KNOWLEDGE, ATTITUDE, PERCEPTION AND PRACTICE INFLUENCING THE OCCURRENCE OF MALARIA IN HOUSEHOLDS OF PERI-URBAN COMMUNITIES IN ABUJA

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ABSTRACT: *Malaria is unique among diseases because its roots lie so deep within human communities. Malaria is a threat to more than 40% of the world's population. The role of household residents and communities cannot be overemphasized. The study examined the knowledge, attitude and practice influencing the occurrence of malaria in households of Peri-Urban Communities in Abuja. The study adopted a cross-sectional survey research that is guided by the Health Belief Model using quantitative methods of data collection. The study employed a multi-staged sampling technique to select 414 households in Abaji and Kuje peri-urban communities in Abuja. However, 385 household residents of peri-urban communities participated in the study. Research questions and hypotheses were formulated and were tested using the SPSS version 27 to compute descriptive and inferential statistics which were tested at a 5% level of confidence. Majority of respondents 47.5% are above the age of 36years with the mean age of 47.1± 19.8. findings revealed that 59.9% of the residents had good level of knowledge of malaria among households residents in peri-urban communities in Abuja mean of 16.3 ± 4.07, 46.7% of the households residents had good level of attitude towards malaria prevention in the peri-urban communities in Abuja 21.9 ±Std. Dev = 2.96 more than forty percent of the participants had a good level of practice of malaria prevention among households residents of peri-urban communities in Abuja Mean 21.9± .96. From the test of hypothesis, the first hypothesis showed there was a significant relationship between knowledge level of households and attitude towards occurrence of Malaria in Peri Urban Communities in Abuja (R=0.803, p< 0.000). The second hypothesis indicated that there was a significant relationship between demographic characteristics (Age, marital status, family type, level of education and religion) and attitude towards the occurrence of Malaria in Peri Urban Communities in Abuja (p< 0.000) The third hypothesis showed that both perceived susceptibility and perceived barriers was significant predictor of knowledge of malaria occurrence among household residents of Peri-Urban communities. The calculated R Square and p-value for perceived susceptibility and barriers is: 0.716 which signifies 71.6% contribution to knowledge of occurrence of malaria among household residents of Peri-Urban communities*

(p=0.000) In conclusion, the study established that there was a good level of knowledge and attitude about malaria while there was high perceived seriousness of malaria while there was low level of perceived barrier toward malaria. It is therefore important for a development of social, communication and behavior change on prevention of malaria occurrence among household residents in communities. Government should also provide malaria prevention tools like ITN, drugs and vaccination for residents of peri-urban communities.

KEYWORDS: Attitude, Knowledge, Practice, Malaria, Occurrence, Peri-Urban Communities

INTRODUCTION

Malaria is a major impediment to health in sub-Saharan Africa, and the greatest toll occurs among children under the age of five years and pregnant women. It remains one of the top three biggest causes of death among young children in Africa (Bryce et al., 2005; WHO, 2006). Seasonal variation is exhibited in the intensity of malaria in Nigeria, being usually higher during the rainy season (Ashikeni, 2019). Malaria is a severe public health problem in developing countries, which is a complex and fatal disease caused by four species of Plasmodium parasites and transmitted by different numbers of vectors. A female Anopheles mosquito, while feeding on humans, injects sporozoites of malarial parasites into the bloodstream. The sporozoites travel to the liver and invade liver cells. Sporozoites remain dormant or grow, divide, and produce haploid forms, called merozoites over a period of 15-16 days (WHO, 2014).

Malaria is unique among diseases because its roots lie so deep within human communities. The most dangerous vectors of malaria thrive mainly within the village environment. Logically, the adult vectors remain close to their nocturnal source of human blood, and the developmental stages of these mosquitoes exploit the nearby accumulations of water that form where people have disturbed the natural drainage. The borrow pits made in the course of mud-brick construction, tyre tracks, and hoof-prints, for example, promote vector abundance in much of sub-Saharan Africa.

Malaria then becomes a fixture of village life, exacting a continuous toll on the health of its host population while generating lethal outbreaks among visitors (Kwiatkowski, 2018; Adeniyi, 2018). As a result, malarious communities tend to be isolated, with their economies frozen at a subsistence level. Productivity is impaired, and the societies that develop in such sites tend to resist change. Affected communities adapt to their isolated state by developing behavior patterns and social systems that help their members adjust to this reality. Malaria is a threat to more than 40% of the world's population, and out of the more than 300 million acute cases each year between 1.1 and 2.7 million people die each year (Roll Back Malaria 2019; WHO, 2018). The vast majority of malaria cases (90%) are in sub-Saharan Africa, where malaria constitutes 10% of the total disease burden. Children under five and pregnant

women are most at risk, with Plasmodium falciparum being "the main cause of severe clinical malaria and death" (TDR/WHO, 2017; WHO, 2019). Malaria constitutes nearly 25% of all childhood mortality in Africa (WHO, 2018). According to the United Nations Children's Fund (UNICEF), (2019) malaria's cost to human and social well-being is enormous. It is a major cause of poverty and poverty exacerbates the malaria situation" (UNICEF, 2019). So too is the economic loss, which in Africa alone is estimated at more than $2 billion annually and can extremely become a burden on houses (WHO, 2018).

The failure of previous initiatives can frequently be blamed on the lack of adequate consideration given to the social and behavioral aspects among households with respect to the increasing prevalence of malaria. (Adebayo, 2018). While there is agreement that malaria is linked with household poverty, there is some debate as to the primary direction of this relationship (Adebayo, 2018; WHO, 2018). Evidences have suggested that the volume of growing gap between rich and poor, the increase in marginalization, and the swelling numbers of people living below an absolute poverty line of $1/day as the major causes of concern, even though we also recognize that malaria morbidity and mortality may lead to poverty (Kwiatkowski, 2018; Adeniyi, 2018). It is clear that the health of a burgeoning group of people will not improve unless household poverty and expanding inequality are reduced and this includes the effort to control malaria on a large scale. The larger issues of poverty and inequality must be addressed if we are to be taken seriously in our quest to tackle malaria. But nothing can be accomplished without positioning the problem in social, economic, and political contexts as well as in a cultural one (Sijuade, 2018; Adeniyi, 2018)

The knowledge, attitude and practice of the residents includes the behaviors of household and residents which is often influenced by social, cultural, economic, and political factors – is clearly related to health, including the risk for infectious diseases like malaria (Blanford et al., 2019). Whether it is intentional or not, human behavior affects health-promoting and disease-preventing activities, in some instances increasing risk and in others reducing it. Blanford et al. (2019) reported that unwittingly facilitated the spread of infectious dis-eases through culturally coded patterns of behaviour or through changes in the crucial relationship among infectious disease agents, their human and animal hosts, and the environments in which the host-agent interaction takes place (Blanford et al., 2019). Beyond human behaviour as such, prevalent cognitive factors – including knowledge, age, occupation and other individual characteristics – also con-tribute to shaping how humans act, and therefore must be seen, in and of themselves, as epidemiological predictors of health and disease patterns. Although people's behaviour may increase malaria risk, to change such behaviour is not easy. Indeed, there are many reasons why particular behaviours exist and they often are tied to considerable benefits in areas quite distinct from health (Blanford et al., 2019; Adeniyi, 2018)

However, in the context of malaria elimination, while malaria prevalence continues to decline, it is necessary to target asymptomatic individuals who may carry gametocytes (Bousema & Okell, 2018). While little is known about the gametocytaemia reservoir(s) in the DRC, even less is known about what group would play an important role of transmission, given potentially varying levels of gametocytaemia. P. falciparum causes a variety of pathophysiological and potentially lethal con-dictions in children that include severe malarial anaemia and fits, prostration, and hyperparasitaemia. Additional complications include splenomegaly, and renal and pulmonary pathology. A wide range of serious neurological sequelae has been reported. About 80% of deaths in adults are due to cerebral malaria (Institute of Medicine, 2016). Malarial anaemia is an important contributor to P. falciparum-

associated morbidity and mortality. (MacDonald, 2015; MacDonald & Goeckel, 2016). Therefore, the purpose of this study is to investigate Knowledge, Attitude and Practices Influencing the Occurrence of Malaria in Households of Peri Urban Communities in Abuja, Nigeria

Objective of the Study

The main objective of this study is to investigate the Knowledge, Attitude 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 household in Peri Urban Communities in Abuja

2. examine the attitude of households towards Malaria among Peri Urban Communities in Abuja

3. determine the level of practice of malaria prevention among Peri Urban Communities in Abuja

4. examine the perceived susceptibility influencing occurrence of malaria among household of the Peri-Urban communities in Abuja

5. Assess the perceived barriers influencing occurrence of malaria among household of the Peri-Urban communities in Abuja

6. Determine the relationship between knowledge level of household and attitude towards occurrence of Malaria in Peri Urban Communities in Abuja

7. assess the relationship between demographic characteristics (Age, marital status, family type, level of education and religion) and attitude towards the occurrence of Malaria in 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 attitude of households towards Malaria among Peri Urban Communities in Abuja?

3. What is the level of practice of malaria prevention among Peri Urban Communities in Abuja?

4. What is the perceived susceptibility influencing occurrence of malaria among households of the Peri-Urban communities in Abuja?

5.   What are the perceived barriers influencing occurrence of malaria among households of the Peri-Urban communities in Abuja?

6.   What is the relationship between the knowledge level of a household and attitude towards occurrence of Malaria in Peri Urban Communities in Abuja?

7.   assess the relationship between demographic characteristics (Age, marital status, family type, level of education and religion) and attitude towards the occurrence of Malaria in Peri Urban Communities in Abuja

Hypotheses

The following research hypotheses were tested for the study;

$H0_1$: There is a significant relationship between knowledge level of household and attitude towards occurrence of Malaria in Peri Urban Communities in Abuja

$H0_2$: There is no significant relationship between demographic characteristics (Age, marital status, family type, level of education and religion) and attitude towards the occurrence of Malaria in Peri Urban Communities in Abuja

$H0_3$: There is no significant predictor of health belief (perceived susceptibility and barriers) on the knowledge of malaria occurrence among households of Peri-Urban communities of Abuja.

METHODS AND DESIGNS

Research Design

The study used a 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 of addressing the problems of malaria incidences among households in cities like Abuja (Chris & Diana, 2004).

Study Population: The population of this study will include residents of Peri Urban Communities in Abuja. The group of individuals in a study. In a clinical trial, the participants make up the study population. Inclusion criteria: All consenting household residents who are above the age of 18years, 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 individuals 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 will be 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 the purpose of this study, the

researcher has selected two Peri Urban Communities in Abuja which are namely Abaji and Kuje Peri Urban communities in Abuja. The rationale for the selection was because, people with sufficient resources will normally rent shops or offices to carry out their trade or business. **Abaji**: The city is the land of the Egbira, Ganagana and Hausa people, the majority are Egbira and Ganagana, the first settlement in Abuja are 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 FCT Council of chiefs) is the oldest traditional institution in Federal Capital Territory, Nigeria. The land was under the old Koton Karfe kingdom but agreed to join the federal capital territory for developmental purposes. It has an area of 992 km^2 and a population of 98,000 as at 2016. It has a proposed Abuja University of Technology (AUTA) which is to be commissioned soon. Nestle bottling company is also situated in the Area council, there is a reasonable supply of electricity and the town is surrounded by the all-season rivers (Azako, Ashara and Ukya). The people are civilized and when it comes to education they are not left behind. The area council consist of ten wards which are: Nuku/Sabon Gari/Manderegi Abaji Central Abaji North East Abaji South East Gurdi Rimba/Ebagi Agyana/Pandagi Gawu Yaba Alu/Mamagi. Abaji shares a boundary with three states in Nigeria which are Nasarawa, Niger and Kogi states.

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 as at the FCT 2006 census. Kuje is a busy market city with a range of roadside stores selling pharmaceuticals, provisions, building materials, ironmongery, tools, phone cards, music CDs. It is also home to several "independent" petrol stations which are unpopular because of the apparent inaccuracy of the calibration of their pumps.

Sample size and sampling Technique: Sample size is estimated using the Kish Leslie (1965) formula for quantitative studies. This will be 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). The total number of selected household residents are five hundred and sixty-five (565) as shown in table 2.1 below.

$$N = \frac{Z^2\,P\,(1-P)}{D^2}$$

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 normal curve corresponding to 95% confidence interval.

        =1.96

Therefore,

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

$$N = \frac{3.92 \times 0.60 \times 0.4}{0.0025}$$

$$N = \frac{0.9408}{0.0025}$$

$$N = 376.32$$

N   =   376 households while 10% attrition rate is 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 will be used. Residents of households will be viewed as a single cluster within the peri-urban communities

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

Stage 3: Purposive sampling method to size will be used to determine the number of households to be selected for the study.

Instrumentation: The researcher will develop self-administered 36 item questionnaires focusing on knowledge, attitude and practice influencing the occurrence of malaria 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 (4) sections, they include; socio-demographics characteristics, knowledge, attitude and practice of prevention of malaria among households in Peri Urban Communities in Abuja. This will explore the influence of belief of households 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 households residents.

Section B: Knowledge of Malaria: This will include item questions on knowledge on Malaria in the community and it will be made up of 5-item questions, reflecting general knowledge of malaria, control methods and prevention of malaria in the communities. This will be in the form of a multiple choice, objective style, and yes or no questions (closed ended).

Section C: Attitude towards Malaria: This will include item questions on attitude towards occurrence of Malaria in the community and it will be made up of 5-item questions. The

questions will reflect the general attitudes towards malaria occurrence. This will be in the form of a multiple choice, objective style, and yes or no questions (closed ended).

Section C: Practice of Malaria Prevention: This section will focus on questions of practice of occurrence malaria prevention among households. This section will consist of 10 item 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).

Section D: Health Belief Model of malaria prevention: This section will reflect a health belief model for prevention of malaria among households in the Peri-Urban Communities and it is made up of 10-item questions reflecting on different cognitive factors causing the incidences of Malaria. This was also in the form of four (4) Likert scale formats (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. Approval to conduct the study will be obtained by the leaders of the Community development association of two-selected Peri-Urban communities in the city of Abuja. Data entry will be done using SPSS statistical package version 28, followed by data cleaning, coding, and editing for final analysis. Frequency tables for all questions will be used to identify missing information, detecting entry errors, and checking for inconsistencies such as outliers. The statistical analysis will be done through descriptive and inferential analysis. The selected socio-demographic variables will be analyzed using the descriptive analysis. Knowledge, attitude and practice questions will be analyzed using descriptive statistics involving rating scale, where aggregated mean score will be derived and categorized accordingly. In inferential analysis; the Pearson Correlation test at 5% (0.05) level of significance will be used to examine the relationship between the dependent variable (knowledge and attitude influencing the practice of the malaria incidence of Malaria) and the independent variables (practice of the incidence of Malaria), including test of hypotheses. Multiple regression analysis will be used in testing of hypothesis 1, 2, and 3

RESULTS

Demographic Characteristics of Respondents

From the table presented in 4.1.1 indicated that 47.5% of the respondents above the age of 36years, 36% of the respondents are between the ages of 31-35years, 11.7% of the respondents are between the ages of 20-25years while 5.7% are between the ages of 26-30years. Majority of the participants 76.1% are married, 17.4% are single while 6.5% are widowed. 69.6% of the family setting of the respondents are from the monogamous family settings while 30.4% are from polygamous family setting. Most of the respondents, 49.5% 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. 51.2% of the respondents are self-employed, 31.9% of the respondents are traders or artisan while 11.1 are civil servants. Majority of the respondents are Christian by faith while 41.5% are Muslim and 2.2% are other religion. The result of the analysis is therefore analyzed as presented below:

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 36 years	183	47.5
Mean Age = 47.1± S.D= 19.8		
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	44	11.4
Unemployed	22	5.7
Self-employed	197	51.2
Artisan	122	31.7
Religion		
Christianity	216	56.1
Muslim	161	41.8
Other religion****	8	2.1

Household Environmental factors influencing Malaria occurrence

Table 4.2.1 presented below indicated that a busy environment could cause malaria occurrence, 89.9% also reported having a water locked area could predispose residents to Malaria occurrence, 81.2% reported not using insecticide treated net, 73.2% also reported susceptible blood group pose residents at risk of Malaria occurrence. 86.5% of the household respondents reported immigration from other countries as one of the lead causes of malaria occurrence.

Research Question 1: Level of Knowledge of malaria among households

Table 4.1.3 presented below indicated 79% of the respondents have heard above malaria or Iba in most the languages in Nigeria i.e Yoruba, Igbo and Hausa. Majority of the respondents 30.9% reported their friends and family as the main source of information about Malaria, 24.4% reported Hospital as main source of information, 16.4% reported Seminars on health helped them so much, 15% reported community meeting was source of information about Malaria, 13.3% reported Radio/Television. 6.8% of the respondents reported fever/high body

temperature, 13.5% reported Headaches, 11.1% reported dizziness, 11.1% reported convulsion as main sign and symptoms of malaria, 5.6% reported lethargic, 15% reported vomiting while 10.6% reported weakness and 4.1% reported other signs and symptoms of malaria. Majority of the households respondents reported 22.2% as one of the main causes of malaria, 16.7% reported stress, 21.7% reported busy environment as one of the main causes of malaria, 11.8% reported bite of infected female anopheles mosquitoes, 8.7% reported weakness of the body while 2.2% reported plasmodium parasite as a cause of malaria. In terms of controlling Malaria, 41.0 % of the respondents reported sleeping under the treated net can be used for controlling mosquitoes, 32.7% reported taking medication regularly, 15% reported cleaning the surroundings while 11.4% reported other means of mosquitoes like draining stagnant water for the control of malaria in the households.

Table 4.3.1 Analysis of Knowledge of Malaria   N=385

Knowledge of Malaria	Categories	Frequency	Percentage
Have you ever heard of Malaria or Iba in Yoruba or Igbo or in Hausa?	Yes	307	79.7
	No	78	21.0
Source of information about Malaria	Community meetings	57	15.0
	Radio/television	52	13.3
	Hospital	96	24.4
	Friends and family	116	30.9
	Seminars on health	64	16.4
Signs and symptoms of malaria	Headaches	52	13.5
	Fever/High body temperature	104	26.8
	Dizziness	44	11.1
	Loss of appetite	8	2.2
	Convulsion	44	11.1
	Lethargic	22	5.6
	Vomiting	56	15.0
	Weakness	40	10.6
	Others	15	4.1
Major cause of malaria	Germs	88	22.2
	Plasmodium	65	16.7
	Bushy environment	84	21.7
	Stress	66	16.7
	Bite of infected female anopheles mosquitoes	43	11.8
	Weakness	31	8.7
	Plasmodium parasites	8	2.2

How Can Mosquitoes be controlled?	Cleaning the surrounding	57	15.8
	Sleeping under treated net	158	41.0
	Taking medication regularly	126	32.7
	Other means (Draining stagnant water	44	11.4

Research Question 2: Attitude of households towards malaria

Table 2 presented below indicated that 30.2% of the respondents agreed that anyone can be infected with malaria. Majority of the respondents 44.7% disagreed that Only children and expectant women have the risk of contracting malaria. Also, most of the respondents agreed that malaria was a life-threatening disease. 45.2% agreed that during night time, sleeping under mosquito nets can prevent malaria. 33.1% of the respondents agreed that working and sleeping overnight in the garden or forest can increase the threat of getting malaria. 40.6% of the respondents agreed that it can be dangerous not to take malaria medicine completely. Also, 32.4% of the respondents strongly agreed that they feel like they should visit the health centers to get their blood tested if they suspect malaria. 37.9% of the respondents agreed that recovering from malaria without getting treatment can be possible.

Table 2 Analysis of Attitude towards malaria   N= 414

Attitude towards malaria	Strongly disagree	Disagree	Agree	Strongly Agree
Anyone can be infected with malaria	86(20.8%)	102(24.6%)	125(30.2%)	101(24.4%)
Only children and expectant women have the risk of contracting malaria	185(44.7%)	65(15.7%)	86(20.8%)	78(18.8%)
Thinks malaria as a life-threatening disease	32(7.7%)	146(35.3%)	147(35.5%)	89(21.5%)
During night time, sleeping under mosquito net can prevent malaria	22(5.3%)	72(17.4%)	187(45.2%)	133(32.1%)
Working and sleeping overnight in the garden or forest can increase the threat of getting malaria	86(20.8%)	92(22.2%)	137(33.1%)	99(23.9%)
It is dangerous not to take malaria medicine completely	56(13.5%)	78(18.8%)	168(40.6%)	112(27.1%)
I feel like I should visit the health centers to get my blood tested if I suspect malaria	86(20.8%)	102(24.6%)	92(22.2%)	134(32.4%)
Recovering from malaria without getting any treatment is possible	69(16.7%)	53(12.8%)	157(37.9%)	135(32.6%)

Research Question 3: Level of practice of malaria prevention among households

Table 3 presented below indicated that 32.6% of the respondents reported to use the indoor residual spraying, 29.2% reported the use of cleaning of the house, 21.5% reported the use of mosquitoes 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 Arthemether-Lumefantrine Combination therapy before 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. 73.2% of the respondents have not heard about malaria vaccination. 64.5% reported to have not been 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 repellent device	82	21.5
	Others	43	11.1
Which of the malaria therapy 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 of malaria	Artemether-Lumefantrine 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 of against Malaria	Yes	248	35.5
	No	137	64.5

Research question 4 and 5 Health Belief on Malaria Prevention (Perceived susceptibility and Perceived seriousness influencing occurrence of malaria among households)

Table 4.6.1 presented belief indicated 33.8% of the respondents agreed that a bushy environment can lead to malaria in the community. 45.7% of the respondents also agreed that the ability to clean water-ways could promote malaria in the community. 38.2% of the respondents agreed that not netting the house reinforces the incidence of malaria in the community. 43.2% of the respondents agreed that malaria is common because the majority of community residents have not been vaccinated. Also 43.2% of the respondents agreed that their family believes that malaria cannot be prevented.

Based on the perceived barriers of the households, most of the respondents 37.7% agreed that proximity or distance to healthcare professionals is a significant barrier to malaria treatment and prevention. 34.1% of the respondents agreed that there is no primary health care centre to provide Insecticide treated net (ITN). Most of the respondents also agreed that access to malaria treatment and prevention is scarce because of the myths of community residents. 42.8% of the respondents disagreed that malaria treatment is against the laws and customs in the family also, 32.1% of the respondents disagreed that family members have different drugs they prefer for malaria treatment and prevention.

Table 4 Analysis of Health Belief on Malaria Prevention N=385

Perceived seriousness	Strongly disagree	Disagree	Agree	Strongly Agree
Bushy environment cause lead to malaria in the community	104(26.8%)	52(13.5%)	130(33.8%)	99(25.8%)
In ability to clean the water-ways could encourage malaria in the community	44(11.1%)	115(29.7%)	174(45.7%)	52(13.5%)
Not netting the house reinforces the incidence of malaria	16(4.3%)	63(16.4%)	148(38.2%0	158(41.1%)
Malaria is common because majority of community resident have not been vaccinated	50(13%)	43(11.8%0	167(43.2%)	125(31.9%)
My family belief that malaria cannot be prevented	43(11.1%)	66(16.7%)	166(43.2%)	110(29%)
Perceived Barriers				
Proximity or distance to healthcare is a major barrier to malaria treatment and prevention	40(10.6%)	60(15.7%)	145(37.7%)	140(36%)
There is no primary health care centre to provide Insecticide treated net (ITN)	60(15.7%)	81(20.8%)	130(34.1%)	114(29.5%)
Access to malaria treatment and prevention is scare because of myths of community residents	80(20.8%)	44(11.1%)	141(36.5%)	120(31.6%)
Malaria treatment is against the laws and customs in my family	366(42.8%)	89(23.2%)	38(9.9%)	92(23.9%)
Family members have different drugs they prefer for malaria treatment and prevention	62(16.2%)	123(32.1%)	111(28.7%)	89(22.9%)

Test of hypothesis

Hypothesis One:

H_1 -There is no significant relationship between the knowledge level of the household and attitude towards occurrence of Malaria in Peri Urban Communities in Abuja.

The table (4.7.1) below showed a significant relationship between knowledge level of the household and attitude towards occurrence of Malaria in Peri Urban Communities in Abuja. The calculated p-value and revealed occurrence of Malaria in Peri Urban Communities in Abuja. The calculated p-value and revealed that knowledge level of household and attitude were significant towards the occurrence of malaria in Peri Urban Communities in Abuja. Therefore, by this the findings the null hypothesis is hereby rejected, which states that there was a significant relationship between knowledge level of household and attitude towards occurrence of Malaria in Peri Urban Communities in Abuja

Research Question 6: Relationship between knowledge of level of household and attitude towards occurrence of malaria

Table 5: Correlation between knowledge level of household and attitude towards occurrence of Malaria in Peri Urban Communities in Abuja

		Attitude towards malaria .
Knowledge	Pearson correlation	**0.803**
	Sig. (2-tailed)	0.000
	N	**414**

**. Correlation is significant at the 0.01 level (2-tailed).

Hypothesis two:

H_2 -There is no significant relationship between demographic characteristics (Age, marital status, family type, level of education and religion) and attitude towards the occurrence of Malaria in Peri Urban Communities in Abuja.

The table (4.7.2) showed significant relationship between demographic characteristics (Age, marital status, family type, level of education and religion) and attitude towards the occurrence of Malaria in Peri Urban Communities in Abuja. The calculated p-value and revealed that all demographic characteristics (Age, family type, religion, marital status and level of education) were significantly related with attitude towards the occurrence of malaria among the households in peri-urban communities are p< 0.05.

Research Question 7: Relationship between demographic characteristics and attitude towards the occurrence of malaria

Table 6: Cross Tabulation showing relationship between demographic characteristics (Age, marital status, family type, level of education and religion) and attitude towards the occurrence of Malaria in Peri Urban Communities in Abuja

Demographic characteristics	Level of Attitude			Total	R
	Good	Moderate	Poor		(p-value)
Age					
20-25years	23	18	12	45	0.733
	10.9%	12.2%	13.5%	11.8%	0.02**
26-30years	11	7	5	22	
	5.7%	4.7%	6.8%	5.6%	
31-35years	78	50	21	135	
	40.6%	33.8%	28.4%	36.0%	
Above 36 years	82	73	38	183	
	42.7%	49.3%	51.4%	46.6%	
Marital Status					
Single	32	25	15	67	0.514
	16.7%	16.9%	20.3%	17.4%	0.193
Married	144	116	55	295	
	75.0%	78.4%	74.3%	76.1%	
Widowed	16	7	4	23	
	8.3%	4.7%	5.4%	6.5%	
Family setting					
Monogamous	128	114	46	268	0.861
	66.7%	77.0%	62.2%	69.6%	0.001**
Polygamous	64	34	28	117	
	33.3%	23.0%	37.8%	30.4%	
Level of education					
No formal education	25	15	5	42	0.738
	13.0%	10.1%	6.8%	10.9%	0.000**
Primary education	23	15	11	45	
	12.0%	10.1%	14.9%	11.8%	
Secondary school education	83	87	35	189	
	43.2%	58.8%	47.3%	49.5%	
Tertiary education	61	31	23	109	
	31.8%	20.9%	31.1%	27.8%	
Religion					
Christianity	101	92	40	216	0.406
	52.6%	62.2%	54.1%	56.3%	0.091
Muslim	88	52	32	161	
	45.8%	35.1%	43.2%	41.5%	
Atheist	3	4	2	8	
	1.6%	2.7%	2.7%	2.2%	

**. Correlation is significant at the 0.05 level (2-tailed).

H3: There is no significant predictor of health belief (perceived susceptibility and barriers) on the knowledge of malaria occurrence among households of Peri-Urban communities of Abuja.

The table (4.7.3) shows the regression square and p-value. Employing a 0.05 criterion of statistical significance, none of the variables had significant effects with the constant. The calculated R Square and p-value for perceived susceptibility and barriers is: 0.716 which signifies 71.6% contribution to knowledge of occurrence of malaria among households of Peri-Urban communities. The S.E for both perceived susceptibility and barriers are 0.073 and 0.124 respectively. Hence, both perceived susceptibility and perceived barriers was a significant predictor of knowledge of malaria occurrence among households of Peri-Urban communities.

Table 8: Regression Model Results

	Knowledge of Malaria Occurrence				
	Unstandardized Coefficients		Standardized Coefficients	Sig.	R-square
	β	Std. Error	Beta		
(Constant)	2.536	1.587		.000	0.716
Perceived seriousness	.787	.173	.506	.000	
Perceived Barriers	.343	.124	.016	.000	

DISCUSSION OF FINDINGS

Research question one: level of knowledge of Malaria among household in Peri Urban Communities in Abuja

The result of research question one indicated that more than half of the households 59.9% had good knowledge of malaria, 26.1% had a fair level of knowledge about malaria while 14% of the respondents had low level of knowledge about malaria. The result corroborates with the findings of Idowu et al. (2019) that heads of houses have the commitment of protecting their siblings and close family relations, therefore, their general level of knowledge is often good.

Research Question two: Level of Attitude toward Malaria

The result of research two showed that 46.4% of the respondents had good attitude towards prevention of malaria in the household in peri-urban communities in Abuja, 35.7% reported moderate attitude while 17.9% had poor attitude towards malaria prevention. The result of the analysis in tandem with the findings of Ani, (2017) that there are generally good attitudes towards malaria occurrence in rural communities where there is paucity of resources in Nigeria. The result corroborates with the findings of Cheng, (2019) that residents of peri-urban communities malaria can be life-threatening and sleeping under the net to prevent mosquitoes is very important for residents in peri-urban communities. The result also supported the findings of malaria prevalence in school children nearest the Lake shore was shown to be over 90%, whereas in those at a distance only one kilometer further away it was less than 70% (Sijuawade, 2018).

Research three: Level of Practice of Malaria Prevention

The result of research question three indicated that most of the respondents 42.5% had a good level of practice of preventing malaria among the households in Peri-Urban Communities in Abuja while 30.2% reported moderate level of practice while 27.3% had poor practice of malaria prevention. The result is in tandem with the findings of Samadoulougou, et al, (2017) practicing malaria prevention involves the use of different preventive measures which also includes the use of ITN, taking appropriate drugs and clearing bushes around. The result is also in tandem with the findings of Dilamini et al. (2019) explaining the associations between total, average rainfall and malaria outbreaks therefore, ensuring a clean environment is a good practice towards preventing malaria infection.

Research Question four: Level of Health Belief of Malaria among households in Peri Urban Communities in Abuja

The result of research question four indicated that Most of the respondents, most of the respondents 48.1% had high level of susceptibility to malaria while 35.7% had average level of susceptibility and 16.2% had low level of susceptibility. For the perceived barriers, most of the respondents had 38.2% low level of barrier experience for malaria prevention, 31.6% had average level of barrier and 30.2% reported high level of barrier to malaria prevention in the Peri Urban communities of Abuja. The result of the analysis in tandem with the findings of Onyeneho (2016) makes similar observations based on a study in Imo state that heads of households (as caretakers) appeared not to easily recognize malaria among their residents unless told by health workers. Similar study was reported by Omonijo et al. (2018) stated that some of the environmental threats/ risks are related to climatology, as such the need to understand the multifaceted interrelationships between atmosphere and the various environmental hazards.

Hypothesis one: The result of hypothesis one showed that there was a significant relationship between knowledge level of the household and attitude towards occurrence of Malaria in Peri Urban Communities in Abuja. The result of the analysis is consistent with the findings of Garba et al. (2016) that knowledge is key in the prevention and protection of residents in riverine and peri-urban communities of Nigeria. Similar findings were reported by Ukaegbu et al. (2018) that there is a significant correlation between knowledge and attitude towards malaria prevention in peri-urban communities in developed cities like Enugu.

Hypothesis two: The result of hypothesis two indicated that there was a significant relationship between demographic characteristics (Age, marital status, family type, level of education and religion) and attitude towards the occurrence of Malaria in Peri Urban Communities in Abuja. The result corroborates with the findings of Ferrari, (2018) that demographic characteristics of household residents is associated with general level of attitude towards the occurrence of malaria in rural communities where there is paucity of resources. The result is also supported with the findings of Adejumo, (2019) that lack of Information on the risk factors associated with the disease helps to understand the changing epidemiology over time and how different factors such as the application of interventions could be influenced.

Hypothesis three: The result of hypothesis three showed that there was a significant predictor of health belief (perceived susceptibility and barriers) on the knowledge of malaria occurrence among households of Peri-Urban communities of Abuja. The result is consistent with that of Adedotun, (2010), knowledge about signs and symptoms of malaria is relatively high with most respondents indicating awareness of key symptoms including raise in temperature/hot body followed by other symptoms like vomiting, loss of appetite and restlessness. A study done by Adedotun, (2018) in Oyo indicated that caregivers had a good understanding of how to recognize malaria, with 91% reporting high body temperature, 50% headache, 25% body pain, 23% chills, 45% vomiting and 74% poor appetite.

CONCLUSION AND RECOMMENDATION

Malaria is unique among diseases because its roots lie so deep within human communities. The most dangerous vectors of malaria thrive mainly within the village environment. There is a need for behavior communication change on prevention of malaria occurrence among households in communities. There is a need for the provision of malaria prevention tools like ITN, drugs and vaccination for residents of peri-urban communities. Government and non-government organizations should increase the social mobilization on the prevention of malaria among residents of peri-urban communities. Advocacy tools should be developed to increase awareness towards prevention of malaria among peri-urban communities and its environs.

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