates that some of the study participants harbour some misconceptions about the diseases. This misconception by a few will definitely have an effect on prevention of malaria in children in the study area.

A greater number of the respondents 185(93.5%) had the belief that malaria in under five children is preventable while only 6.5% believe that it is not preventable. The belief that malaria can be preventable was further strengthened in the FGD, where mothers agreed that it was the knowledge they had of malaria that made them to use bed-nets for the family members, especially for the under five children that were more vulnerable to malaria attack and some of them also had mosquito nets on their windows and doors as preventive measure against malaria.

Majority (93.5%) of the respondents also believed that malaria in children less than five years is treatable while only 6.5% believed that it is not treatable. Mothers in the FGD validated the belief that malaria was treatable in children and mentioned the different drugs they use when their children are attacked by the disease. The most common mentioned drugs were arthemeter,

chloroquine, Lokmal, maldox. This was confirmed by a patent medicine store owner who had high patronage by community members. The in-depth interviews with health care practitioners revealed similar patterns of treatment seeking behavior for malaria.

Respondent's belief about malaria was further assessed by asking them whether a child suffering from malaria will die if the disease is not treated (table 5). According to the table 95.5% of the respondents believed that a child can die if malaria is not treated. This suggests that some people in the study area (4.5%) still believe that malaria does not kill children. It also indicates some level of ignorance about the disease. This ignorance (even though a small percentage) is not expected because people are supposed to be more enlightened about the disease. This is also in spite of the

fact as reported earlier that malaria awareness was high and children experience malaria attack severally in a year, yet some believed it does not kill. Discussants during FGD and informal conversation with community members reveal that they have some contradictory views. Respondents that claim that malaria does not kill indicated that it makes one sad and unable to carry out one's duties and attribute the distress to the fact that it may kill. Thus, they attribute the main distress of malaria to mortality due to it. A mother who perceived the disease to result in death of children reported during FGD that:

Malaria is a big problem to us because many of our children are dying due to the disease.

Table 5: Beliefs about malaria

Characteristics	Variable	No of Respondents	Percentage
Contacting malaria where there are no mosquitoes	Yes	53	26.5
	No	147	73.5
Is malaria in children preventable	Yes	187	93.5
	No	13	6.5
Is malaria treatable	Yes	187	93.5
	No	13	6.5
Death of a child If malaria is not treated	Yes	191	95.5
	No	9	4.5

Source: Author's Field survey, 2019

PREVENTIVE PRACTICES

Mothers perception of the cause of malaria determines their protective behaviour and the type of protective measures adopted. The major malaria preventive measures used at home and at community level by respondents are shown Table 6. Majority (78%) indicated using bed-nets which some of the respondents said they got from the community health centre when they went for immunization, 3.0% make use of environmental manipulation, 3.5% indicated indoor residual spraying as a means of reducing mosquitoes. Respondents that use repellants and coils were 8.5%,

2.5% keep house clean. Others use traditional medicine (0.5%) which was reported in the FGD as leaves called *Kurga* which they believed repels mosquitoes. About 2% indicated that they cover the Child body with cloth and 2% also believe in good nutrition as a preventive measure. The finding reveals that the major form of protection for children from mosquito bites was the use of bed-nets

Table 6: Respondents Major Preventive Measures

Preventive measures	No of Respondents	Percentage
Use of Bed-nets	156	78.0
Environmental manipulation	6	3.0
Indoor residual spraying	7	3.5
Use of repellants and coils	17	8.5
Keep house clean	5	2.5
Traditional medicine	1	0.5
Cover body with clothes	4	2.0
Good nutrition	4	2.0

Source: Author's Field survey, 2019

Respondents use of preventive measures were also assessed (Table 7). Table 7 indicate the percentage of respondents who made use of bed-nets as at the time of the study. Majority (89%) of the respondents reported the making use of bed-nets to protect children less than five years from mosquito bite. This is a positive

attitude in the use of preventive measures against malaria attack in children while 11% did not use bed-nets. The use of bed-nets was also confirmed by respondents in the discussion groups where mothers attested to using bed-nets that were given to them at the community health centre and some of the women made mention

of buying extra for the family. The high rate of ownership may be due to increased health promotion by the government. It can also be attributed to the state government massive distribution of Insecticide Treated Nets (ITNs) in all communities in the state. It could also possibly imply that the campaign of the Ministry of health to reach all communities in the state was being successfully implemented. This has also increased mosquito net availability and use in communities in the study community. The high rate of ownership of bed-nets is also an indication that the respondents associate mosquitoes with malaria. It was noted that bed-nets were generally appreciated in the study community.

Table 7 also shows the category of people that use mosquito nets most often. The table shows that children (73%) more than adults (3.5%) often use bed-nets in their homes. This shows that majority of the existing mosquito nets are used by people who are at greatest risk of severe malaria-the children. This finding is confirmatory to the findings in the FGDs where discussants who

mentioned the use of bed-nets in their homes also indicated that children mostly use them. About 12.5% of the respondents reported that both adults and children making use of the bed-nets. Table 7 further shows that majority (76%) of the respondents reported that all their children under five years sleep under bed-nets while 13% reported that not all their children sleep under bed-nets.

Respondents were also asked whether they had mosquito proofs on their doors and windows as a strategy for preventing children from mosquito bites (table 7). Majority (78%) of the respondents do not have mosquito proofs on their doors and windows while 22% had. This is surprising because community members are expected to be exposed to the mosquito preventive benefits associated with having mosquito proofs on doors and windows. There is the need for more advocacies about the disease in the study area.

Table 7: Respondents Use of Preventive Measures

Characteristics	Variable	No of Respondents	Percentage
Use of Bed-nets	Yes	178	89
	No	22	11
Users of bed-nets	Adults	7	3.5
	Children	146	73.0
	Both	25	12.5
All children sleep under bed-nets	Yes	152	76
	No	26	13
Mosquito proofs on doors and windows	Yes	44	22
	No	156	78

Source: Author’s Field survey, 2019

4.6. TREATMENT SEEKING BEHAVIOR

Malaria morbidity and mortality can be substantially reduced with prompt and appropriate treatment, while the roles of parents in illness are an essential factor in deciding where and when professional help is sought for children. Table 8 presents information on treatment choice for childhood malaria. The table shows that majority (87.5%) of mothers treat their children for malaria at the dispensary or hospital. Mothers appeared to be well aware that proper malaria treatment at health clinics is critical to their children getting well. This was expressed by statements such as, " *if I take my child to the hospital for malaria treatment, I will get something good to stop the symptom*". Several mothers noted that although the " *persistence of symptoms*" was one of the main reasons for taking their children to the clinic, " *it was better to take the child so that the health worker will tell me why my child is ill,*" and " *prescribe drugs that will make my child better*".

Although the dispensary and hospital was the reported first treatment choice, discussant during the FGDs narrated that most

of the mothers normally give some form of treatment to their children at home at the onset of malaria. Those that sought for help from traditional medicine accounted for 3.5%, from family 0.5%, some respondents went to chemist(7.5%), and a combination of traditional and modern medicine(1%).

This findings, is an indication that the respondents view medication at the hospital as the most reliable and effective. This also indicates that medication at the chemist and local shops is not considered very effective by the respondents. Respondents who reported traditional health care as their source of help when their child had malaria were asked during FGD, after attending the traditional healer and the child did not get relief what they did. All reported that they took the child to a clinic or hospital. This suggests that the usual pattern for those that consult traditional health providers is the use of herbal treatment as a starter and then a follow up with modern medicine when that failed.

Table 8: Respondents First treatment choice for childhood malaria

First treatment choice	No of Respondents	Percentage
Dispensary or hospital	175	87.5

Traditional medicine	7	3.5
Family	1	0.5
Private drug vendors/chemist	15	7.5
Combination of traditional and modern medicine	2	1

Source: Author's Field survey, 2019

4.6.1. Treatment of children with malaria at home.

Table 9 contains information on whether respondents start treatment of malaria in children at home. The table shows that more than half(61.5%) of the respondents start treatment at home when their children have malaria while 38.5% often do not start treatment at home when their children have what they perceived as malaria.

Some of the respondents perceived malaria not as a serious disease but as an illness that has a simple and known treatment regime that can be effectively applied at home. Since malaria is often viewed as an "ordinary illness, they mostly believe that a child has to be taken to a health centre only if it becomes severe.

Generally, mothers start treatment at home for their children with malaria. This was expressed by the following statements by participants in the FGDs :

*I will take the child to the hospital only if it becomes severe.
I normally keep some drugs at home so that if my child is attacked by malaria, I can easily just administer.
But anytime the drugs have finished and my children are attacked by malaria, I can go to the market and purchase drugs from a vendor and treat him at home.*

Table 9: Treatment of malaria at home

Treatment of malaria at home	No of Respondents	Percentage
Yes	123	61.5
No	77	38.5

Source: Author's Field survey, 2019

4.6.2. Sources of Drugs for the Treatment of Malaria

Table 10 shows that most respondents(43.5%) got their drugs from government health centre,35% went to the chemist to buy drugs, 0.5% bought it from drug vendors, 12.5% of the respondents patronized private health facilities where they obtained drugs, 4% were given by health workers and from family members(4.5%) who had malaria drugs at home..

It was difficult to elicit information from respondents from the study questionnaire on the type of anti-malarial drugs used at home. The study respondents generally could not be categorical about the anti-malarial drugs used at home. Most of them reported during FGD that when children have malaria, they normally go to the chemist and asked for any anti-malaria drug. They were not too certain about the names of drugs used. However, the most

frequently mentioned drugs were chloroquine, fansidar, paracetamol and some elderly mothers mentioned quinine. Discussants in FGDs were asked whether they were aware of Artemisinin-based combination therapies (ACTs). Uninterestingly, not even a discussants reported that they have heard about ACT-implying a very poor use of artemisinin combination therapy. This is not encouraging because child ACTs are the recommended first-line treatment for uncomplicated malaria in most malaria-affected regions of Africa and are extremely effective against malaria parasites and have few or no side effects.

Table 10: Sources of Drugs for treatment of childhood malaria

Sources	No of Respondents	Percentage
Chemist	70	35
Government hospital/clinic	87	43.5
From vendor	1	0.5
Private health facility	25	12.5
Health workers	8	4
Family members	9	4.5

Source: Author's Field survey, 2019

Duration between when symptoms of malaria are noticed in children and consultation at the treatment centre.

The type of health care provider and time when treatment is sought may depend on how the individual perceives the severity of the disease and his or her faith in and experience of various

treatments. Delay in seeking help often results in complications, increased cost of treatment and death. Table 11 presents information on duration between noticing of symptoms of malaria in children and consultation at treatment centre within and after 24 hours. Majority (69.5%) of the respondents take their children suffering from malaria to a treatment centre within 24 hours,

while 30.5% take their children for treatment later than this. Mothers who consult a health care provider after 24 hours in the FGD reported that they normally wait till home treatment fails. They wait for between 2-3 days to see whether the child will be healed without treatment or wait for more than 3 days to observe the illness or until when the illness becomes severe. The implication of this finding is that since mothers are likely to delay

seeking for help, it may be necessary to educate them on how to recognize and treat uncomplicated malaria in children at home. This will help in restricting consultation to treatment centres only for complicated malaria cases. This strategy, which is home friendly, may considerably reduce problems of delay in treating malaria in children.

Table 11: Duration of Seeking for Treatment for Malaria For Under Five Children

Duration	Within 24 hours		After 24 hours	
	No of respondents	Percentage	No of respondents	Percentage
	139	69.5	61	30.5

Source: Author’s Field survey, 2019

4.7. PARENTS ROLES IN MALARIA CARE FOR CHILDREN

Growing evidence suggests that behaviour related to health is influenced by gender. This is because gender roles and responsibilities influence treatment-seeking behaviour for child illness. Table 12 contains information on the role of parents in decision-making and responsibilities for help-seeking/treatment for malaria in their children. The ability of parents to clearly diagnose that a child has malaria affects treatment choice while early treatment depends upon prompt recognition of symptoms and signs of malaria in the household. Table 11 shows which of the parent’s advice is most important when a child has malaria. Majority (46%) of the respondents reported that it is the father’s advice that is most important while 16.5% reported that it is the mother’s advice that is important when children have malaria. About 31.5% reported that the advice of both parents is important when seeking for treatment for childhood malaria.

Majority (62.5%) of the respondents reported that it is both parents that decide treatment centre for a child suffering from malaria-indicating that only 8% of the fathers and 27% of mothers

that take decision about the treatment of malaria in their children. It is glaring from the table that it is both parents that decide where treatment should be sought.

Cost is an important factor in treatment-seeking behavior of parents for malaria in children. This is because it affects the promptness and quality of the treatment sought. Respondents were asked who pays for the monetary cost of treating children with malaria. More fathers (65.5%) than mothers (9%) and both parents (24) pay for the cost of treating malaria in their children. About 1.5% of the respondents reported that other family members bear the cost of treating children with malaria. However, generally determining which of the parents often bears the cost of treating illness and malaria in children in particular is very complex. This is because even where fathers are considered to pay the cost of treatment(as found in this study), it is mostly only considered as direct cost which includes money for transportation to the health centre, medication, cost of consultation and feeding. This assumption undermines the role of mothers who often bear indirect cost like nursing the child at a treatment centre or home, administering the drugs and absence from work.

Table 12: Roles and responsibilities of parents in treatment-seeking for childhood malaria

Characteristics	Variable	No of Respondents	Percentage
Most important advice	Father	92	46
	Mother	33	16.5
	Both parents	63	31.5
	Others	12	6.0
Decides treatment centre	Father	16	8
	Mother	54	27
	Both parents	125	62.5
	Others	5	2.5
Payment of treatment	Father	131	65.5
	Mother	18	9
	Both parents	48	24
	Others	3	1.5

Source: Author’s Field survey, 2019

4.8 DISCUSSION OF FINDINGS

The aim of the study was to investigate the behavior of mothers for malaria in children under five in Fobur , Jos East Local Government Area of Plateau state, Nigeria. There were more

Christians (69%), Afizere and mothers that were into business(59%) in the sampled population. The educational status of the respondents shows that majority (77.7%) had some form of formal education. This implies that the study captured a significant number of mothers who could be reached with health education

about malaria. This supports a similar study reported by Okeke and Oakfor(2008) findings where 73% of the care givers had at least attained primary education. The findings was consistent with the study done in Nasarawa state of Nigeria (Marcus,2014) where majority of the respondents had formal education and were significantly associated with high score of malaria knowledge than those who had no formal education. It is however, higher than findings reported by Chukwuocha, et.al(2009) where 58.3% of the mothers interviewed were illiterates. The literacy level of the mothers may affect their timely decision about treatment of malaria in children as reported by Osagbemi(1998) that literate mothers were significantly associated with early treatment of malaria.

All the study participants have heard of malaria. This is an indication of the prevalence of the diseases in the study community. It is probably because the study area is not too far from the urban centre(Jos-plateau state capital) where there have been a lot of campaign on malaria. The major source of information about malaria was community health workers.

Most of the respondent's identified the correct clinical symptoms of malaria. For example, the high percentage (99.2%) 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. Similar results were found in other studies (Chukwuocha, et.al, 2009; Okeke and Okafor, 2008; Marcus, 2014).

The study participants noted the role of mosquito bite in malaria transmission. The participants elaborated their ideas of the cause of malaria and most of them (84.5%) associated the disease with mosquito bites. Although mosquitoes were recognized to be the main agents in transmission of malaria in this study, misconceptions such as cold/climate change, contaminated water, malnutrition, hot sun, witchcraft, natural and others were also perceived as a cause of malaria by some of the participants. People's perception and understanding about the perceived cause and transmission of malaria have strong implications on the preventive measures such as ITNS implementation (Ahorlu,1997, Agyepong et al, 1999).

The second hypothesis stated that treatment seeking behavior of mothers is a function of age . The hypothesis was confirmed. This finding showed that the age of mothers determined treatment seeking behavior of mothers in Fobur. In other words, the treatment seeking behavior of mothers in this community is a function of age to some extent, using the variable 'In how many hours of the onset of malaria signs and symptoms do you seek treatment? Cross tab with mothers age. ($t = 19.705$; $df = 6$; $p = 0.003$).The older women within the age of 45-49 years had a higher percentage of those who sought for treatment after 24 hours.

Most participants in the study believed that malaria can only be contacted through mosquito bite while 93.5% each believed that malaria is preventable and treatable. Majority (95.5%) of the respondents believe that a child will die if malaria is not treated. This suggests that some people both in the study area still believe that malaria does not kill children and it is not treatable and preventable. This incorrect belief indicates the level of ignorance about the disease. It could also be attributed 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. 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.

Greater awareness about malaria and undertaking a broader range of preventive actions for malaria influence appropriate treatment-seeking behavior.The commonest form of protection used by respondents for children in the study area was a mosquito net (78%) which is interestingly high. This is an indication of a positive attitude towards malaria control. A similar finding was reported by Chukwuocha, et.al, 2009; Okeke and Okafor, 2008 and Marcus, 2014. Respondents associated bed-nets with a control programme of the government. Since identification of malaria as a serious and potentially deadly disease is already high in the study area, only little effort is needed in educating the respondents on this.

Although environmental manipulation (draining of mosquito breeding sites cleaning the environment), indoor residual spraying were reported as some of the practices of some households, the practice was said not to observed completely as reported in the FGD, the quantitative report might have be influenced by social desirability bias in which the respondents replied to conform to the expectations of the field workers. The practice of malaria prevention by households is related to perception of the risk, their knowledge of the causes of malaria and its preventive measures (Agyepong, et al, 1999).

Mothers reported in this study that their major reason for protecting their children against mosquitoes is that they cause malaria. Since majority use bed-nets, it can be inferred that the study respondents consider mosquito nets as an effective strategy in reducing malaria in this group of children as reported by WHO (2003). About 89% reported ownership and use of at least a bed-net in their houses. The mosquito net ownership findings in this study is higher than the results reported by Oyewole and Ibadapo (2007) and Humprey,*et.al* (2010).The high rate of ownership may be attributed to the state government's massive distribution of Insecticide Treated Nets (ITNs) in all communities in the state. This has increased mosquito net availability and use in communities.

The study shows that majority (73%) of existing mosquito nets in the households were used by children. This demonstrates that the existing mosquito nets were used by people who are at greatest risk for severe malaria. This support James *et.al*.(2011) findings in northern Uganda where children were more frequently protected with mosquito nets than older children and adults. The practice of putting mosquito proofs on doors and windows as a form of protection against malaria was not too common in the study community. More than half (78%) of the respondents had no mosquito proofs on their doors and windows. This is even though that, the study respondents believed the introduction of bed-nets and mosquito nets on doors and windows had helped to reduce malaria. (2011). Also, despite the fact that the study participants had high knowledge of malaria, their low educational level implies the need for intensifying the expansion of training programmes to raise the level of women's education. Evidences show that educational attainment is associated with better malaria

knowledge. For example, in some parts of Nigeria, higher levels of education were associated with improved knowledge and practice about the appropriate malaria prevention and control intervention (Dike, et al; 2006). Education also increases the probability that household would purchase bed-nets(Dike, et al;2006). This suggests that higher level of education may be required to impact upon the intake of malaria prevention and control interventions.

In this study, mothers seek for help from a variety of sources. Mother's first choice of treatment outside the home was mainly from Dispensary or Hospital about (87.5%), within this percentage most of them went to private health facilities. The reason given in FGD was the availability of health personnel anytime of the day and drugs unlike the government health centres where they only operate during the day, long waiting and non availability of some of the drugs. However, traditional remedies were found to be very low in this study. The findings is an indication that malaria illness is considered best treated by modern health services by most respondents while a few considered it best treated by traditional methods, and often a mixture of both is sought .

The delay in seeking treatment within 24 hours of onset of malaria is a great concern in the right attitude in treatment seeking behavior as 30.5% of the respondents did not seek treatment within 24hours at the onset of malaria signs, This leads to seeking treatment at home. However, the findings in this study like in most African countries are far below the Roll Back Malaria (RBM) partnership target of ensuring that 80 percent of those suffering from malaria have prompt access to, and are able to correctly use, affordable and appropriate treatment within 24 hours from year 2010 .Perhaps the proportion of those that delay in consultation with a health care provider should be educated on how to recognize and treat uncomplicated malaria in children at home.

Treatment at home(61.5%) to cure malaria among the children less than 5 year of age was commonly practiced by parents before going to the health facility. Similar findings were reported by Jane,*et.al.*(2010). Mothers usually start treatment for children at home with the belief and hope to cure malaria in children. Mothers are more likely to begin with self-medication at home to minimize expenditure at health facility, this was also emphasized in the FGDs where the mothers reported delay in seeking treatment outside the home, due to financial constraints which was due to the absence of the husbands in some cases from the house who were responsible for the payment of their children's treatment.

Gender roles and responsibilities influence treatment-seeking behaviour for child illness. Majority (46%) of the respondents reported that it is the father's advice that is most important. Dominating and decision making by fathers was also reported by James, *et.al.*(2011) in their study of northern Ghana .Patent medicine store owners in the community also confirmed that the mother often come to purchase drugs with insufficient money. This means husbands have important role in health of children because financing care largely depends on them .While some women can advice (16.5%), both parents advice is also important (31.5%) seeking for treatment for childhood malaria. Majority (62.5%) of the respondents reported that it is both parents that decide treatment centre for a child suffering from malaria-indicating that only 8% of the fathers and 27% of mothers that take

decision about the treatment of malaria in their children. This suggests that in the study community, it is both parents. In this study, more fathers (65.5%) than mothers (9%) and both parents (24) pay for the cost of treating malaria in their children. This finding means that husbands have important roles in health of children because financing care largely depends on them (D'Alessandro, et al, 2005).

V. CONCLUSION

This study has contributed to the existing knowledge about malaria and the findings are also very informative in the area of increasing peoples knowledge on the behaviors of mothers for malaria in children under age five.. The study has revealed reasonable knowledge of the symptoms of malaria, however there is a need for community intervention programmes directed towards correcting misconceptions about the cause of malaria, the recognition of danger signs which will require prompt referral to health facilities and improving treatment seeking practices. Appropriate home management with effective drugs given in correct dosages should also be promoted since majority resort to self treatment before seeking treatment outside. Childhood malaria is common in rural Nigeria. Mothers are at home more than are the fathers, and so they are often the first to recognize when a child is sick with malaria fever. In many instances, therefore, mothers take the first step in finding treatment for the child, so mothers should be enhanced financially

VI. RECOMMENDATIONS

The following recommendations are proffered in this study to improve knowledge, belief and treatment seeking behavior for childhood malaria.

1. Identify target groups, such as children and youth for malaria prevention and control and bring down the observed disease burden in this particular community.

2. There is a need to strengthen community education. Also introduce integrated malaria vector control strategy, since most of the respondents use only bed-nets as the most common preventive measure.

3. The community should have access to any f a health institution within less than one hours walking distance and get health education because lack of education is associated with delay to seek health.

4. There is a need for Subsequent health education regarding malaria and promote general education of the community to suit the economic circumstances of women in the study area.

5. Greater awareness and health education for mothers, particularly on early treatment-seeking and appropriate use of health care options for malaria. A regular workshop on malaria prevention should be held regularly with the women, thereby raising their awareness and understanding, and involving them in malaria prevention.

6. A more concerted effort is needed for scaling –up the distribution of bed-nets (ITNs), improving the knowledge of the community about the link between malaria and mosquitoes, causation of malaria and its preventive methods particularly on the proper utilization of bed-nets.

7. Effective antimalaria drugs should also be available in the community and malaria drugs should be free or affordable for children under five to encourage mothers utilize the public health facilities.

8. Women should be given opportunity for higher education in order to develop more positive attitudes towards treatment seeking for malaria.

9. There should be an intensive and extensive media enlightenment campaign on accessibility to treatment, dangers of mosquitoes, prevention and control, both by the electronic and print media in English and local languages.

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AUTHORS

First Author – Oahimire, Oise Joan, joanoahimire@gmail.com
Second Author – Pofung, Zachariah Freejob, Freejob43@gmail.com, Department of Geography and Planning, University of Jos, Plateau State, Nigeria