

# **Malaria Prevention Among Pregnant Women in Bauchi State, Nigeria: Knowledge and Utilization of Insecticide-Treated Nets**

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## **Abstract**

Malaria during pregnancy is associated anaemia, underweight babies, premature babies, and neonatal mortality. Use of insecticide-treated nets (ITN) is a practical and effective way of malaria prevention. The aim of this study was to determine knowledge and utilization of ITN among pregnant women in Toro, Bauchi state. A descriptive study design was adopted for the study and 108 women participated voluntarily. Data was collected using a questionnaire. Data was analyzed and presented in tables and charts. Findings show that 87.9% were aware that ITN can be used in malaria prevention while 78.7% posited that ITN is an important tool in preventing malaria during pregnancy. Of the 64.8% who used ITN during pregnancy, only 30% use it every day while 12.9% use it once a week. It is concluded that pregnant women in this setting have adequate knowledge about ITN. Most of them use ITN but frequency or rate of use is poor. Enlightenment program about proper and adequate use of ITN in malaria prevention is warranted.

## **Keywords**

Malaria, Prevention, Insecticide-Treated Net, Pregnant Women, Bauchi State

## **1. Introduction**

Malaria is an important public health issue in Africa. The worldwide malaria burden is currently estimated at over 200 million cases and over half a million deaths. Sub-Saharan Africa bears the heaviest brunt with 90% of all deaths [1], [2]. Malaria infection is common in about 100 countries of the world and half of these countries are in sub-Saharan Africa [3]. An eleven years analysis of prevalence of malaria in pregnancy in sub-Saharan Africa among women attending antenatal visit revealed that 29.5% were infected in east and southern Africa while 35.1% infected in west and central Africa [4].

Women are increasingly becoming aware of malaria

prevention strategies due to enlightenment campaigns by government and non-government organization [5]. More women are attending reproductive age hence the need to sustain and scale-up current malaria prevention interventions among pregnant women as well as periodic assessment to determine the impact of these interventions. Between 19-25 million women in malaria endemic area of Africa become pregnant annually and are at risk of malaria during pregnancy [6]. Malaria infection could have a devastating effect in pregnant women, their developing fetus and newborn infants. Malaria in pregnancy contributes to low birth weight, infant mortality, anaemia, prematurity and placental infection [5], [7]. This underpins the importance of malaria prevention as a tool for improving maternal and child health in Africa. A periodic assessment of pregnant women regarding malaria

prevention is beneficial in identifying gaps and for planning of more effective and efficient preventive strategies.

Use of insecticide-treated nets (ITN) is an effective and cheap method of preventing malaria in sub-Saharan Africa [8]. Use of ITN can potentially reduce malaria infection significantly [9]. A systematic review revealed that use of ITN throughout pregnancy or from mid pregnancy onward have beneficial impact on pregnancy outcome in malaria endemic Africa [10]. Between 2001 and 2010, 842,800 child mortality were averted through the malaria prevention intervention scale-up in Malawi [9]. A study in Kenya reported that although use of ITN was widely accepted, most individuals are ignorant of how it is maintained and use [11]. Musoke *et al* [12] asserted that most women had low knowledge of malaria prevention in Uganda and that use of ITN was poor. Ayodeji *et al* [13] posited that knowledge of malaria prevention strategies in southern Nigeria was satisfactory because most women reported that malaria could be prevented using ITN. However, Abasiattai *et al* [14] reported a low use of ITN (16.4%) in southern Nigeria. They further asserted that unavailability of nets, high cost of nets, and ignorance were factors that affect negatively affect the use of ITN.

Paucity of literature about use of ITN as a malaria prevention strategy in the current setting necessitated this study. Understanding the knowledge and utilization of insecticide-treated nets among pregnant women provide baseline information that will be useful in planning and designing future preventive interventions.

## 2. Materials and Method

A descriptive study design was adopted for the study. One hundred and eight pregnant women attending maternal clinic in general hospital Toro, Bauchi state voluntarily participated in the study. The aim of the study was to determine pregnant women's knowledge and utilization of ITN. The aim of the study was explained to the participants and consent was obtained. A questionnaire was used to collect data from respondents. The questionnaire was interpreted for those who did not understand English. Data was analyzed and presented in frequency tables and percentages. Permission was sought from the hospital management to conduct the study. All respondents were assured of confidentiality and anonymity of information provided.

## 3. Findings

*Table 1. Characteristics of respondents.*

Characteristics	Frequency N=108	Percentage
Age		
19-25	46	42.6
26-35	39	36.1
36-45	17	15.7
>45	6	5.6
Educational Level		
No formal education	22	20.0

Characteristics	Frequency N=108	Percentage
Primary	48	44.4
Secondary	38	35.2
Tertiary	0	0
Number of children		
None	27	25
1-2	30	27.8
3-4	26	24.1
5-6	17	15.7
≥7	8	7.4
Occupation		
Trader	59	54.6
Farming	2	1.9
House Wife	41	37.9
Civil Servant	6	5.6

Table one shows that 46 women (42.2%) were between 19-25 years and 39 (36.1%) between 26-35 years. Seventeen women (15.7%) and 6 (5.6%) were between 36-45 years and ≥45 years respectively. Majority of the respondents were young mothers with none of them attending tertiary education. Twenty two women (20%) had no formal education while eighty-six (79.6%) had attended primary or secondary school.

The table further shows that 27 (25%) have no children, 30 (27.8%) have 1-2 children, 43 (39.8%) have 3-6 children while 8 (7.4%) have 7 or more children.

About occupation, 59 women (54.6%) were traders, 2 (1.9%) farmers, 41 (37.9%) house wives while 6 (5.6%) were civil servants

*Table 2. Knowledge of malaria prevention.*

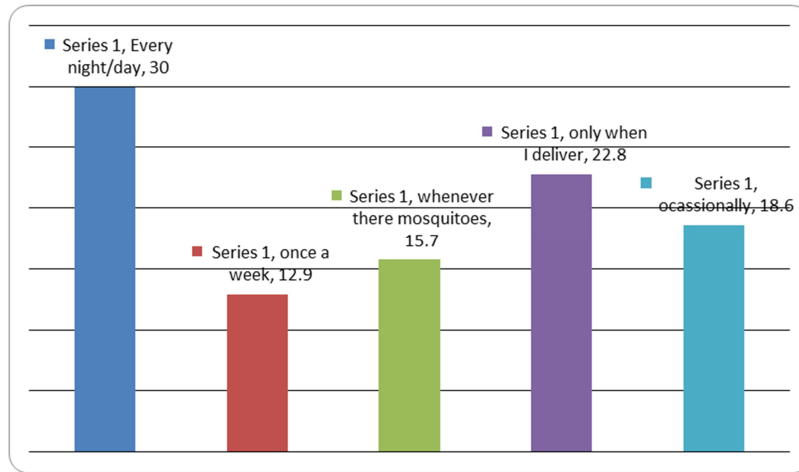
Statement	Agreed	Disagreed
I can prevent symptoms and effect of malaria if I use ITN	95 (87.9%)	13(12.1%)
Taking anti-malaria prophylaxis can prevent and control malaria	94 (87.%)	14(13.0%)
Disposed of stagnant water and good drainage system can prevent malaria.	72 (66.7%)	36(33.3%)
Clearing of bushes around the house and general environmental sanitation can control malaria	82 (75.9%)	26(24.1%)
Spraying the house with insecticides especially at night can control malaria	90(83.4%)	18(16.7%)
Use of insect repellent lotion or cream can control mosquito bites/malaria	70(64.8%)	38(35.2%)
Netting of doors and windows can prevent malaria	96(88.9%)	12(11.1%)
ITN is very useful tool in prevention and control of malaria during pregnancy	85(78.7%)	23(21.3%)
I will personally encourage other pregnant women around to use ITN	65(60.2%)	43(39.8%)
The insecticide use in treating the net is not harmful to either the mother and child	51(47.2%)	57(51.9%)
ITN is not costly compared to treating malaria during pregnancy	98(90.7%)	10 (9.3%)

Table 2 shows that the respondents had adequate knowledge about malaria prevention. Most women demonstrated good knowledge of malaria prevention strategies. Details in table 2.

**Table 3. Utilization of ITN.**

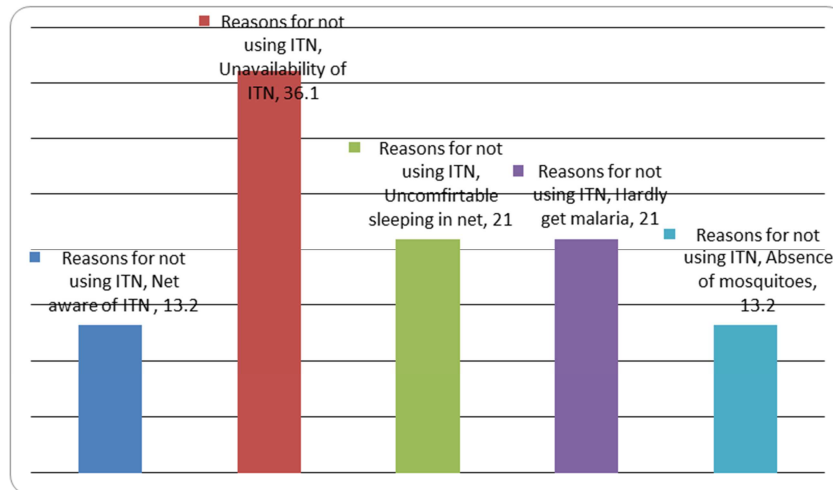
Statement	Yes	No
I accepted ITN without much difficulty	72(66.7%)	36(33.3%)
I use insecticide treated net in the prevention of malaria during pregnancy	70 (64.8%)	38 (35.2%)

Table 3 indicated that 72 (66.7%) accepted ITN without difficulty while 70 (64.8%) reported that they use ITN in the prevention of malaria.



**Figure 1. Rate of use of ITN.**

Figure 1 above indicated that 21 (30%) use ITN every day and night, 9 (12.9%) use it once a week, 11 (15.7%) use ITN whenever there mosquitoes, 16 (22.8%) use it when they deliver their baby while 13 (18.6%) use ITN occasionally.



**Figure 2. Reasons for not using ITN.**

Figure 2 shows that 5 (13.2%) did not use ITN because they were not aware of it. Twelve (36.1%) did not use ITN because it is not available, 8 (21%) said they were not comfortable using ITN, another 8 (21%) said they did not use ITN because they hardly get malaria infection while 5 (13.2%) said they did not use ITN because there are no mosquitoes in their houses.

#### 4. Discussion

Women's knowledge about malaria prevention strategies is an important determinant of malaria prevention practices. Most of the women in the current study demonstrated adequate knowledge of malaria prevention measures. They

reported that malaria can be prevented using ITN, use of antimalaria Prophylaxis, disposal of stagnant water and good drainage, clearing of bushes around the house, use of insect repellent cream and lotion and netting of doors and windows. This findings align with the position of Ayodeji *et al* [13] and Musoke *et al* [12] who revealed that most women are aware of malaria prevention strategies. The increase awareness could be attributed to the various interventions focused on malaria eradication by government and non-governmental organizations. However, some women seems not to understand what is takes to prevent malaria. This is not surprising because a reasonable proportion of the respondents were first-term mothers (primigravid) and this may be their first contact with the health facility. Another reason some

women are not aware of malaria prevention may be the lack of education. The finding in table 1 shows that a significant proportion of the study sample never had any formal education with none achieving tertiary education. This may make enlightened campaign difficult and less effective. Government of Bauchi state need to encourage girl child education by making their education at all levels free. Future malaria prevention program in this setting and similar settings in developing countries should put the level of education of the women into consideration in order to enhance efficiency. Health workers should use simple local languages in educating women about malaria prevention during antenatal care. This should be done regularly and improved upon as the case may be because women are enrolled for antenatal care on a regular basis.

Use of ITN as one of the practical and effective way of preventing malaria can not be over emphasized. In the current study, most women accepted ITN without difficulty because they believe it is effective in malaria prevention. They are willing to encourage other women to use ITN especially during pregnancy. The fact that some women have misconceptions about the use of ITN underlines the need for orientation and enlightenment about the safety and advantages of using ITN. Furthermore, most women see the use of ITN as cheaper than treating malaria infection and use of ITN was impressive. This finding is consistent with Abasiattal *et al* [14] and Ayodeji *et al* [13]. However, findings also indicated that some pregnant women did not use ITN adequately. A few women use ITN daily as expected, others use it once a week or occasionally when there are mosquitoes or when they have their babies. Inadequate or improper use could still expose these women to malaria infection [11]. Health personnel should emphasize to women the need to use ITN daily. Some of the respondents in the current study reported that they were not using ITN and the reasons was that ITN was not available and is uncomfortable to use. Other reasons include the fact that they hardly get malaria infection and that there was no mosquitoes in their houses. Scaling-up of malaria prevention sensitization programs, adequate provision and distribution of ITN could improve acceptance and utilization among pregnant women. This will ultimately results in reduction of malaria related morbidity and mortality in Bauchi State and Nigeria at large.

## 5. Conclusion

Knowledge of malaria prevention and use of ITN among pregnant women attending antenatal care in Toro general hospital is satisfactory. However, there is need to intensify effort at ensuring that all women use ITN. Unavailability of ITN and ignorance basically affect the use of ITN by women in this setting. It is recommended that ITN should be provided and adequately distributed to communities and hospital so that pregnant women will be given free. There is also need to sustain and improve on it current enlightenment campaign about use of ITN.

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