



KNOWLEDGE AND PRACTICES OF MALARIA PREVENTION MEASURES AMONG SELECTED COMMUNITIES IN ABUJA, NIGERIA

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ABSTRACT: *Malaria remains a critical public health concern globally because it is linked to human practices and their living conditions. Malaria is a threat to more than 40% of the world's population. The role of household residents and communities cannot be overemphasized. Hence, the study examined the knowledge and practice of malaria prevention measures among selected peri-urban communities in Abuja. This study adopted cross-sectional survey research using quantitative methods of data collection. A multi-staged sampling technique was used to select 385 household residents who participated in the study. Research questions were formulated, and data were analysed using SPSS version 27 to compute descriptive statistics. The majority of respondents (47.5%) are above the age of 36 years, with the mean age of 47.1 ± 19.8 . Findings revealed that knowledge of malaria prevention among the participants was moderate, with participants having correct responses ranging from 59.2%-79.3% across important items for knowledge, like preventive measures, awareness of environmental risk factors, and barriers to malaria prevention and control. Also, practices of malaria prevention were generally high, since many participants reported using malaria prevention and treatment actions such as indoor spraying (32.6%), house cleaning (29.2%), and use of mosquito repellent devices (21.5%). However, the use of insecticide-treated nets was reportedly low (5.6%), and treatment practices such as antimalarial monotherapy and antimalarial combination therapy were varied across the study population. In conclusion, while malaria prevention practices were considerably high, specific gaps in knowledge still exist. The researchers recommend that health education and community-based intervention be strengthened to improve knowledge and sustain the malaria prevention practices in peri-urban communities in Abuja.*

KEYWORDS: Attitude, knowledge, practice, Malaria, occurrence, Peri-urban communities.



INTRODUCTION

Malaria is a serious public health issue and is very endemic in sub-Saharan Africa despite growing public health interventions (Amadi & Erandi, 2024). In 2020, sub-Saharan Africa accounted for most of the malaria-related morbidity and mortality in children under 5 worldwide (Oladipo et al., 2022). Studies have documented that there is a positive relationship between malaria, rainfall, and humidity, with malaria cases rising in regions with heavy rainfall and maximum temperatures (Tariq et al., 2025). According to the Centers for Disease Control (CDC, 2024), only four of the about 156 identified species of *Plasmodium* can infect human beings: they are *Plasmodium falciparum* (or *P. falciparum*), *Plasmodium malariae* (or *P. malariae*), *Plasmodium vivax* (or *P. vivax*), and *Plasmodium ovale* (or *P. ovale*). The female Anophele mosquito is the definitive host and primary vector of *Plasmodium*. A person gets infected with malaria when sporozoites are injected into the bloodstream by the female anopheles when it is feeding (Buck & Finnigan, 2025).

Globally, over half of the world's population, i.e., 3.3 billion people, live in malaria transmission areas. Of 106 countries and territories at risk, an estimated 216 million positive cases and 655,000 deaths were reported in the year 2010 due to malaria (WHO, 2022). While this is on the increase around the world and even in the African region, 86% of the malaria deaths were of children (Ahmad, 2019). Of these African regions, West African regions like Nigeria, Ghana and Kenya reported 91%, 6%, and 3% malaria deaths, respectively (World Health Organization, 2018).

However, Okoronkwo (2017) reported that Nigeria alone contributes nearly 65% of the malaria cases in the West African region. Also, in many parts of Nigeria, malaria exists as an endemic disease (Diesfield, 2018). In 2019, for example, it was estimated that among a population of 150 million, there were 13.5 million (722 per 1000) cases of out-patient hospital attendance annually attributable to malaria (National Demographic Health Survey, 2019). Malaria, therefore, is a serious health and socio-economic problem in Nigeria. In the western areas of Nigeria, the disease has been described as holoendemic (Roberts, 2019). In spite of this, there has been very little success in controlling it, not only in Nigeria but also in most other countries affected (WHO, 2018). Indeed, the great progress that had been made in combating this disease has increasingly become frustrated by two main constraints, namely, the increasing resistance of the human stage of the parasite to antimalarial drugs and of the vector mosquitoes to insecticides.

It is, therefore, evident that besides chemotherapy aimed at killing the human stage of the parasite, one other most effective strategy to control malaria involves the killing of both the adult host mosquitoes and their immature stages. For a while, insecticides proved to be the most satisfactory means of achieving this goal, as was evident from concerted indoor spraying in Nigeria with fenitrothion, which was able to reduce malaria prevalence among inhabitants from 90% to 15% within 2 years (Fontaine & Pull, 2017; Adesina, 2018). However, it soon became apparent that because of insecticide resistance in the vectors, this method alone could not sustain malaria control without a sound understanding of several other physical and biological factors that may affect the vectors within the environment. For example, malaria prevalence in school children nearest the Lake shore was shown to be over 90%, whereas in those at a distance of only one kilometer further away, it was less than 70% (Oster, 2016; Sijuawade, 2018). The reasons for such variation need to be understood in order to formulate cost-effective strategies to control malaria.



Therefore, before undertaking malaria control, it is necessary to measure the variable factors that influence the individual malaria transmission situation. These epidemiological factors include not only the various cognitive factors, ecological factors, but also the socio-economic processes of the people that interact with the basic elements in the transmission chain - parasite, vector, and infected and uninfected host (Oster, 2016; Okiro, 2019). Transmission of malaria depends on the factors affecting the disease and varies from place to place. There are areas where the transmission and incidence of disease is high, low, and in some are a sit is very brief, lasting for several months or throughout the year. Different climatic and non-climatic factors favor the transmission of the disease. Temperature, rainfall, and relative humidity are the climatic variables that influence parasites' lifecycle in vectors as well as in parasites (Gubler et al., 2017; Koenraad, 2016).

The present study focuses on knowledge and practice, and this shows the importance of understanding community prevention of malaria, as well as specific factors such as age, occupational status, and length or duration of residence in a peri-urban community (Adeniyi, 2018). For this study, cognitive factors are often non-climatic factors, which include parasites and vectors, while human host factors, population movement or migration, urbanization, and interruption of control and preventive measures. Improvements in access to prompt treatments as part of community-level interventions for strengthening home management of malaria are currently being promoted in the rural areas of Nigeria. To this end, mothers, being the primary caregivers at home, are key players in treatments of childhood malaria (Roux et al 2018; Sande et al, 2016). However, anecdotal observations revealed that malaria control programs that principally involve mothers are not reaching many rural communities as expected. The limited involvement of mothers in malaria control interventions in rural communities reveals concerns about the efficacy and effectiveness of current prevention strategies in achieving malaria control goals and targets.

Previous studies have shown that mothers' understanding of malaria and related issues is a key factor in achieving effective malaria control in endemic communities (Given the prime roles played by mothers, there is a need to integrate them properly into malaria control and treatment activities (Samadoulougou et al, 2017). However, much of the research currently available only assesses children, mothers, level of income, or disease prevalence, and has not really looked into how common community knowledge and everyday practices influence malaria prevention in certain communities in Abuja. Hence, this study aims to fill this gap by assessing knowledge and practice associated with malaria prevention among households in Abuja. This would provide valuable information and insight into how appropriate authorities and bodies can implement effective community-based malaria strategies or support current ones.

Objectives of the study

The main objective of this study is to investigate the Knowledge and Practices influencing the occurrence of malaria in households of peri-urban communities in Abuja, Nigeria. The specific objectives are to;

1. Assess the level of knowledge of Malaria among households in peri-urban Communities in Abuj
2. Determine the level of practice of malaria prevention among peri-urban Communities in Abuja.



Research questions

1. What is the level of knowledge of Malaria among households in peri-urban Communities in Abuja?
2. What is the level of practice of malaria prevention among peri-urban Communities in Abuja?

METHODS AND DESIGNS

Research Design

The study used descriptive cross-sectional survey research. This method of research design was considered appropriate for the study because it provided information about the research problem and also provided better strategies for addressing the problems of malaria incidences among households in cities like Abuja. This method was also considered more effective than other methods of research design because it answered the research question and enquiry of interest to the researcher and also provided information about phenomena or relationships among phenomena at a fixed point in time (Chris & Diana, 2004).

Study population: The population of this study included residents of peri-urban communities in Abuja

Inclusion criteria: All consenting households' residents who are above the age of 18 years, own the house of residence, and are registered members of the community development association of their local government area.

Exclusion criteria: All non-consenting and individual younger than 18 years will be excluded from the study. All non-registered members of the community development association of the two communities will be excluded from the study.

Description of Study Population Area: The study area was conducted among households in the peri-urban communities of Abuja. These Peri-urban areas are zones of transition from rural to urban land uses located between the outer limits of urban and regional centers and the rural environment. The boundaries of peri-urban areas are porous and transitory as urban development extends into rural and industrial land. Irrespective of how the boundaries move, there will always be peri-urban zones (UNESCO, 2019). For this study, the researcher has selected two peri-urban communities in Abuja, which are namely Abaji and Kuje peri-urban communities in Abuja.

Abaji: The city is the land of the Egbira, Ganagana and Hausa people, the majority are Egbira and Ganagana, the first settlement in Abuja is Egbira and Tiv people before the coming of Usman Danfodio religious war to Northcentral, Abuja South, after the kinship throne won by Egbira people that win the war between them and Tiv people, they become ruling kinship and Allow the Hausa as Imam of the city the name used to be Igabazi (meaning: A territory carved by Abazhi), and is one of the area council in Abuja. The Abaji kingdom, headed by the Ona of Abaji (chairman of the FCT Council of Chiefs), is the oldest traditional institution in the Federal Capital Territory, Nigeria.



Kuje: Kuje is an area council in the Federal Capital Territory in Nigeria, and houses the Local Government Area headquarters. It is about 40 km southwest of Abuja. Presently, Kuchiyako is the most developed area in Kuje. It has an area of 1,644 km² and a population of 97,367 according to the 2006 FCT census.

Sample size and sampling Technique: Sample size was estimated using the Kish-Leslie (1965) formula for quantitative studies. This was calculated based on a similar local study done in Ladoke Akintola University Teaching Hospital, Osogbo, Osun State. There was 60% household study of the incidence of Malaria in Osun State (Adebami, 2016).

$$N = Z^2 P (1-P)/D^2$$

Where,

N=minimum sample size

P =the estimated prevalence of value, 60% in this study.

D = the absolute precision of the study, which is 0.05

Z = area under the normal curve corresponding to 95% confidence interval.

$$=1.96$$

Therefore,

$$N = \frac{(1.96)^2 \times 0.60 (1 - 0.60)}{0.05^2}$$

$$N = \frac{3.82 \times 0.60 \times 0.4}{0.0025}$$

$$N = \frac{0.9168}{0.0025}$$

$$N = 366.72$$

N = 367 households, while 10% attrition rate results in 414 households to be selected for the study

Sampling Technique

The sampling technique to be used in this study is a multi-stage sampling technique. Below are the different stages.

Stage 1: For the first stage, cluster sampling was used. Abaji and Kuje was treated as clusters.

Stage 2: Random sampling using the ballot technique was used among the two communities to determine the households to be selected within each of the Peri-Urban Communities.

Stage 3: Simple random sampling method was used to determine the number of households to be selected for the study.



Instrumentation

The researcher will develop a self-administered 40 item questionnaires focusing on knowledge, and practice of malaria prevention among household residents. The researcher will design the instrument based on the conceptual framework on Health Belief Model to address the research objectives and research questions of the study. The questionnaire will be divided into four (3) sections, which include; socio-demographics characteristics, knowledge of Malaria among households in peri-urban communities in Abuja. This will explore the influence of belief of household residents on the occurrence of malaria in peri-urban communities.

Section A: Demographic Characteristics: This will include socio-demographic characteristics, which are age, marital status, education level, occupation, religion, and ethnicity of household residents.

Section B: Knowledge of Malaria: This will include item questions on knowledge of malaria in the community, and it will be made up of dichotomous questions, reflecting general knowledge of malaria, control methods, and prevention of malaria in the communities. The responses would be either Yes or No.

Section C: Practice of Malaria Prevention: This section will focus on questions of the practice of malaria prevention among households. This section will consist of 10 multiple-choice questions on different practices of malaria occurrence among households. Respondents will be asked to respond to a four (4) point Likert scale format (strongly agree, agree, strongly disagree, disagree).

Method of Data Collection

Data will be collected during the normal meeting period of members of the Community Development Association of households in the two (2) selected Peri-Urban Communities in Abuja. The participants will be served the questionnaire constructed in English language. The questionnaire will be self-administered with guidance from trained assistants who will be trained on the administration of the questionnaire. All correctly filled questionnaires will be returned to the researcher immediately, and they will be verified for accuracy.

Ethical Consideration

Ethical issues are important to be considered in any type of research work. Therefore, a formal approval will be obtained from the Babcock University Health and Research Ethical Committee (BUHREC) to ensure the safety of the participants and regulate the procedure that will be carried out. Therefore, names of the participants will not be included in the questionnaire, confidentiality will be ensured of the household and decision to fill the questionnaire will be voluntary also, their freedom to withdraw from the study will be without penalty.



RESULTS

Demographic Characteristics of Respondents

The table presented in 1 indicated that 47.5% of the respondents were above the age of 36 years, 36% of the respondents were between the ages of 31-35years, 11.7% of the respondents were between the ages of 20-25years while 5.7% are between the ages of 26-30years. The majority of the household respondents 76% are married, 17.4% are single, while 6.0% are widowed. 69.6% of the family settings of the respondents are from monogamous family settings, while 30.4% are from polygamous family settings.

Most of the respondents, 49%, had secondary school education, 27.8% of the respondents had tertiary level of education, 11.8% had primary level of education, while 10.9% had no formal education. 51.4% of the respondents are self-employed, 31.9% of the respondents are traders or artisan while 11.1 are artisans or traders. 45.2% of the respondents earn between 51,000 and 100,000, 47.1% earn above 100,000, while 7.7% of the respondents earn less than 50,000 Naira. The majority of the respondents are Christian by faith, while 41% are Muslim and 2.2% are of other religions. **Table 1 Analysis of Characteristics of Respondents N=385**

| Demographic Characteristics | Frequency | Percentage |
|------------------------------------|-----------|------------|
| Age | | |
| 20-25years | 45 | 11.7 |
| 26-30years | 22 | 5.7 |
| 31-35years | 135 | 35.1 |
| above 36years | 183 | 47.5 |
| <i>Mean Age = 47.1 ± S.D= 13.3</i> | | |
| Marital Status | | |
| Single | 67 | 17.4 |
| Married | 295 | 76.6 |
| Widowed | 23 | 6.0 |
| Family Setting | | |
| Monogamous | 268 | 69.6 |
| Polygamous | 117 | 30.4 |
| Level of Education | | |
| No formal education | 42 | 10.9 |
| Primary education | 45 | 11.7 |
| Secondary school education | 189 | 49.1 |
| Tertiary education | 109 | 28.3 |
| Occupation | | |
| Civil servants | 22 | 5.7 |
| Self-employed | 44 | 11.4 |
| Unemployed | 197 | 51.2 |
| Artisan | 122 | 31.7 |
| Average Income | | |
| less than 50,000k | 30 | 7.8 |
| 51,000 to 100,000 | 174 | 45.2 |
| above 100,000 | 181 | 47.0 |
| Religion | | |
| Christianity | 216 | 56.1 |



| | | |
|--------------------|-----|------|
| Muslim | 161 | 41.8 |
| Other religion**** | 8 | 2.1 |

**** traditional and atheist

Research Question 1: Level of Knowledge of malaria among households

Table 2, presented below, indicated 59.6% of the respondents know that bushy environments increase malaria risk. The majority of the respondents 59.2% reported that their poor waterway sanitation encourage malaria, 79.3% reported that lack of house netting increases malaria risk, 75.1% reported that malaria is not prevented by vaccination alone, 72.2% reported that malaria can be prevented, 73.7% reported that distance to health facilities affects malaria prevention and treatment.

Most of the respondents, 63.6% of the respondents, reported availability of insecticide-treated nets (ITNs) in the community, 33.8% reported that cultural beliefs can affect malaria treatment, and 51.6% reported that different drug choices affect malaria treatment practices.

Table 2: Knowledge of Malaria Prevention and Barriers among Community Residents n=385

| S/N | Knowledge Item | Yes n (%) | No n (%) |
|-----|---|-------------|-------------|
| 1 | Knowledge that bushy environments increase malaria risk | 229 (59.6%) | 156 (40.4%) |
| 2 | Knowledge that poor waterway sanitation encourages malaria | 226 (59.2%) | 159 (40.8%) |
| 3 | Knowledge that the lack of house netting increases malaria risk | 306 (79.3%) | 79 (20.7%) |
| 4 | Knowledge that malaria is not prevented by vaccination alone | 292 (75.1%) | 93 (24.9%) |
| 5 | Knowledge that malaria can be prevented | 276 (72.2%) | 109 (27.8%) |
| 6 | Knowledge that the distance to health facilities affects malaria prevention and treatment | 285 (73.7%) | 100 (26.3%) |
| 7 | Knowledge of the availability of insecticide-treated nets (ITNs) in the community | 244 (63.6%) | 141 (36.4%) |
| 8 | Knowledge that community myths affect malaria prevention and treatment | 261 (68.1%) | 124 (31.9%) |
| 9 | Knowledge that cultural beliefs can affect malaria treatment | 130 (33.8%) | 255 (66.2%) |
| 10 | Knowledge that different drug choices affect malaria treatment practices | 200 (51.6%) | 185 (48.4%) |

Research Question 2: Level of practice of malaria prevention among households

Table 3, presented below, indicates that 32.6% of the respondents reported using the indoor residual spraying, 29.2% reported the use of cleaning of the house, 21.5% reported the use of mosquito repellent devices, while 11.1% reported other preventive measures, 5.6% reported the use of insecticide-treated nets. Most of the respondents 44% reported the use of antimalarial monotherapy, 42.5% reported the use of antimalarial combination therapy, 5.6% reported the use of other malaria therapy. Most of the respondents reported 21.5% utilise



Artemether-Lumefectrine Combination therapy before an appropriate diagnosis of malaria is made, 23.4% reported the use of Fansidar, 27.3% reported the use of local herbs, 11.1% reported the use of quinine, while 16.7% really do not know. The majority of the respondent 73.2% have not heard about malaria vaccination. 64.5% reported not being vaccinated against malaria.

Table 3: Analysis of Practice of Malaria Prevention N=385

| Practice of Malaria Prevention | Categories | Frequency | Percentage |
|--|--|-----------|------------|
| How do you prevent malaria | Use of insecticide-treated nets | 22 | 5.6 |
| | Indoor residual spraying | 126 | 32.6 |
| | House modification and cleaning | 112 | 29.2 |
| | Use of mosquito repellents device | 82 | 21.5 |
| | Others | 43 | 11.1 |
| Which of the malaria therapies do you prefer | Antimalarial monotherapy | 169 | 44.0 |
| | Antimalarial combination therapy | 164 | 42.5 |
| | Antimalarial local herbs | 30 | 8.0 |
| | Others | 22 | 5.6 |
| Drug utilized when diagnosed with malaria | Arthemether-Lumefectrine Combination therapy | 82 | 21.5 |
| | Fansider | 88 | 23.4 |
| | Local herbs | 105 | 27.3 |
| | Quinine | 44 | 11.1 |
| | I really don't know | 66 | 16.7 |
| Have you ever heard of Malaria Vaccination | Yes | 281 | 26.8 |
| | No | 104 | 73.2 |
| Have you ever been vaccinated against Malaria | Yes | 248 | 35.5 |
| | No | 137 | 64.5 |

DISCUSSION OF FINDINGS

Research question one: level of knowledge of Malaria among households in peri-Urban Communities in Abuja

Generally, knowledge can be regarded as what is or can be known by a person. According to the KAP model, knowledge is a set of understandings (Gumicio et al., 2011). It is also an individual's capacity for imagining things and a way of perceiving. Knowledge of a health behaviour is considered to be beneficial; however, it does not automatically translate to practice (Gumicio et al., 2011). The current study assesses knowledge because it is an



important factor that affects how people and communities prevent malaria and respond to the disease. The study found that overall knowledge about malaria and its prevention was moderate or medium. Specifically, several important knowledge items or questions were answered correctly and had high responses. For instance, many participants know that house netting reduces malaria risk. This could mean that a lot of the interventions on insecticide-treated nets (ITNs) have been effective in reaching many residents.

However, Knowledge does not equal practice. This reinforces what Esomonu et al. (2021) and Wakai et al. (2025) found in their study. The researchers found that many of the respondents did not use ITNs even though they owned one. Some responses showed an important gap in knowledge. For instance, only about Six in ten respondents knew that environmental factors such as a bushy environment could cause or increase the risk of malaria. The overall medium knowledge about malaria preventive practices in this study is similar to that reported by Umwangange et al. (2023) and in contrast to the result reported in the study by Okafor et al. (2025), where they reported high knowledge of malaria and its prevention among participants. In hindsight, high knowledge of ITNs is good, but moderate knowledge of environmental risk factors is a concern and shows the need for more community public health interventions.

Research Question Two: Level of Practice of Malaria Prevention

Practices, according to the KAP model, are the observable actions of an individual in response to a stimulus. This is a concept that deals with actions or behaviour (Gumicio et al., 2011). The current study assessed practices of its participants because just having adequate knowledge about malaria is not always sufficient and does not automatically translate to people acting on that knowledge (Munsense & Tsoka-Gwegweni, 2025). Thus, assessing practices provides insight into what community members in the study usually do to prevent malaria in their everyday life, such as using insecticide-treated nets, environmental management, and so on. Findings from the present study showed that most of the respondents had a good level of practice of preventing malaria among the households in Peri-Urban Communities in Abuja. The result is similar to the findings of Ezaka et al. (2021), who found that malaria prevention among their respondents was good and involved practices or different preventive measures like the use of ITN, the use of insecticidal spray, and clearing breeding sites around their homes.

The result is also in tandem with the findings of Dilamini et al. (2019), showing the relationship between total, average rainfall, and malaria outbreaks; therefore, ensuring a clean environment is a good practice towards preventing malaria infection. The study also revealed gaps in malaria prevention practices. For example, some respondents stated that they still used antimalaria monotherapy and local herbs as a cure for malaria, which is not recommended. Some participants even stated that they take medication without a proper diagnosis. These findings reveal important safety and quality issues or concerns. The WHO treatment guidelines warn that these practices can increase the risk of treatment failure, drug resistance, and long or delayed recovery (WHO, 2025). Overall, even though practices were high, there is still a need for malaria interventions that improve practices through community education, access to good diagnostic testing, and regulation of antimalarial drug use to make sure the good and correct practices observed in the study population do not slip into poor ones.



CONCLUSION AND RECOMMENDATION

Malaria is still a major public health concern because it's closely related to living conditions, human behaviour, and their communities. The findings from the current study revealed that even though knowledge of malaria prevention among the study population was moderate, practices were moderate. This shows that a lot of residents exhibit a lot of preventive practices and actions, even though their knowledge or understanding of the disease and its prevention is not sufficient or complete. These findings suggest that interventions aimed at changing behaviour and community experience might be important in malaria control among the respondents. However, it is important to make sure that knowledge about preventive practices is improved, correct, and very effective. Hence, the researchers recommend that government and non-governmental organizations alike should aim to improve social mobilization, medication, access to insecticide-treated nets, and information about malaria vaccination. Also, interventions such as policy advocacy and health education programs should be implemented to support malaria prevention practices in peri-urban communities and regions in the country.

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