



PERCEPTION TOWARDS MALARIA IN PERI-URBAN COMMUNITIES IN ABUJA, NIGERIA

KAREN CHIDERA EZE^{1*} AND OYINLOLA OLUWAGBEMIGA²

¹Department of Public Health and Allied Health, Babcock University, Ilishan-Remo, Nigeria.

²Department of Medical Social Services, University College Hospital, Ibadan, Nigeria.

AUTHORS' CONTRIBUTIONS

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

Malaria is a major problem in most developing African countries in Nigeria. The study therefore examines the perception of residents of peri-urban communities towards Malaria.

The study employed a cross-sectional survey research that is guided by the Health Belief Model using quantitative methods of data collection. The study employed 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. The validated questionnaire has a Cronbach alpha of 0.83 and perception towards malaria had a Cronbach had 0.88. Research questions and hypothesis 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 . In terms of the Perception about malaria, majority of the respondents 35.7% had high perceived serious of the illness while most of the residents, 38.2% had low level of barrier with the mean score of $17.2 \pm 0.2.61$. From the test of hypothesis, perceived susceptibility and perceived barriers was significant predictor of perception of malaria occurrence among household residents of Peri-Urban communities with 71.6% contribution to perception towards malaria among household residents of Peri-Urban communities ($p=0.000$).

In conclusion, there was high perceived seriousness of malaria while there was low level of perceived barrier toward malaria. There is communication messages developed in local languages about the prevention of Malaria in Urban and Peri-Urban communities.

Keywords: Perception; malaria; Peri-Urban; communities; households; barriers and residents.

1. INTRODUCTION

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 year 2010 due to malaria [1]. While this is on the increase around the world and even in the African region, 86% of the malarial deaths were of children [2]. Of these African regions, west African regions like Nigeria and Ghana and Cote d'ivoire region reported 91%, 6% and 3% malaria deaths

*Corresponding author: Email: kareneze24@gmail.com;

respectively [1]. However, Okoronkwo [3] reported that Nigeria alone contributes nearly 65% of the malaria cases in West African region. Also, in many parts of Nigeria, malaria exists as an endemic disease [4]. 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 holo-endemic [5]. In spite of this, there has been very little success to control it, not only in Nigeria but also in most other countries affected [1]. 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.

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 play by mothers, there is the need to integrate them properly into malaria control and treatment activities [6]. Shift in the geographic ranges of hosts and vector, effect reproduction, development, and mortality rates on hosts, vectors, and pathogens. Effects of the increased climate variability, floods and droughts all have the potential to affect disease incidence and emergence either positively or negatively. Dlamini et al. [7] explained the associations between total, average rainfall and malaria outbreaks. Mosquitoes prefer water bodies and the right amount of rainfall is as they are the most important factor for them to breed. So, changes in rainfall drive malaria transmission to a higher state [8]. Blanford [9] explained temperature as an important determinant of malaria transmission.

Maximum and minimum temperatures affect the life cycle of malaria parasite. The maximum and minimum temperatures for parasite development are 40°C and 18°C. Below 18°C, the life cycle of *P. falciparum* in the mosquito body is limited. The minimum temperatures of *P. Vivax* are between 14–19°C, surviving at lower temperatures than *P. falciparum*. Life cycle of the parasites in vectors can be shorter or longer depending on temperature. A minimum of 10 to 19 days is required for the parasite to complete its life cycle in the gut of mosquito. Sometimes life cycle decreases to less than 10 days as the temperature increases from 21°C to 27°C, with

27°C being the optimum. Malaria transmission in areas colder than 18°C can occur because the *Anopheles* often live-in houses, which tend to be warmer than the outside temperature. Mosquito's survival is greatly influenced by relative humidity as they survive better and become active under conditions of high humidity greater than 60%, if it is below 60% the life cycle of mosquito is short or no malaria transmission. Therefore, rainfall, temperature and relative humidity are the major climatic factors that guide malaria transmission by showing their effect on *Anopheles* mosquitoes.

1.1 Objective of the Study

The main objective of this study is to investigate the perception of residents of peri-urban communities towards Malaria.

The specific objectives are to;

1. Examine the perceived susceptibility influencing occurrence of malaria among household of the Peri-Urban communities in Abuja
2. Assess the perceived barriers influencing occurrence of malaria among household of the Peri-Urban communities in Abuja

1.2 Research Questions

1. Examine the perceived susceptibility influencing occurrence of malaria among household of the Peri-Urban communities in Abuja
2. Assess the perceived barriers influencing occurrence of malaria among household of the Peri-Urban communities in Abuja

1.3 Hypotheses

The following research hypothesis were tested for the study;

H₀₁: There is no significant predictor of health belief of perception (perceived susceptibility and barriers) on the prevention of malaria occurrence among households of Peri-Urban communities of Abuja.

2. METHODS AND DESIGNS

2.1 Research Design

The study used a descriptive cross-sectional survey research design.

2.2 Study Population

The population of this study will include residents of Peri Urban Communities in Abuja. All consenting household residents who are above the age of 18 years, own the house of residence and are registered member of the community development association of their local government area.

2.3 Description of Study Population Area

The study area will be conducted among household 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. 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 purpose. It has an area of 992 km² and a population of 98,000 as at 2016. It has a propose Abuja University of Technology (AUTA) which is to be commission 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 consists 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 share 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.

2.4 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 [10]. The total number of selected household residents is five hundred and sixty five (565) as shown in Table 1.

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

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

2.5 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.

2.6 Instrumentation

The researcher will develop a self-administered 36 item questionnaires focusing on perception towards malaria among households 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 (2) sections, they include; socio-demographics characteristics and health belief of perception towards of prevention of malaria among households in Peri Urban Communities in Abuja.

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 D: Health Belief of perception towards malaria prevention: This section will reflect health belief of perception towards malaria 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 form of four (4) Likert scale format (strongly-agree, agree, strongly-disagree, disagree).

2.7 Method of Data Collection

Data will be collected during 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 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.

3. RESULTS

3.1 Demographic Characteristics of Respondents

From the table presented in 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 20-25 years 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 trader 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		
20-25 years	45	11.7
26-30 years	22	5.7
31-35 years	135	35.1
above 36 years	183	47.5
<i>Mean Age = 47.1 ± S.D= 19.8</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	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

3.2 Research Question 1 Health Belief of Perception toward Malaria Prevention (Perceived Susceptibility and Perceived Barriers)

Table 2 presented belief indicated 33.8% of the respondents agreed that bushy environment cause lead to malaria in the community. 45.7% of the respondents also agreed that in ability to clean waterways 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 majority of community resident have not been vaccinated. Also 43.2% of the respondents agreed that their family belief 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 scare 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.

3.3 Test of Hypothesis

Hypothesis one: 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 3 shows the regression square and p-value. Employing a 0.05 criterion of statistical significance, none of the variable 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 significant predictor of knowledge of malaria occurrence among households of Peri-Urban communities.

Table 2. 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%)	158(41.1%)
Malaria is common because majority of community resident have not been vaccinated	50(13%)	43(11.8%)	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%)

Table 3. Regression model results

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

4. DISCUSSION

4.1 Research Question One: Level of Health Belief of Perception of Malaria prevention among households in Peri Urban Communities in Abuja

The result of research question 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 most of the respondents had 38.2% low level of barrier experience for the 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 [11] 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. [12] 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 three showed that there was a significant predictor of health belief of perception (perceived susceptibility and barriers) on the prevention of malaria occurrence among households of Peri-Urban communities of Abuja. The result is consistent with that of by Adedotun [13], 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.

5. CONCLUSION AND RECOMMENDATION

Malaria is a major health challenge to humans living in endemic regions. As such it could cause obstruction and/or delay in daily activities there by leading to low productivity among the labour force due to absenteeism. There is need for development of information education and communication malaria for households on the prevention of Malaria in peri-urban communities in Nigeria. Government and non-government organizations should increase the social mobilization on the prevention of malaria among residents of peri-urban communities.

CONSENT

All participants gave consent to participate in the study after reading information sheets and signing the informed consent forms given to them by the researcher.

ETHICAL APPROVAL

Babcock University Health Research Ethics Committee (BUHREC/181/21B)

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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