ScientificScholar®
Knowledge is power
Publisher of Scientific Journals

https://anmrp.com/

Annals of Medical Research and Practice

Review Article

Knowledge and perception of caregivers of febrile children with malaria at the Dalhatu Araf Specialist Hospital Lafia Nasarawa state, Nigeria

Ikrama Ibrahim Hassan[1], Alfred John Aluku[2], Michael Chidi Anazodo[1], Regina Aluku[2], Gideon Ede Alhassan[2], Lamini Ngolo Jebes[2], Steven Habila Kyari[2], Agbawu Agbawu[2], Yakubu Danbaba Tanze[2], Caleb Eselema Odonye[1], Olukayode Olugbenga Orole[3], Abdulmumuni Ahmed Lawal[4], Surajudeen Oyeleke Bello[5]

Departments of [1]Community Medicine and [2]Laboratory Services, Dalhatu Araf Specialist Hospital, Departments of [3]Medical Microbiology and [4]Anatomy, Federal University, [5]Department of Paediatrics, Dalhatu Araf Specialist Hospital, Lafia, Nasarawa, Nigeria.

***Corresponding author:**
Surajudeen Oyeleke Bello, Department of Paediatrics, Dalhatu Araf Specialist Hospital, Lafia, Nasarawa, Nigeria.

surajudeenbello4@gmail.com

Received : 29 July 2021
Accepted : 02 July 2022
Published : 19 July 2022

DOI
10.25259/ANMRP_22_2021

Quick Response Code:

ABSTRACT

Objectives: Malaria is an infectious disease caused by Plasmodium and transmitted by the bite of an infected female Anopheles mosquito. This study determined the knowledge and perception of caregivers about malaria at a tertiary health facility in Lafia Nigeria.

Material and Methods: A prospective cross-sectional study carried out among caregivers of children aged 6 months to <15 years in Lafia Nigeria. Interviewer administered questionnaire was completed. Bivariate analysis was done. $P < 0.05$ is significant.

Results: Most (66.9%) lived in rural locations. Almost half either had no formal education or primary school certificate only. About one quarter was unemployed. Almost all (92.6%) reported knowledge of fever as a symptom of malaria and 96.1% reported knowledge of mosquito bites as the cause of malaria.

Conclusion: There is good awareness about malaria, it cause and some preventive strategies. However, more efforts are required in reaching out to those in the rural areas.

Keywords: Children, Febrile, Knowledge, Malaria, Perception

INTRODUCTION

Malaria has remained a leading public health problem and causes of morbidity and mortality in tropical and subtropical countries.[1] This avoidable disease has reached epidemic proportions in many regions of the world especially the sub-Saharan Africa which accounts for over 90% of the global malaria cases.[2]

Malaria cases have reduced from 251 million in 2010 to 228 million in 2019.[3] Furthermore, the deaths from malaria had decline from 585,000 in 2010 to 405,000 in 2018.[3] Globally, malaria affects more than 3 billion people while deaths from it is ravaging the African countries, where we belonged.[4] In Nigeria, malaria accounted for over 60% outpatient visit and 30% of admission among children.[5,6] It is the most common cause of death among children aged 5 years and below.[7]

Malaria is an infectious disease caused by Plasmodium and transmitted by the bite of an infected female Anopheles mosquito.[8] These mosquitoes primarily inhabit the tropical and subtropical parts of the world.[9] The four known species of *Plasmodium* genus that causes human malaria are *Plasmodium falciparum*, *Plasmodium vivax*, *Plasmodium ovale,* and *Plasmodium malariae* and they contribute to majority of human health problem in malaria endemic regions of the world.[10] Occasionally, humans become zoonotically infected with Plasmodium species that normally infect Macaques (monkeys) such as *Plasmodium knowlesi*.[11] Malaria is the predominant cause of elevated body temperature in our environment.[12]

A study by Nmadu *et al*. reported a higher proportion of malaria in children 2–5 years.[1] This study was to determine the knowledge and perception of parents/caregivers about malaria in a health facility in Lafia.

Objective

This study seeks to;
Assess knowledge and perception of caregivers of febrile children aged 6 months to <15 years with malaria visiting Dalhatu Araf Specialist Hospital (DASH), Lafia.

MATERIAL AND METHODS

Study area

The study was carried out in DASH, Lafia. This is a referral center for most private hospitals and primary health facilities in the state. Lafia is the capital city of Nasarawa State, one of the six North – Central States. It has border with Federal Capital Territory Abuja, Kogi, Benue, Taraba, Plateau, and Kaduna States.

Study population

The study populations are febrile children aged 6 months to <15 years with malaria and their caregivers visiting the Dalhatu Araf Specialist Hospital in the Southern senatorial zone of Nasarawa state.

Study design

A cross-sectional and hospital-based study was carried out between August 1, and October 31, 2020, among children visiting DASH at the Pediatric Out-Patients Department, General Out-Patient Department and the Emergency Pediatrics Unit. Clinicians in the Pediatrics department and caregivers of the patients were involved to get all the necessary information.

Sample size determination

The formula for sample size determination of a cross-sectional study was used.

$$n = \frac{Z^2\, PQ}{d^2}$$

Where n = Sample size
Z = Z statistic for a level of confidence or alpha-deviate
P = prevalence or proportion from a previous study. The prevalence rate of 20% reported at Nnewi Nigeria.[13]
d = degree of precision

Therefore
Z = 1.96 at alpha=0.05
P = 0.2
Q =1–P = 1–0.2 = 0.8
d = 0.05

$$Sample\ size(n) = \frac{1.96^2 \times 0.2(1-0.2)}{0.05^2} = 246$$

Final sample size, N = n + NRR

Non-response Rate = $\frac{246}{100} \times 10$ = 24.6 approx. = 25

The study was conducted on a final sample size of a minimum of 271 persons.

Sampling method

A convenience sampling was used in the recruitment until the desired number was reached. The parents/caregivers and/or the child were approached at presentation, the purpose for the study was explained to them and those that consented where recruited for the study. Informed consent was gotten from the parents/caregivers, while assent was gotten from children aged 7 years and above.

Eligibility criteria

Inclusion criteria

The following criteria were included in the study:
a) All febrile children aged 6 months – years visiting Dalhatu Araf Specialist Hospital Lafia, Nasarawa from August 1, to October 31, 2020, are eligible
b) Those whose parents/caregivers gave informed consent
c) All those children that tested positive to malaria (whether uncomplicated or complicated)
d) Children aged 7 years or more who gave assent.

Exclusion criteria

The following criteria were excluded from the study:
a) Children whose parent declined consent
b) Children 7 years and above that decline assent

c) Children who are critically sick
d) Children with comorbidities such as typhoid and pneumonia.

Ethical consideration

A formal ethical clearance was obtained from the DASH Research Ethics Committee, where issues related to consent, confidentiality, and safety of the patient were addressed.

Data collection procedure

Structured questionnaire

A pre-tested questionnaire was administered to the participants and caregivers after recruitment to gather information on their demographic, socioeconomic, and environmental factors, as well as their knowledge, attitude, and practice of malaria by trained research assistants.

Data analysis plan

All data generated from the research were analyzed and presented using SPSS version 23. A descriptive analysis was done showing frequencies among age groups and percentile. At the bivariate level, Chi-square test and fisher's exact test were used with some variables to determine the significant association between some variables of interest and presence of malaria in children. Mean and standard deviation of quantitative variables were determined.

Confidentiality of data

To maintain privacy and confidentiality, data were collected anonymously without identifiers and stored on a passworded retrieval system, where only the principal investigator had access to it.

Study duration

This study lasted for 3 months, from August 1 to October 31, 2020, during which samples were collected, processed, and read.

RESULTS

The sociodemographic characteristics of the study participants

The average age of participants in the study was 15.0 ± 4.6 years with majority, 67.3% being <5 years of age. There were more males, 54.6% were male and 45.4 were female. Majority of the participants, 66.9% lived in rural locations compared to the urban dwellers, 33.1%. Level of education among the study participants caregivers revealed that 25% were not educated, 21.5% had primary education, 30.6% had completed secondary school, and 22.9% had completed tertiary education. Most of the study participants, 53.2% were unemployed as at the time of the study [Table 1].

Knowledge and perception of malaria

Almost all the participants, 92.6% reported knowledge of fever as a symptom of malaria and 96.1% reported knowledge of mosquito bites as the cause of malaria. Other symptoms are chills and headache recognized in 9.5% and 2.1%, respectively.

Similarly, 89.4% of participants in the study have heard about how to avoid malaria in the last 12 months. Source of their information on how people get infected with malaria revealed, 87.7% had heard from healthcare workers and 10.6% heard from radio. Majority of the participants, 70.4% know mosquito nets to be protective against malaria, 27.8% reported keeping the surrounding clean, and 1.4% reported the use of protective clothing [Table 2].

DISCUSSION

This study revealed a high knowledge on the causes and preventive strategies of malaria. Majority, however, admitted that the source of the information was the healthcare workers. Despite this "high" knowledge, there is a relatively high (29.6%) proportion not using insecticide treated mosquito net (ITN).

A high percentage does not know about environmental cleanliness and use of indoor residual spraying in addition

Table 1: Sociodemographic characteristics of the study participants.

Variables	Frequency (%)
Age: Mean±SD	15.0±4.6 years
6 month–<5 years	191 (67.3)
5–10 years	53 (18.7)
>10–<15 years	40 (14.1)
Sex	
Male	156 (54.6)
Female	128 (45.4)
Location	
Rural	190 (66.9)
Urban	94 (33.1)
Education qualification of caregiver	
Not educated	71 (25.0)
Primary	61 (21.5)
Secondary	87 (30.6)
Tertiary	65 (22.9)
Employment status of caregiver	
Employed	133 (46.8)
Unemployed	151 (53.2)

SD: Standard deviation, month: Month, years: Years

Table 2: Knowledge and perception of malaria.

Variable	Frequency (%)
Symptoms of malaria	
Fever	263 (92.6)
Chills	27 (9.5)
Headache	6 (2.1)
Nausea/vomiting	3 (1.1)
Body joint	2 (0.7)
Diarrhea	1 (0.4)
Heard about how to avoid malaria in the past 12 months	254 (89.4)
Source of information about how to get malaria	
Health personnel	249 (87.7)
Radio	30 (10.6)
TV	5 (1.8)
Methods that are protective against malaria	
Mosquito nets	200 (70.4)
Keeping surrounding clean	79 (27.8)
Indoor spraying	1 (0.4)
Protective clothing	4 (1.4)
Knowledge of mosquito bites as the cause of malaria	273 (96.1)

to the ITN. The possible reason for this may be because most of the participants reside in the rural areas, where they may not have access to electricity to enable them listen to or watch news on the Television. The low level of education in this study where half of the participants were either with no any formal education or with only primary school certificate, may be partly responsible for the poor knowledge on the preventive strategies of malaria. This is worrisome as it means those that did not have contact with the healthcare workers will not have the needed awareness.

Most participants in this study have heard about malaria and most are aware that mosquito bites cause malaria. Almost a third of the respondents, however, do not use the insecticide-treated bed nets (ITNs) as they do not know that it has protective properties against malaria. This study result compares with (although lower) to the reports of National Malaria Control Program 2016 which estimated 45% ITN utilization in 2015 among children under 5 years in Nigeria. This is much lower than the 61.7% found in a study in Port-Harcourt Nigeria.[5] The difference with our finding may be due to the varied study population and the geographical locations. Our study was among children <15 years and in the North with limited rainfall compared to the study in Port-Harcourt.[5] Similarly, the oil rich city of Port-Harcourt is more likely to be educationally and socially more advanced than Lafia, hence a better awareness and ITN utilization in the former compared with the latter. The prevalence of ITN use in the present study is higher than the 19% reported among under five children in Uganda.[14] The difference may be because ours was a prospective study compared to the Ugandan study (a retrospective study).

Risk factors associated with febrile malaria in children include access to and utilization of malaria care which might be a challenge in rural areas. Most of the participants in this study (66.9%) were from the rural area. This creates barriers that might include bad roads and transportation means as a risk factor. Another risk factor could be the caregiver educational qualification. About 25% of the caregivers are not educated at all while 21.5% had primary school certificate. This low level of education might be a barrier for the participant on clear understanding of health-care services including the free ones. It may also account for the close to 30% who do not know and or used the ITN. Furthermore, the fact that, 53.2% of the participants in this study were unemployed, could explain our findings. This hinders the resources for transportation as well as for visiting the hospital for appropriate investigation and treatment. In addition, this study found that most (92.6%) of the caregiver feels fever is the only symptom associated with malaria. This study has demonstrated that caregivers had insufficient knowledge about malaria symptoms and signs. This low level of perception of the features of malaria could be due to the low education level, high unemployment (in one quarter), and rural dwellers in most of the participants. These decreased access to mass media, ability to purchases educational materials, and to read even if provided at no cost to them.

CONCLUSION

There is good awareness about malaria, it cause and some preventive strategies. However, more efforts are required in educating the populace about the various symptoms/signs, the full preventive strategies, encouraging use of ITN, and devising means of creating mass awareness such as through town criers, market women, religious, and traditional houses on its risk factors.

Recommendations

1. This study recommends that The need for more awareness campaign on malaria causes, features, prevention and risk factors through the mass media (electronic and print media), town criers, town union, market leaders, youth leaders, students association, traditional, and religious houses.

Declaration of patient consent

Institutional Review Board (IRB) permission obtained for the study.

Financial support and sponsorship

This study was financed by the Saving One Million Lives (Program for Results P4R) Nasarawa State.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Nmadu PM, Peter E, Alexander P, Koggie AZ, Maikenti JI. The prevalence of malaria in children between the ages 2 15 Visiting Gwarinpa General Hospital Life Camp Abuja Nigeria. J Health Sci 2015;5:47-51.
2. White NJ. Anaemia and malaria. Malar J 2018;17:371-87.
3. World Health Organization. World Malaria Report 2019. Geneva, Switzerland: World Health Organization; 2019. Available from: http://www.who.int/publications/i/item/9789241565721 [Last accessed on 2021 Jul].
4. Okumagba M. Knowledge and attitude towards prevention and control of malaria in Nigeria the implications. South Am J Public Health 2015;3:1-13.
5. West BA, Okari TG. Prevalence of malaria in febrile under five under five children in Port Harcourt Nigeria. J Dent Med Sci 2018;8:46-51.
6. Bello DA, Tagurum YO, Afolaranmi TO, Chirdan OO, Zoakah AI. Knowledge and pattern of malaria case management among primary health-care workers in Jos. J Med Trop 2013;15:91-5.
7. World Health Organization. Country Statistics and Global Health Estimates by WHO and UN Partners. Geneva: World Health Organization; 2015. http://www.who.int/gho/en [Last accessed on 2021 Jul 22].
8. Yahaya A, Aminu F, Tukur AI. Seasonal variation of malaria infection among out-patients attending Wudil General Hospital Kano State Nigeria. Int J Appl Res Technol 2012;1:79-84.
9. Hajison PL, Mwakikunga BW, Mathanga DP, Feresu SA. Seasonal variation of malaria cases in children aged less than 5 years old following weather cange in Zomba District Malawi. Malar J 2017;16:264-75.
10. Ukwubile CA, Tzozon K, Samagoro CT, Odogu J. Prevalence of malaria parasite in Takum local government area Taraba State Nigeria. J Bacteriol Mycol 2018;6:53-5.
11. Ukaegbu CO, Nnachi AU, Mawak JD, Igwe CC. Incidence of concurrent malaria and typhoid fever infections in febrile patients in Jos Plateau State Nigeria. Int J Sci Technol Res 2014;3:157-61.
12. Chibwana AI, Mathanga DP, Chinkhumba J, Campbell CH Jr. Socio-cultural predictors of health-seeking behavior for febrile under-five children in Mwanza-Neno District Malawi. Malar J 2009;8:219-26.
13. Ezeudu CE, Ebenebe JC, Ugochukwu EF, Chukwuka JO, Amilo GI, Okorie OI. The performance of an Histidine rich protein-2 rapid diagnostic test against the standard microscopy in the diagnosis parasitaemia among febrile under-five children at Nnewi. Niger J Paediatr 2015;42:59-63.
14. Wanzira H, Katamba H, Okullo AE, Agaba B, Kasule M, Rubahika D. Factors associated with malaria parasitaemia among children under 5 years in Uganda: A secondary data analysis of the 2014 malaria indicator survey dataset. Malar J 2017;16:191-9.

How to cite this article: Hassan II, Aluku AJ, Anazodo MC, Aluku R, Alhassan GE, Jebes LN, *et al*. Knowledge and perception of caregivers of febrile children with malaria at the Dalhatu Araf Specialist Hospital Lafia Nasarawa state, Nigeria. Ann Med Res Pract 2022;3:6.