

Childhood Malaria Prevention and Treatment Options: A Study in Giwa Local Government Area, Kaduna State - Nigeria

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DOI:10.36108/NJSA/8102/61(0290)

Abstract

Malaria is among the major public health issues in Nigeria. Although various preventive and treatment techniques have been adopted by people in different locations, the disease remains a big concern among households in areas where its transmission is endemic. This study on childhood malaria prevention and treatment options utilized quantitative and qualitative data collected among mothers of under five children, household heads and health workers. Findings revealed that despite the divergent views about malaria causation, 66.7% of respondents attributed malaria to mosquito, 53.3% claimed that children under five are the most vulnerable to the scourge and further revealed that the majority of mothers in the study area used Insecticide Treated Net (ITN) for prevention, the incidence of malaria during the survey was less than 50%. Though different treatment options were available in the area hospital was the most common option for malaria treatment among the people. The study concluded that modern preventive technique (ITN) was used for malaria prevention despite its low coverage among children; malaria treatment expenses were the major challenge identified by the respondents.

Keywords: Malaria, vulnerable group, preventive method and treatment pattern

Introduction

Prevention and treatment of malaria remains a challenge in Africa where people use various preventive and treatment measures to avert the scourge. The disease is known to be associated with fever, headache, chills, shivering, loss of appetite, general body weakness and joint pains (Makundi *et al.*, 2006 in Adekanmi and Foluso, 2015). The scourge is endemic in Nigeria and the population at the risk include children and pregnant women, it results in keeping children away from school and for adult, loss of work days (Fall, 2011). Malaria is therefore responsible for a number of deaths and impoverishes affected households and communities. Thus, the inability of some mothers to identify the mode of malaria transmission invariably causes delay in seeking appropriate prevention and treatment. Abdullahi *et al.* (2013) confirmed in Ifelodun, Ilorin that more than 70% of reported cases of illness in children treated at health centres were malaria cases such as anaemia and convulsion. Indeed, three (3) out of five (5) children presented were malaria related patients. According to UNICEF (2013) malaria is a leading killer especially children under the age of five.

Teklehaimanot *et al.* (2007) opined that children older than five years and adults other than pregnant women are also vulnerable to severe illness, death and substantial economic loss from the disease. But children are the most vulnerable to malaria infection. Thus, malaria is said to have attacked children and pregnant women because of the weak nature of their body and low immunity against the diseases. Although malaria is preventable, it continues to kill millions of children because of their lack of immunity. According to Abuja+12 (2013), 1 in every 9 children dies before the age of five, a rate more than 16 times higher than that in developed countries; Nigeria is the leading country with malaria death rate of 30 percent. Jegede *et al.* (2006) further asserted that malaria is a health, social and economic burden in Nigeria where it ranks among the four most common causes of children deaths. Virtually, numerous interventions have been put in place which includes free ITN distribution during ANC/Child immunization, Environmental Sanitation (ES), Insecticide Residual Spray (IRS) this involves the fumigation of an insecticide to an environment for the purpose of killing mosquitoes and other harmful insects. Free malaria services are also provided in some government health care centres, aimed at controlling malaria infection particularly among children. Kweku *et al.* (2017) asserted that children need protection from malaria, but the income of most parents/guardians was not enough to cater for the services to them. Furthermore, according to malaria report (2011) the bite of anopheles mosquito transmits malaria from infected to the healthy people. The rapid multiplication of the parasite causes the destruction of the red blood cells and the infection of new cells through the body. The infected person would become ill with malaria after a week(s), mostly within 7 to 21 days. Therefore, Malaria among children has increasingly become an everyday health problem which attracts the attention of policy makers and donor partners, especially in the northern part of the country where Kaduna State is located. Giwa Local Government Area is situated along Zaria Funtua road with eleven existing political wards. Health care facilities are established to cater for the health needs of the populace in the area.

Obviously, mothers hold different beliefs on malaria causative agent and its mode of transmission. This variation therefore influenced the use of variety of modern and traditional techniques in malaria prevention and treatment, depending on the perceived beliefs in the effectiveness of the methods. This study examined childhood malaria prevention and treatment options.

Theoretical Framework

Health Beliefs Model is a Socio-psychological model focuses on health seeking behaviour. People often engage in series of actions to avert the occurrence of disease. According to Razum and Amzat (2014) HBM has various versions, but a comprehensive version was advanced by the proponents (by Rosenstock *et al.*, 1988; Strecher and Rosenstock, 1997), which provides a clear picture of the model by presenting the six major variables and the seventh

factor which could influence course of action. The model has the following assumptions:

- 1) Perceived susceptibility to the disease
- 2) Perceived severity
- 3) Perceived benefits of taking action
- 4) Perceived barriers of taking action
- 5) Self-efficacy
- 6) Cues to action
- 7) Modifying factors

On the basis of the above assumptions therefore, Health Beliefs Model is suitable in explaining the childhood malaria prevention and treatment options. Malaria remains a serious health problem, especially among the vulnerable population. Therefore, people use numerous techniques to prevent and treat malaria depending on the perceived aetiology of malaria and beliefs in the effectiveness of a particular method of prevention and treatment. The perceived cause and the threat malaria poses on children determine the kind of method to be used for prevention and treatment. Therefore, insecticide treated net (ITN), Indoor Residual Spray, Environmental Sanitation, the Use of Herbs, Over the Counter Drugs, Mosquito Coil, Burning of Leaves, self-medication, health care facilities are among the modalities people employed in childhood malaria prevention and treatment.

Virtually, the choice of a particular method depends on the cultural orientation of a person in question, beliefs in its efficacy or its availability within the individual's domain. The perceived danger of childhood malaria infection, the desire to avert the occurrence of malaria, advice from the medical practitioners during ANC visit and beliefs in mosquito as the sole cause of malaria are among the reasons why mothers behave towards preventing and treating malaria infection using modern health care facilities. People who believed on the causes other than mosquito are more often used traditional and home based therapeutic methods.

However, despite mothers' desire to prevent children or treat their children when they contracted with malaria, other intervening factors such as accessibility to preventive tool and health care facilities, income, cultural and religious practice (women kept in *purdah*) play significant roles, and may affect the propensity to taking action; despite perceived benefits of taking such actions.

The model has been used for different health behaviour and tested model for explaining and predicting health related behaviour. The model fails to take into account that, knowing the cause of disease, perceived susceptibility to it and effectiveness of the preventive method may not necessarily influence health behaviour. This is because an individual may be prone to disease and even perceive the symptoms of it, but chose not to take any action either to prevent or treat when he or she already contracted (personal choice). For instance, smoking and unprotected sex. The smokers of cigarette and marijuana

know that the constant intake of smoke is dangerous to one's lungs and brain, yet people continue to be smoking without engaging in any health behaviour. So also, commercial sex workers and their patrons continue with their daily occupation because of the pleasure and gain they derived, despite it is risky not only to the victims but also to family, economy and society at large.

Methods

The study utilized both quantitative and qualitative methods using survey and in-depth interview. The study examined childhood malaria prevention and treatment options. A total of 396 mothers were systematically randomly picked using households. Multistage cluster sampling was adopted using districts as clusters to select the respondents. The study covered four (4) villages in every cluster (district) which were selected at random to represent the district. A systematic sampling technique was used to select the respondents using households. Therefore, the nth term was used to select the respondents in which the houses were numbered serially, and picked the 1st house at random, followed by every 3rd house. In an event where there was no woman of child bearing age, the house was automatically skipped and considered the next house.

The methods used for data collection comprised structured questionnaire and in-depth interview. The questionnaires were administered in a face to face interaction with the respondents with the aid of three female research assistants. Also, in-depth interviews were conducted among 5 households and health care workers each to get adequate information on malaria prevention and treatment pattern. Since, child health concerns not only the mother but also the father and health care practitioners. On the other hand, in-depth interviews were also conducted among 5 of households and health care workers each. Because of the nature of the topic, in-depth interview is desirable in order to avoid producing biased result.

The procedure for data analyses involved both quantitative and qualitative methods. The Statistical Package of Social Sciences (SPSS) was used to analyse the qualitative data. It helped in the area of descriptive statistics and frequency distribution table was used for the presentation and analyses of the data. Content analysis was used to analyse the qualitative data. Verbal responses were indented in the text.

Results

This section reports the findings of the study that include demographic characteristics of the respondents, cause of malaria infection, category of people most vulnerable to malaria infection, most preferred method of malaria prevention, malaria treatment pattern and the problem mothers faced in seeking malaria treatment.

Demographic Characteristics of Respondents

Majority of respondents were married mothers with 93.2%, divorced mothers 14 respondents (3.5%) while separated and widow mothers were 6 respondents each (1.5%), and 1 respondent (.3%) did not disclose her marital status. This implies that majority of mothers in the area are married women. The income per month of majority of the respondents was N1–N5000 (44.9%), N5001–N10,000 (26.7%), N10,001–N15,000 (12.4%), N15,001–N20,000 (7.1%), N20,001–N25,000 (6.3%), N25,001– above (11.6%) and undisclosed income 1.0%. This showed that the income level of the respondents in the area was very low. A total of 88.4% respondents were Muslims while 11.6% respondents were Christians, no adherence of African Traditional Religion was discovered in the area. On educational attainment, 26.0% acquired Qur’anic education; primary education 46 respondents (11.6%) while 8.3% had post-secondary education, 5 respondents (1.3%) refused to disclose their educational qualification. The finding shows low level of literacy among women in the area. 63.9% were house wives, 40 respondents each (10.1%) were engaged in farming and civil service, 9.6% were not employed in any private or public sector, traders 21 respondents (5.3%) while 1(.3%) respondent was artisan and 3 respondents (.8%) did not disclose their occupation. This indicates that women in the area are kept at home without engaging in any form of formal or non-formal work outside.

Table 1: Perceived Cause of Malaria Infection among Children

Agent	Percentage
Ill-act of others	3.3
Mosquito	66.6
God	13.9
Dirty environment	11.9
Stress	1.5
Don’t know	2.8
Total	100.0

Respondents were asked to know the causative agent of malaria infection, 66.6% of respondents attributed malaria to mosquito bite, 13.9% claimed that malaria was an act of God. While 11.9% mentioned living in a dirty environment, 3.3% said malaria occurred as a result of the evil act of others. 1.5% claimed stress as the cause of malaria and 2.8% did not respond to the question. This showed that more than half of the respondents attributed the cause of malaria to mosquito bite. This buttressed the fact that, people held different notion on the mode of malaria transmission in the area, because, divergent views were expressed by the respondents. Thus, Act of God, dirty environment, stress, ill-act of others were mentioned as the cause of malaria, but mosquito was believed to have caused malaria by more than half of respondents (about 66.6%). It is observed that, Radio and health care centres

are the main sources of information about the damage mosquito could cause to human health in the area, especially children. Therefore, it could be deduced from the finding that mosquito bites cause malaria infection. As such, necessary measure to prevent children from having contact with such agent (mosquito) need to be considered important in order for the children not to be infected. The In-depth interview conducted revealed that mosquito was the cause of malaria infection, and it transmits the infection from one person to another as quoted below:

Mosquito causes not only malaria, but also different diseases because it carries blood containing various diseases to a healthy child. (*Household Head, 42 years*)

Analytically, the IDI above reaffirmed that mosquito causes not only malaria but also other diseases. This was because the blood of the infected person might have contained many diseases. Therefore, malaria was caused by mosquito and the pattern of its transmission from one person is simply by mere sucking of blood and deposits to the healthy person. Henceforth, any room for this pattern of interaction should be blocked so that the transmission rate could be reduced. Similarly, another IDI revealed that the pattern of malaria transmission had changed, a 58-year household head said that:

mosquito nowadays is beyond rainy season in my area, and if care is not taken it will result in malaria infection which affects not only the victims but all the family and economy.

The above quotation implied that many people were of the believed that mosquito was highly intense during the rainy season, but then, the pattern had changed and went beyond the rainy season. Furthermore, the presence of mosquito and frequency of malaria cases were found throughout the year, including the dry season. The implications of malaria include, the victim might not be socially discharge his normative responsibilities, and his /her sickness would affect the family members by abandoning their works and attend to his/her need in their quest to get him/her well. The resources meant for other purposes for example food stuff, would be diverted to the payment of treatment bills and transport expenses.

Table 2: Category of People most Vulnerable to Malaria Infection

Most vulnerable	Frequency	Percentage
Adults		6.1
Children under 5		53.2
Every one		28.8
Pregnant women		7.6
People with light skin		2.0
Don't know		2.3
Total		100.0

Question was asked to identify the most vulnerable group to malaria infection. A total of 53.2% of respondents mentioned children under five years as the most vulnerable group, 28.8% said every individual is vulnerable and 7.6% of respondents identified pregnant women as the most vulnerable. 6.1% of respondents mentioned adults as the most vulnerable group while 2.0% identified people with light skin as the most vulnerable group and 2.3% of respondents did not respond to the question.

The finding indicated that children under 5 are the most vulnerable to malaria infection as claimed by more than half of the respondents (about 53.2%). Thus, other categories of people were also vulnerable to malaria but not as children under five; the respondents did not have the knowledge that pregnant women are also vulnerable like children. Adults have already developed immunity against the disease while children under five have not, which expose them to be prone to all sort of diseases, especially malaria. The implication of malaria to children includes among others anaemia, convulsion and death. While on pregnant women include, anaemia, abortion, preterm delivery and alike. IDI conducted revealed that children and pregnant women were the population at risk of malaria infection as thus:

Pregnant women and children under five years are at risk of malaria infection because they develop low immunity in their body against diseases, as such we make sure we give ITN to vulnerable population who booked for ANC/immunization.
(Health Worker, 45 years)

It was observed from above that, despite anybody could fall victim of malaria, children under 5 years were the most vulnerable to malaria infection compared to other category of people. The health care practitioner affirmed that children and pregnant constituted the population prone to the diseases. This was the reason why ITN was given to them during ANC and child immunization, because their body are weak with no immunity against the disease. Thus, the purpose of giving the net was to protect them from direct contact with the malaria transmitting agent. In addition, a 42-year household head was of the view that children under five years were more prone to malaria which in the process of treatment may lead to other disease, as such children need to be protected from the scourge as quoted below:

If a child is infected, he/she baths for 2 to 3 times as prevention in a single night which may result to pneumonia. Therefore, mothers should do everything possible to see that children are protected from the bite of mosquito.

Unlike the preceding quotation, the variation in terms of knowledge among respondents exists. Despite both the respondents agreed children under five years were vulnerable, the former further included pregnant women, because he knew that pregnant women were equally weak and prone to diseases such as malaria. The later focused only on children based on personal experience. The

malaria preventive measure need to put in place, because if children contracted in the process of treatment, he/she might be affected by other diseases such as pneumonia due frequent bath to calm down the body temperature.

Table 3: Method of Malaria Prevention

Method	Frequency	Percentage
ITN		61.9
Insecticide		11.9
Herbs		3.3
Use of anti-malaria drugs		13.6
Others		6.1
Don't know		3.3
Total		100.0

The table presents the malaria preventive method people used to prevent malaria. From the information, 61.9% of respondents used ITN as their method of preventing malaria, 11.9% spray insecticide, 13.6% said they preferred to use anti malaria drugs in malaria prevention, 6.1% of respondents used others like anti malaria syrup, while 3.3% of respondents used herbs, 3.3% did not disclose their malaria preventive method. The finding indicated that more than half of the respondents used ITN as their method of malaria prevention in the area. This is because, despite many respondents used different malaria preventive methods, ITN was used as the most preferred method of malaria prevention in the area, because it is the best way of preventing malaria. The utilization of ITN was high among the respondents compared with the use of other methods; but it was observed during the survey that, the availability of this net among people was very low in the area. IDI supported this finding where ITN was believed to be the most effective malaria preventive tool as revealed below:

ITN is the most effective malaria preventive mechanism than any other preventive tools, insecticide is expensive and it is not everybody can afford it, while mosquito coil is dangerous to health. (*Household Head, 42 years*)

It was analysed here that, ITN was effective malaria preventive tool than any other methods, and agreed to be used by mothers, especially on children. The problem associated with it was very expensive to buy in the market. This was the reason why some people resort to use other methods despite the danger associated with such methods to human health. For example, mosquito coil was used at the expense of ITN simply because it was cheaper than the ITN. A 45 year Health Worker revealed the way in which ITN was given to people in the hospitals as quoted thus:

We give ITN free to mothers during their 1st trimesters of ANC visit, and also children under five years who completed measles

and yellow fever immunization where 1 ITN is given to each respectively. (*Health Worker, 45 years*)

The above observed that ITN was distributing to people in the hospital by the health workers, especially vulnerable population. But, 1 net to pregnant woman who at least owns 2 to 3 children would not be adequate to cover them sufficiently. In most rural areas, 1 woman might have 3 under five children, and still carry a pregnancy. So the number of net to be given should be increased to at least two or more. To end the issue of ITN unavailability, it should be made accessible and affordable to all people. A household head also confirmed that ITN was given by the health workers to mothers who attended ANC/immunization as stated below:

My wives came home along with two ITNs each from the hospital, and I use to monitor them for ensuring that they (mothers) use the net for children in the night, and even if they don't mount the net, I put it myself. (*Household Head, 41 years*)

This finding indicated that people really used ITN in the area so long as they were given in the hospital. This was because they believed on the efficacy of it in childhood malaria prevention. Furthermore, another respondent revealed that ITN was obtained from hospital as stated below:

There is no woman in this area that can say she is not given ITN after her child completed immunization. (*Household Head, 52 years*)

The above finding from IDI showed that ITN was given to women who completed immunization only. So the criteria of getting the net were through child immunization. Those mothers who refused to take their children for immunization were denied access to the net in the area. To reach the target population, ITN should be given beyond the point of antenatal care and child immunization. Similarly, a 30 years Health Worker revealed the pattern of malaria incidence prior and after the ITN distribution in the area as quoted below:

Prior to ITN distribution the incidence of malaria was very high, but with distribution of free ITN to vulnerable population the incidence of malaria is reduced by at least 30%. (*Health Worker, 30 years*)

It was observed from the quotation that, ITN was effective in preventing the incidence of malaria cases, because it was confirmed that the incidence was reduced by 30% against prior to the commencement of ITN distribution in the area. And at least it achieved certain point of achievement. Another Health Worker aged 45 maintained that malaria had drastically reduced in the area as revealed below:

Malaria infection has drastically reduced and saved many children's lives as a result of sleeping under ITN. It kills not only mosquito, but also other insects that come closer to the net. I am advising mothers to please purchase ITN in the market for their children if they are not given in the hospital.

This further reiterated the confirmation of the importance of sleeping under ITN, because of its efficacy in killing not only mosquito but also other insects that came closer to the net.

Table 4: Last Time a Child Experienced Malaria Infection

Time	Percentage
Presently	45.7
A Week	10.10
A Month	15.2
3 Months ago	16.4
A Year	12.6
Total	100
<i>Malaria Treatment Options</i>	
Treatment	Percentage
Use of counter drugs	17.2
In the health care facility	54.8
Use of herbs	4.8
Home management	14.1
Don't know	9.1
Total	100

It was discovered in the table 4 above that, respondents whose children had malaria during the survey was 45.7% which constituted the majority, followed by 16.4% who said it was 3 months when they experienced malaria, 15.2% of respondents claimed a month ago while 12.6% of respondents revealed that they did not experience malaria for the past 1 year and 10.10% of respondents experienced malaria a week preceding the survey. It could be deduced from this finding that, malaria is among the major health challenges of children under five, because the incidence of malaria during the survey was high with almost 50% of children. That was why majority of the hospital admissions were malaria related sickness. Obviously the transmission was always on the increase despite interventions, because mosquitoes nowadays found in all the seasons throughout the year. The intense of malaria motivate people to use the appropriate treatment pattern to avoid the severity of the disease when children were already contracted.

Similarly, respondents were asked about the malaria treatment pattern, 54.8% of respondents went to the hospital for malaria treatment, 17.2% of them patronized local chemists, 14.1% of respondents treated malaria at home, while 4.8% mentioned the use of herbal medicine and 9.1% of respondents did not make any response. This implied that women in the area utilized modern health care facilities for the treatment of malaria. This was a result of massive

awareness campaign on the media and during health talks in the hospital on the danger of malaria; and the experience a mother had from the significant others whose children were infected with malaria. Despite some respondents treated malaria at home, through the use of local chemist, self-medication and use of herbs, the perceived threat of malaria influenced majority of them to go to hospital for a variety of treatments. IDI conducted with a respondent revealed series of treatment pattern offered to patients. For instance:

In the treatment of malaria infection, we give ACT lumartem, Artemeter lumefantrine, chloroquine, but the use of chloroquine is reduced because of the introduction of ACT which is safer for the patient. (*Health Worker, 38 years*)

This was observed that ACT lumartem and Artemeter were the most treatment given to the patients. The use of chloroquine was no longer in the area. And chloroquine was already banned by the government because it was no longer effective. So, medicine prescribed in the hospital was the treatment option majority of people employed at the expense of any form of treatments as confirmed by both quantitative and qualitative data. A 47-year Household Head affirmed that, he took his children to hospital as revealed below:

My children are treated in the clinic next to our village, the mosquito is now high and the mosquito coil we use does not always prevent mosquito from biting.

There was an intensity of mosquito in the area during the survey. And the mosquito coil was not effective in preventing mosquito bite. Although, when children were infected, they were treated in the health clinic close to them. Similarly, a 35 years Household Head said, he often patronised local chemist whenever his children fall sick as quoted below:

I usually buy medicine from the local chemist when my children fall sick, because medicine in the health clinic is very expensive.

The above finding revealed that people in the area cherished to take their children to hospital for malaria treatment. However, the treatment expenses remained a setback where medicine was sold at high cost that many could not afford to buy. And it was observed that the income of many people in the area was low, relying on the subsistence farming and retail trading. This therefore often pushed people to patronize local chemists or even herbs whenever their children infected with malaria.

Table 5: Problems respondents faced in seeking malaria treatment

Problem	Percentage
Long distance to hospital	20.4
Lack of permission to visit hospital	6.6
Inadequate money for treatment expenses	45.2
Ineffective herbs	2.5
Ineffective drugs	8.1
Don't know	17.2
Total	100.00

Respondents were asked about the problem they confronted in malaria treatment. 45.2% of respondents said inadequate money for treatment expenses was their major problem, 20.4% of respondents complained of long distance to hospital, 8.1% of respondents mentioned that the drugs they used were ineffective, 6.6% of respondents said they were not permitted to always visit hospital for malaria treatment, 2.5% of respondents claimed that the herbal medicines they used were not effective while 17.2% did not respond to the question. The finding revealed that despite respondents faced variety of problems in treating malaria infection, the inadequate money for treatment expenses was the major problem mothers faced in seeking malaria treatment. In addition, the income level of most of them was very low, and their husbands were low income earners, mostly subsistent farmers. Qualitative data revealed that:

The problem most women face is inadequate money, some time I prescribe drugs/syrup for them but they don't have money to buy. (*Health Worker, 28 years*)

It was observed from the above IDI that, people in the area were fully aware on the importance of utilizing hospital services, especially when children were contracted with malaria. But, money was their main problems that even the prescribed drugs; some could not have the money to buy. The solution to this might be the price of the drugs could be subsidized by making it affordable.

Discussion of Findings

The aim of the study was to examine childhood malaria prevention and treatment options. Respondents presented many misconceptions about cause of malaria such as God, stress, dirty environment and ill act of other, but mosquito was dominantly identified as the aetiology of malaria as indicated by 66.7% of the respondents. This agrees with Hlongwana *et al.* (2009) who affirmed that majority of the population about 99.7% associated malaria to mosquito bites. Also, Adekanmi and Foluso (2015) revealed similar finding in Turbo, Colombia where 92.9% confirmed mosquito as the cause of malaria. This study further discovered children under five were the most vulnerable to malaria infection. The finding correlates Abdullahi *et al.* (2013) who revealed that the most vulnerable population to the threat of malaria in Nigeria like other

endemic places were children below the age of five. He also found in qualitative study that more than 70% of reported cases of illness in children treated at health facility which included complicated cases such as anaemia and convulsion were malaria related. Similarly, in a study conducted in Makono district, Uganda, malaria was caused by mosquitoes and was perceived as the leading cause of ill-health among children and pregnant women. The reason for their vulnerability to malaria was because of the weak nature of their bodies while, adolescents and men were not perceived to be at risk of malaria (Mbonye *et al.* 2006). This suggests that, despite series of misconceptions, mosquito was identified as the cause of malaria infection which classified among the child killer diseases.

Furthermore, this study discovered that ITN was used as the most preferred method of preventing malaria infection as indicated by 61.9%. This is agreed with Koenker and Kilian (2014) who observed that the use of ITN was widely recognised as one of the main intervention in malaria prevention. Similarly, Adewole (2012) maintained that malaria is preventable, and ITN was effective in malaria prevention because it repels and kills mosquito when it comes in contact with net. Boene *et al.* (2014) observed similar finding in Manchica, Mozambique where ITN prevented the incidence of malaria and 58% of mothers saw ITN as effective malaria prevention. The perceived benefit of ITN compelled the mothers to imbibe the culture of using it for children. This is in consistent with Kilian *et al.* (2013) who observed in Nigeria that significant proportion of the population about 81.2% used ITN for malaria prevention. It also agrees with Sangare *et al.* (2013) who reported in Jinja, Uganda that, the ITN usage was significantly recognized as method of preventing malaria infection with about 73% respondents admitted the use of ITN in their respective households. Similarly, Kweku *et al.* (2017) opined that the use of ITN for childhood malaria prevention was in Hohoe, Ghana was high with 74.6%. This however disagreed with Efunshile *et al.* (2011) who observed that the use of ITN for malaria prevention was very low with only 15.5%, and further maintained that the incidence of malaria was very low among those who use insecticide spray because they considered it as effective malaria control compared to other preventive techniques. It affirms based on the above findings that ITN remains the peoples' option for childhood malaria prevention.

On the pattern of malaria treatment, people opt to use different methods depending on the beliefs of the person in question. Jegede *et al.* (2006) observed self-medication among market women in Ibadan where herbs or medicine purchased across the counter was the most prevalent treatment pattern. Similarly, Oyeneho (2013) also argued that people had not necessarily taken appropriate malaria treatment at onset of sign or symptoms, and even if they did, the first action is to patronize the nearest chemist to mix up drugs, only when this failed they proceed to health care centres. However, malaria was found higher among children in the area during this survey with (45.7%) which might be the reason why the finding of this study was on contrary to the

above findings on the treatment option. It was discovered in this study that up to 54.6% of the respondents patronized modern health care facilities for malaria treatment whereas, few respondents used over the counter drugs or herbs in the treatment of malaria. Although, majority of them were of the view that treatment expenses were the major problem faced in the area. This suggests that, despite treatment constraint, malaria treatment option in the area was through the use of health care facilities.

Conclusion and Recommendation

The results of this study showed that childhood malaria prevention and treatment followed a common option in which ITN and health care facilities were utilised. Despite many women held certain misconceptions on the malaria causative agent, the data confirmed that malaria occurs through the agency of anopheles mosquito, and children under five were the most vulnerable to this infection. Therefore, mothers had imbibed the culture of using ITN for children as their method of childhood malaria prevention, because they view it as effective more than any other methods. When a child was contracted with infection however, hospital was used as home of treatment for the avoidance of related damages. This study is of the conclusion that malaria treatment expenses were the major challenge faced by respondents in the area, because, the income level of most people was very low battling with what to eat to sustain life rather than the payment of the hospital bills. Though, question on whether the respondents take prompt action when malaria symptoms are perceived was not asked. However, ITN in children' possession was very low considering the number of children owns by a woman, but receiving only 1 net at completion of either immunization or antenatal visit. Based on the findings however, the study recommended the following:

1. Since mosquito was identified as the cause of malaria, government and concerned bodies should as a matter of urgency intensify their efforts to ensure free mosquito environment by reviewing and modifying the existing strategies of the Roll Back Malaria, through ITN distribution using public places such as schools, markets and faith based-organisations and make it available to all children.
2. Government should design modalities of providing free malaria treatment at both primary and secondary health care facilities to alleviate the suffering most people, especially vulnerable population faced in the local area in seeking malaria treatment.
3. People should not always wait for the government to provide ITN for them; they should as well try to buy by themselves in the market to compliment government efforts, since, it affirmed to be effective in preventing contracting malaria.

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