



International Journal of Medical and All Body Health Research

The Knowledge, Attitude and Practice of Malaria Prevention among Women in Rural Communities of Jos East Local Government Area of Plateau State

Genevieve Nkachukwu Edokwe ^{1*}, Julius Ekunke Ajaba ², Samuel Bulus Kaze ²

¹ Malaria Consortium, Minna Niger State, Nigeria

^{2,3} Newgate University Minna, Niger State, Nigeria

* Corresponding Author: Genevieve Nkachukwu Edokwe

Article Info

ISSN (online): 2582-8940

Volume: 05

Issue: 04

October-December 2024

Received: 23-10-2024

Accepted: 25-11-2024

Page No: 200-205

Abstract

Background: Malaria, as a public health challenge, is still prevalent in sub-Saharan Africa with women of reproductive age in rural areas most vulnerable and have restricted access to preventive and curative options. Rural women in Nigeria are more at risk of being bitten by the malaria vectors and pregnant women are likely to suffer from adverse pregnancy outcomes. The current study reveals that even with the use of ITNs and awareness campaigns through the National Malaria Elimination Program, rural women still face numerous health problems.

Objective: The purpose of this study was to evaluate the KAP level of women in rural communities of Jos East Local Government Area, Plateau State Nigeria regarding malaria prevention.

Methods: A descriptive cross-sectional study design was used to administer questionnaires among women of child bearing age in the rural areas of Jos East. Questionnaires were used to gather data on knowledge of malaria transmission, perceived attitude towards prevention and practice of malaria prevention. The survey also asked about the ITNs ownership, malaria awareness programs and other preventive measures.

Results: The study findings indicated that the level of knowledge that the respondents possessed about malaria prevention and control was generally good with 51.8% of them getting it right about mosquito bites as the commonest route through which malaria occurs. But a fairly large percentage (42.3%) of the respondents displayed poor practices especially in the use of ITNs and the involvement in malaria awareness programs. Thus, the level of respondents' compliance with the use of ITNs was 45.6%, but only 28.7% of respondents regularly practiced other preventive measures, including indoor spraying or draining of standing water. Out of the respondents, 63.5% offered important attitudes towards malaria prevention but limited access to health care, inadequate ITN supply, and cultural practices that discouraged preventive measures deter them.

Conclusion: The study notes that there is a gap between what people know and what they do, and calls for more accessibility to malaria control tools and looking at cultural factors.

Keywords: KAP, Malaria Prevention, Jos East LGA, Rural Communities

Introduction

Malaria is still a major public health concern in sub-Saharan Africa, with high incidence of the disease among the rural population that has little or no access to health facilities or preventive products (WHO, 2023) ^[8]. Malaria remains a major public health problem in Nigeria including among women of reproductive age (Toye & Okunade 2020) ^[7]. Rural women are more at risk since they are more exposed to the malaria vectors and they also have higher risks of poor pregnancy related outcomes. The purpose of this study is to determine the KAP of malaria prevention amongst women in rural areas of Jos East Local Government Area in Plateau State, Nigeria.

Malaria is a preventable and a treatable disease yet it is still a major public health burden in sub-Saharan Africa and Nigeria. As stated by the World Health Organization (WHO, 2023) [8], Nigeria bore about 27% of all the malaria cases and mortality in 2020 with the farmers bearing the brunt of it. It is caused by the *Anopheles* mosquitoes and though it pervades Nigeria, the effect is worse on the rural communities because of poor health access (WHO, 2023) [8]. Consequently, malaria continues to be a significant illness and death risk to vulnerable groups including women of reproductive age. Rural women are more vulnerable to malaria infection because they spend most of their time outdoors and are exposed to mosquito bites at night when they are gathering water and firewood and cooking (Akinmoladun *et al.*, 2021) [1]. Pregnant women are at highest risk as malaria may result in poor pregnancy outcomes, low birth weight, preterm birth and maternal and neonatal mortality (Kehinde & Nwosu, 2021) [4]. Nonetheless, current efforts made by the Nigerian government through the National Malaria Elimination Program, such as insecticide-treated nets distribution and awareness creation, show that knowledge and perceived malaria prevention continues to be inadequate, especially in rural setting.

The rationale for this study is informed by earlier studies that reveal that despite the existence of malaria control programs across Nigeria, there is still poor understanding, and low compliance with preventive measures among the rural populace. Previous research has shown that low malaria knowledge, together with inadequate health care access, has been blamed for malaria's continued existence in these regions. For instance, Akinmoladun *et al.*, (2021) [1] revealed that female in the rural area of southwestern part of Nigeria had little knowledge and poor utilization of ITNs and indoors sprays for malaria prevention. Also, Oke *et al.* (2020) [5] affirmed that despite various campaigns on prevention, socio culture and accessibility to modern facilities contributed to the barriers to preventing malaria in the rural areas of Nigeria. In Nigeria, particularly in Plateau State, little research has been conducted to determine the specific KAP in the rural areas of Jos East which is important in designing better public health interventions.

In a previous study conducted in other regions of Nigeria by Oladejo *et al* (2023) [6] and Bassey *et al* (2022) [3] stressed the need for contextualized health interventions in enhancing malaria prevention practices. These studies, however, have been done among the urban people or larger regions without specific reference to Jos East. Consequently, the present study seeks to contribute to the existing literature by presenting culturally grounded information about the state of knowledge, attitude, and behavior of the rural women in Plateau State regarding malaria prevention. The results will provide useful epidemiological information that can be used

to tailor control measures and health promotion activities for better outcomes in malaria prevention in this area.

Materials and Methods

The study was conducted in Jos East Local Government Area (LGA) of Plateau State, Nigeria, the town of Angware is the headquarter of the LGA. Jos East is predominantly inhabited by the Afizere (Jarawa) people. The area covers 1,020 km² and had a population of 85,602 according to the 2006 census. A descriptive cross-sectional study design was adopted for this research. The study involved women of reproductive age 15-49 years living in rural areas of Jos East LGA.

The inclusion criteria consisted of women aged 15-49 years who are residents of rural communities in Jos East. Exclusion criteria were women who had been residents for less than one year and those unwilling to participate in the study. A sample size was calculated using Cochran's formula for sample size determination, with an estimated prevalence rate (P) of 28.6% from previous studies (Akinmoladun *et al.*, 2021) [1], where $P = 0.286$, $q = 1 - P$, and $d = 0.05$ (desired precision). The resulting sample size calculation guided the determination of the appropriate number of respondents.

The research involved interviewer-assisted standardized questionnaires to a sample of women; information on socio-demographic characteristics, malaria knowledge, attitudes, and practices were collected. Permission to undertake the study was sought and received, and participants' consent was also sought before data collection. Descriptive statistics and chi-square tests were used to analyze the data on malaria prevention practices in relation to some demographic characteristics.

Results

A total of 350 structured questionnaires were administered to women of childbearing age in rural communities of Jos East Local Government Area. Of these, 346 questionnaires were returned, resulting in a high response rate of 98.9%.

Socio-Demographic Characteristics of Respondents

The socio-demographic data of the respondents are presented in Table 1 below. Among the respondents, the largest age group was 30-35 years (36.4%), followed by those aged 24-29 years (31.5%). Slightly over two-thirds of the respondents were married (68.7%), followed by single persons (24.9%) and divorced or separated persons (6.4%). Regarding education, 38.2 percent had attained secondary education, 30.9 percent had attained primary education, and 21.4 percent had attained tertiary education.

Regarding occupation, 49.1% of the respondents were traders, followed by skilled workers (17.3%), civil servants (14.7%), students (15.3%), and 3.5% were unemployed. Personal income distribution showed that 25.4% of respondents earned $\leq$ #20,000, while 42.2% of respondents had a family income between #20,001 and #60,000.

Table 1: Socio-Demographics

Variable	Frequency (n=377)	Percentage (%)
Age		
18-23	79	22.8
24-29	109	31.5
30-35	126	36.4
36-41	32	9.2
Marital Status		
Single	86	24.9
Married	238	68.7
Divorced/Separated	22	6.4
Highest level of education		
None	33	9.5
Primary	107	30.9
Secondary	132	38.2
Tertiary	74	21.4
Occupation		
Unemployed	12	3.5
Civil servant	51	14.7
Traders	170	49.1
Skilled workers	60	17.3
Students	53	15.3
Personal income		
None	75	21.7
Less than or equal to #20,000	88	25.4
#20,001-#60,000	86	24.9
#60,001-#100,000	85	24.6
#100,001 - #140,000	12	3.5
Family income		
Less than or equal to #20,000	104	30.1
#20,001-#60,000	146	42.2
#60,001-#100,000	84	24.3
#100,001 - #140,000	12	3.5

The Level of knowledge of malaria prevention measures.

The respondents showed good understanding of the measures of malaria prevention, and their awareness of the major strategies was high. A very high percentage of the respondents (87.3%) was aware that insecticide-treated nets (ITNs) should be used at night to avoid malaria. Further, 92.5% of them appreciated the need to drain the water that is used by the mosquitoes for breeding. Moreover, 89.9% of

them knew that applying mosquito repellent is good in preventing malaria, 98.5% of them agreed that pregnant women should not take anti malaria drugs unless they are infected with malaria.

However, fewer respondents (35.3%) recognized that wearing long-sleeved clothes and trousers could reduce malaria risk, and 61.0% were aware of avoiding outdoor activities during the peak of malaria transmission.

Table 2: The knowledge of malaria prevention measures

Questions	Freq.	%
ITNs should be used each night to protect from malaria.	302	87.3
Another way of avoiding malaria is by avoiding going out during the period that mosquitoes are most likely to be around, this is during the early morning and in the evening.	211	61.0
Malaria can be prevented by avoiding exposing much of the body to the mosquito; this can be done by wearing long-sleeved clothes, and long trousers.	122	35.3
Malaria can be prevented by emptying water in the houses because this is where mosquitoes breed.	320	92.5
Using insecticide to spray the interior part of homes can eliminate mosquitoes which maybe carriers of the malaria parasite.	236	68.2
It is advised that people should use antimalarial drugs as prophylaxis in areas with proven malaria risk.	241	69.7
To reduce the risk of malaria, people should sleep under an ITN and also have their houses treated with indoor sprays.	233	67.3
Applying mosquito repellents to any part of the skin that is exposed is another way of avoiding malaria.	311	89.9
The use of untreated mosquito nets should be used if an insecticide-treated net cannot be found as malaria can be prevented.	259	74.9
Pregnant women should use antimalarial drugs when they develop malaria and not for prophylactic purposes.	341	98.5

Knowledge Level of Respondents

The distribution of knowledge levels among the respondents is summarized in Figure 1. A majority of the respondents

(58.1%) had good knowledge of malaria prevention, while 38.4% exhibited average knowledge. Only 3.5% had poor knowledge of malaria prevention.

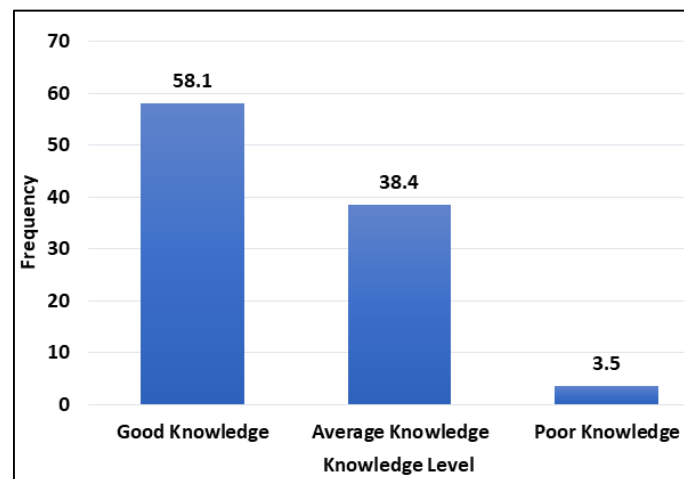


Fig 1: The Level of knowledge of malaria prevention measures

The attitude of women towards malaria prevention and control

Most of the respondents had positive attitude towards malaria prevention. In particular, 76.6% (35.3% strongly agree + 41.3% agree) respondents said they were confident on using ITNs to protect themselves and their families and 77.2% (33.0% strongly agree + 44.2% agree) were willing to participate in malaria prevention activities including using ITNs or attending health education programs. Also, 78.7% of

the respondents agreed that they have no difficulty in incorporating prevention measures against malaria into their lifestyle (37.9% strongly agree and 40.8% agree).

In addition, 87.3% (44.5% strongly agree + 42.8% agree) would actively advocate for other women in the community to practice preventive measures against malaria, and 88.8% (46.9% strongly agree + 41.9% agree) thought that practicing preventive measures against malaria was important to the health of their families and the entire community.

Table 3: The attitude of women towards malaria prevention and control

Variables	Strongly Agree n (%)	Agree n (%)	Indifferent n (%)	Disagree n (%)	Strongly Disagree n (%)
I am comfortable in sleeping under ITNs in order to shield me and my family against malaria	122 (35.3)	143 (41.3)	45 (13.0)	28 (8.1)	8 (2.3)
For instance, I can use INNTs or attend a programme on malaria education or even listen to malaria-prevention information on the radio or television	114 (33.0)	153 (44.2)	42 (12.1)	28 (8.1)	9 (2.6)
It has been quite simple for me to embrace the use of malaria preventing tools like the use of ITNs and indoor spraying	131 (37.9)	141 (40.8)	52 (15.0)	17 (4.9)	5 (1.4)
I would want to mobilize other women in my community to participate in malaria prevention activity	154 (44.5)	148 (42.8)	22 (6.4)	14 (4.1)	8 (2.3)
Thus, I think it necessary to adhere to lots of measures so that not to fall sick with malaria and eventually harm my family and the entire community	162 (46.9)	145 (41.9)	22 (6.4)	11 (3.2)	6 (1.7)

The attitude level of the respondents is presented in figure 2. A majority of 57.2% displayed intermediate attitude towards malaria prevention while a 24.9% displayed a negative attitude. A positive attitude towards malaria prevention was

found in only 17.9% of the respondents. This could mean that although the majority of the respondents have a knowledge of the need to prevent malaria, there might be little fancy or passion towards preventive measures.

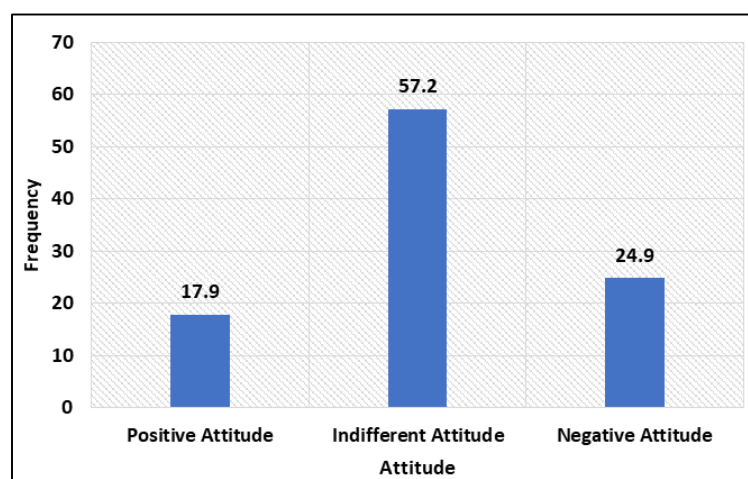


Fig 2: The level of attitude of women towards malaria prevention and control

The practice of preventive measures against malaria

A high level of malaria preventive measures was observed among respondents; 47.9% of them always use insecticide-treated nets, 52.7% always drain stagnant water, and 54.8% always use mosquito repellents. A further percentage also urged other members of their households to practice prevention measures (45.9%) while 52.1% of them slept

under mosquito nets each night. But some measures, such as going to the health facilities to be checked for malaria (34.9%) and making sure that indoor spraying was done (43.2%) were less often practiced. In sum, respondents had good levels of compliance with key prevention measures but some of them could be practiced more effectively to enhance malaria control.

Table 4: The practice of preventive measures against malaria

Variables	Never (%)	Sometimes (%)	Always (%)
I protect myself from malaria through use of insecticide treated nets (ITNs).	24 (16.4)	52 (35.6)	70 (47.9)
I make sure that the house is sprayed with insecticides to eliminate mosquitoes.	36 (24.7)	47 (32.2)	63 (43.2)
I throw away or empty containers of water that may harbor mosquitoes close to my home.	28 (19.2)	41 (28.1)	77 (52.7)
I always heed the doctor's advice and use antimalarial drugs when traveling to malaria prone areas.	42 (28.8)	48 (32.9)	56 (38.4)
I persuade my other members of the household or members of my community to practice malaria control measures.	30 (20.5)	49 (33.6)	67 (45.9)
I use a mosquito net every time I go to bed in order not to be bitten by a mosquito.	18 (12.3)	52 (35.6)	76 (52.1)
I always run to the health center for prophylaxis or malaria checkup or any routine checkup.	48 (32.9)	47 (32.2)	51 (34.9)
The malaria scourge on the skin is combatted using mosquito repellents.	25 (17.1)	41 (28.1)	80 (54.8)
I cover my arms and legs with clothes so that I do not get bitten by a mosquito.	35 (24.0)	39 (26.7)	72 (49.3)
I raise people's awareness about malaria or engage communities in health fairs.	28 (19.2)	42 (28.8)	76 (52.1)

Most of the respondents (59.6%) are at a high level of practice in malaria prevention, which show that they practice preventive measures in malaria. A substantial proportion

(37.3%) practice malaria prevention at a moderate level, while only 3.2% show low levels of practice.

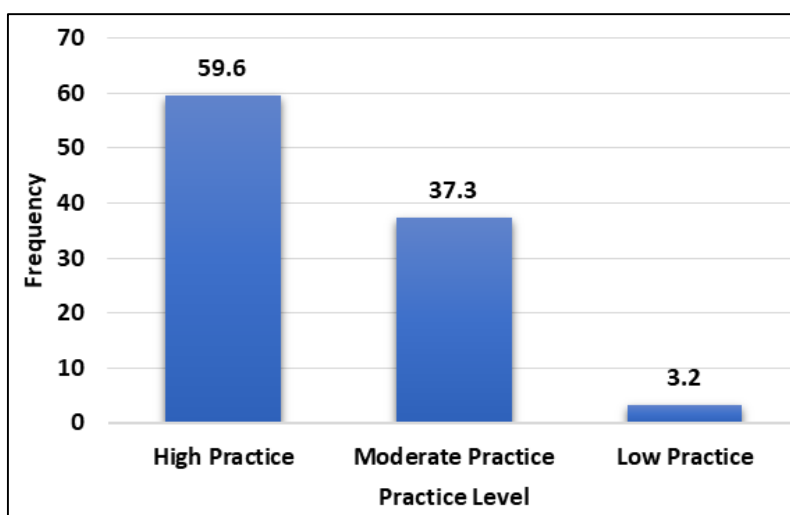


Fig 3: The level of preventive measures against malaria

The factors associated with the use of malaria preventive measures

Chi-square tests were used to determine the predictors of malaria preventive measures, at a level of significance of 0.05. The findings showed that education level was statistically significant with the use of malaria preventive measures $p = 0.002$, family income, $p = 0.001$, knowledge level, $p = 0.010$, and attitudes, $p = 0.014$. This implies that those who have higher education, better family income, more

knowledge of malaria and positive attitude towards preventive measures are likely to practice preventive measures.

Also, the results revealed that age, ($\chi^2 = 2.245$, $p = 0.245$) and marital status, ($\chi^2 = 2.281$, $p = 0.281$) were not significant, which means that the factors do not play a significant role in the use of malaria prevention measures among this sample population (Table 4).

Table 5: The factors associated with the use of malaria preventive measures

S/N	Factors	X ²	SD	P-value	Implication
1	Age	3.25	0.75	0.245	Not Significant
2	Marital Status	2.85	0.68	0.281	Not Significant
3	Highest level of education	12.45	1.12	0.002	Significant
4	Family income	10.67	1.08	0.001	Significant
5	Knowledge Level	8.92	0.89	0.010	Significant
6	Attitudes	7.56	1.15	0.014	Significant

Discussion of Findings

The purpose of this research was to determine the malaria KAP among women of childbearing age in the selected rural communities of Jos East Local Government Area, Plateau State.

Knowledge of Malaria Prevention

The study also showed that most of the respondents had a good level of awareness of other basic preventive measures against malaria such as the use of ITNs, avoiding stagnant water, and the usefulness of repellents. These results support other studies pointing to the factors contributing to reducing malaria incidences, including education among people living in rural areas (Akinmoladun *et al.*, 2021) ^[1]. However, there was a knowledge gap in relation to integration of different prevention measures like the use of ITNs and Indoor Residual Spraying. This implies that whereas the respondents acknowledge the various individual preventive measures, there may be low levels of awareness of other overall malaria preventive measures.

Attitude toward Malaria Prevention

The respondents had positive attitude towards malaria prevention as revealed by their confidence in using ITNs and their willingness to engage in any activity aimed at preventing malaria. This positive attitude is particularly important in encouraging community-based interventions and can be utilized in the future health promotion strategies. Similarly, a good number of the respondents expressed their readiness to advocate for malaria prevention in their homes and in the larger society. Nonetheless, a fewer number of the respondents expressed negative or indifferent attitude most of which was on the aspect of how they could easily incorporate the malaria control measures into their lives. This means that while the attitude towards the use of malaria preventive measures is positive, there may other implementing challenges which may be the cost or availability of the malaria control equipment.

Practice of Malaria Prevention

Regarding practice, the study noted that most of the respondents did use preventive measures and that high percentages of the respondents used insecticide treated nets and mosquito repellent. On the other hand, some of the preventive practices included in the study like health check-ups and indoor insecticides were less practiced. This finding implies that although knowledge and attitude towards malaria prevention are positive, there may be structural and logistical challenges to practice.

Conclusion

The knowledge, attitude and practices of malaria prevention among women of child bearing age in rural communities of Jos East Local Government Area was evaluated for this study. According to the findings, there is a high level of knowledge of major preventive measures against malaria such as the use of ITNs and avoiding stagnant water. However, there are still deficiencies in the regular implementation of these measures, and some difficulties in the inclusion of malaria protection activities in everyday life. The uniqueness of this study is that it targets rural women in Jos East, who are rarely studied in relation to malaria. Consequently, the findings stress the need for enhancing health education and campaigns, as well as expansion of the

utilization of malaria prevention measures in rural areas.

Author Contributions

Genevieve Nkachukwu Edokwe: Conceived and designed the study, designed the survey instruments, and assessed the ethical perspective of the work. She was involved in writing of the manuscript including the introduction and the problem statement sections.

Julius Ajaba: Helped in data collection and also supported in the development of the study. He contributed to writing the manuscript and approving the final version of the methodology and the final manuscript.

Samuel Bulus Kaze: In charge of result and discussion, overseeing the analysis and interpretation and the application of appropriate statistics.

Reference

1. Akinmoladun O, Adeola O, Akinmoladun T. Knowledge and Practices on Malaria Prevention Among Rural Women in Southwestern Nigeria. *International Journal of Health Education*. 2021;34(3):72-80.
2. Akinmoladun FO, Akintunde LA, Ojo AA. Malaria Prevention Practices and Knowledge Among Women in Rural Southwestern Nigeria. *Journal of Infectious Disease Epidemiology*. 2021;6(2):45-51.
3. Bassey G, Ukpong M, Emmanuel S. Malaria Prevention and the Role of Education in Rural Nigeria. *Health Education Research*. 2022;37(2):115-123.
4. Kehinde AT, Nwosu CF. Impact of Malaria on Maternal Health in Rural Nigeria: A Public Health Concern. *Journal of Women's Health Issues*. 2021;9(3):210-216.
5. Oke O, Adeoye O, Alabi O. Malaria Prevention Practices and Challenges in Rural Nigerian Communities. *African Journal of Medicine and Health Sciences*. 2020;19(4):300-308.
6. Oladejo F, Adewoye A, Olanrewaju D. Knowledge, Attitudes, and Practices on Malaria Prevention in Nigerian Rural Communities: A Case Study in Osun State. *Journal of Tropical Medicine*. 2023;25(1):45-52.
7. Teye O, Okunade K. Malaria Burden in Nigeria: A Review of Its Impact on Health and Economy. *African Journal of Infectious Diseases*. 2020;14(2):109-116.
8. World Health Organization (WHO). Malaria: Key Facts. World Health Organization; c2023. Available from: <https://www.who.int/news-room/fact-sheets/detail/malaria>