

## Knowledge and Treatment Practices of Malaria among Mothers and Caregivers of Children in an Urban Slum in Jos, Nigeria

\*Daboer J C MB BS, FMCPH, \*\*John C MB BS, FWACPaed, \*\*\*Jamda A M MB BS, PGDM, MPH, FMCPH, \*Chingle M P MB BS, \*Ogbonna C MB BS, FMCPH

\*Department of Community Health, Jos University Teaching Hospital, Jos \*\*Department of Paediatrics, Dalhatu Araf Specialist Hospital, Lafia \*\*\*Department of Community Medicine, College of Health Sciences, University of Abuja, Abuja.

### Abstract

**Background:** Malaria is a public health problem in more than 90 countries, inhabited by a total of 2.4 billion people, representing about 40% of the world's population. Major trends over the last few decades point to a worsening situation if effective action is not taken. Sadly, this is in spite of enormous efforts and resources that have been invested in its control. The objective of this study was to describe the level of knowledge of malaria as a disease and the practice of its treatment by mothers and caregivers of underfive children in Gangare, an urban slum of Jos City, Nigeria.

**Methodology:** A cross-sectional descriptive study design, a cluster sampling technique and an interviewer administered questionnaire were used to collect information on socio demographic profiles as well as knowledge and treatment practices of malaria from mothers and caregivers of underfive children in Gangare, Jos North Local Government Area of Plateau State, central Nigeria. The data was then analyzed using Epi info2002 epidemiological software.

**Results:** The study revealed a low level of knowledge of malaria with 248(49.6%) being able to recognize the disease and only 124(24.9%) attributing it to the mosquito bite. The attitude of most respondents towards malaria as an illness was however good as 275(55%) viewed it as a very serious illness and most of them 328(65.6%) would use hospitals/clinics for treatment. Majority of them; 462(92.4%) have not heard of Artemisinin Combination Therapy (ACT) and only 19(50%) of those who had heard of ACT had ever used it for the treatment of malaria. Generally, their knowledge of malaria and treatment seeking practice are influenced by cost of treatment, perceived safety and level of their education. ( $p < 0.05$ )

**Conclusion:** Among mothers and caregivers living in slums in Jos, their ability to recognize malaria is poor. So also is their awareness and use of Artemisinin Combination Therapy. An improvement in their level of education and their economic power could improve their knowledge and treatment practices.

**Key words:** Knowledge; treatment practices, malaria; slum; caregivers

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### Introduction

Malaria represents one of the major causes of morbidity and mortality in the tropics.<sup>1</sup> Estimates indicate that approximately 40% of the world's population, mostly those living in the world's poorest countries of Africa, Asia, Islands of the South, West and Central Pacific Ocean, Latin America and certain Caribbean Islands are at a high risk of developing malaria.<sup>2</sup> However, with the current high technological advancement and jet travels, there has been increasing cases of malaria reported in areas hitherto believed to be devoid of the disease ("airport malaria").<sup>3</sup>

Every year, more than 500million people become severely ill with malaria.<sup>2</sup> Non immune pregnant women risk both acute and severe clinical disease resulting in up to 60% fetal loss and over 10% malarial death including 50% mortality in severe disease.<sup>4,5</sup> WHO Reports show at least 300 million acute cases of malaria occur each year globally, resulting in over a million deaths. Around 90% of these deaths occur in Africa, mostly in young children.<sup>2</sup> Malaria is a leading cause of under-five mortality, killing about 3,000 children per year. African children of this age group are chronic victims of malaria, suffering an average of 6 bouts in a year.<sup>6, 7</sup> Malaria constitutes about 10% of Africa's disease burden. It also accounts for 40% of public health expenditure, 20-50% of admissions as well as up to 25-40% of outpatient visits in certain areas of high transmission are due to malaria.<sup>2,8</sup>

In Nigeria, malaria remains the most commonly reported disease and is among the top three causes of mortality.<sup>9</sup> Incomplete and irregular reporting make the

true incidence and mortality rates largely unknown but it is estimated that 50% of the population experience at least an episode a year. This is much higher (6 attacks a year)<sup>3</sup> among children under five. Also it represents 8-12% of childhood deaths among underfives.<sup>9, 10</sup> Since each attack of malaria could result in 3-4 days absence from work, economic loss due to malaria is obviously quite considerable.<sup>4</sup> Countries are now working through local partnership to develop the capacity to fully implement the country strategy plan (CSP) using ongoing health sector reform and linkage to other initiatives (such as Integrated Management of Childhood Illnesses and Making Pregnancy Safer) to improve access to key interventions.

Even though studies reveal a high level of knowledge of how malaria is transmitted, only few people are aware of the availability and source of modern methods of treatment and even fewer of these community dwellers use these methods of malaria treatment.<sup>10, 11</sup> The aim of this study was to determine the knowledge, attitude and treatment practices of under-five care givers about malaria as information gained from the study will elucidate the current practices regarding treatment of the disease in the locality and determine the gaps if any for the purpose of improvement.

## Methodology

The study was carried out in Gangare community, a suburban settlement in Jos North Local Government Area of Plateau State, central Nigeria between June and August 2007. The population, estimated at 10 000 persons, consist of mostly low income earning petty traders, peasant farmers and civil servants. The major ethnic group in Gangare is Hausa and the people are predominantly Muslims. The climate is the tropical type with peak annual rainfall between June and September and the average room temperature is about 28 degree centigrade.

The Study population consisted of mothers and caregivers of under five children. It was cross-sectional descriptive in design and the the minimum sample size was determined to be 305 using the formula for cross-sectional descriptive studies, a malaria knowledge level of 27.3% from a previous study<sup>11</sup> and an allowable error margin of 5% . This was increased to 500 to increase the power of statistical tests.

Sample selection involved the use of cluster sampling technique. All households in the study area were enumerated during preliminary mapping and household numbering. In each household where an under five child was found a mother or any other caregiver was selected

for the study. Data was collected by trained interviewers using interviewer administered questionnaires with open and closed ended questions soliciting information on socio-demographic characteristics as well as knowledge of malaria and practices related to treatment. Permission was obtained from both the village head and the head of each household. Informed verbal consent was also sought from each respondent before administering the questionnaire. Ethical clearance for the study was obtained from the Ethical Committee of the Jos University Teaching Hospital, Jos. Data was analyzed manually and by the use of Epi info 2002 epidemiological computer software. Tables and charts were used to present the data and relevant inductions were made from the data using  $\chi^2$  tests.

## Results

All the 500 questionnaires administered were completed and returned, giving a response rate of 100%. Of the respondents, 128(25.6%) fell within the age range of 25-29 years while the least number of 32 (6.25%) each were within the two age groups of 15-19 and 40-44 years. Four hundred and seventy three (94.7%) of the respondents were female. Most of the respondents; 461(92.2%) were currently married. Majority; 235(46.9%) had primary education only while 139(27.8%) had no formal education, 109(21.8%) had secondary education while 17(3.4%) had tertiary education.

Two hundred and forty eight (49.6%) of the respondents could recognize symptoms of malaria and 124 (24.9%) of them correctly attributed it to the bite of the mosquito. In addition, 275(55%) view it as a very serious disease. All respondents had at least an episode of malaria among children under their care in the last 12 months.

Figure I shows that majority of the respondents; 328 (65.6%) treated their children in the hospital while 119 (23.8%) and 53(10.6%) treated theirs at home and herbalist place respectively. In figure II, 369 (73.8%) cited better treatment outcome, 94 (18.8%) lower cost and 37(7.5%) proximity to their residences as factors guiding their choice of places of treatment.

Within 24 hours of malaria attack, 231(46.3%) respondents take action while 203 (40.6%) take action between 24 - 48 hours. However, 66(13.1%) take action after 48 hours. See table 1.

In figure III, 19(50%) of the respondents who had heard about ACT but had not used it said it is expensive, 5(33%) said it is not readily available and 2(17%) do not know where to get it.

Majority; 462 (92.5%) of the respondents have not heard of ACT while only 38(7.5%) have heard. Only 18(50%) of those who heard about ACT have ever used it. Statistically significant associations exist between the respondent's educational status and their ability to recognize malaria, their awareness of ACT and their use of same.

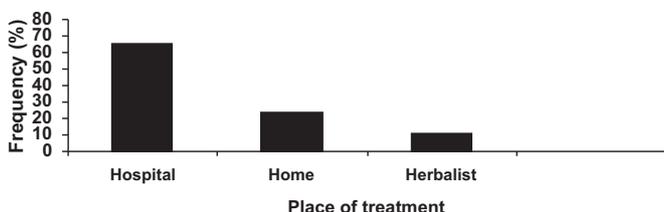


Fig I: PLACE OF TREATMENT OF LAST EPISODE OF MALARIA

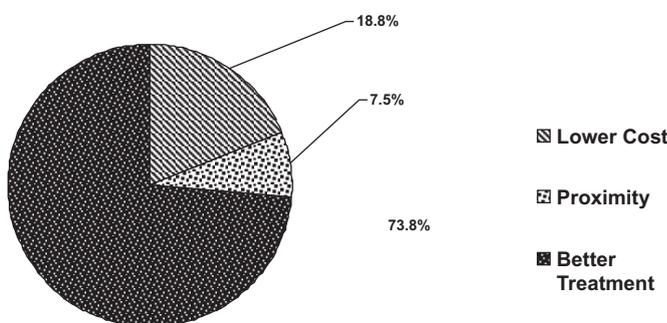


Fig. II: REASONS FOR CHOICE OF PLACE OF TREATMENT

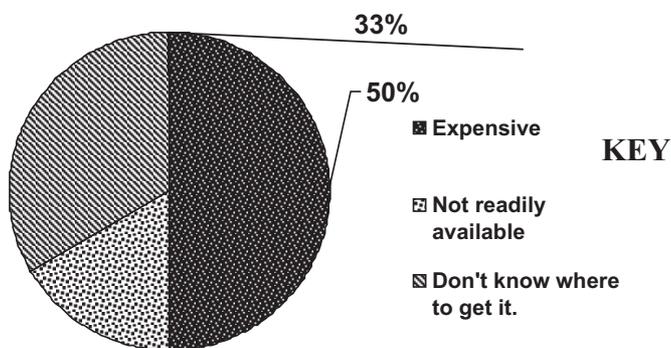


Fig. III: REASONS FOR NOT USING ACT FOR MALARIA TREATMENT

Table I: Time Of Action Following Onset Of Malaria Among Respondents

Time of Action (hr)	Frequency	Percentage (%)
< 24	232	46.3
24 - 48	203	40.6
> 48	65	13.1
Total	500	100.0

Table II: Relationship between educational level and selected parameters of respondents

Educational Level	Can recognize malaria		Heard of ACT		Ever used ACT		Total
	yes	no	yes	no	yes	no	
Tertiary	12	5	11	6	5	12	17
Secondary	79	30	10	99	8	101	109
Primary	124	111	14	221	2	233	235
Nil	33	106	3	136	4	135	139
Total	248	252	38	462	19	481	500
$\chi^2$	63.94		86.09		40.15		
df	3		3		3		
p	0.000000000		0.000000000		0.000000000		

## Discussion

Majority of the respondents mentioned fever as a symptom of malaria and almost half of the studied population could recognize malaria based on its clinical features. This is similar to knowledge levels reported in other communities in sub-saharan Africa and in keeping with the fact that fever is the most common feature of malaria.<sup>11</sup> The study area is endemic for malaria and all mothers are expected to recognize symptoms of this disease since all the respondents had at least a child who suffered from malaria in the last 12 months. Other symptoms occur less frequently depending on the individuals. Also, the knowledge of symptoms of malaria has been found to be influenced by the level of education of the respondents. It is worrisome that in spite of all the interventions to control the burden of malaria, not much has been achieved as evidenced by the case load in the last 12 months.

Although, those who go to the hospital were the majority, a significant percentage of the respondents still treat their children at home and at patent medicine vendors with chloroquine or paracetamol alone. Those who treat their children in the hospitals do so because of better outcomes. However, respondents who sought other options mentioned lower cost and proximity to their homes as a reason for doing so. Even though enormous resources have been expended on research for effective antimalarial drugs, the problem persists mainly because effective modern tools for the treatment and prevention of the disease do not reach the disadvantaged populations on the fringe of the health services.<sup>2,9</sup> This is one such community.

There is ample evidence that delay in the commencement of anti malarial treatment is among the most important risk factors in malaria mortality.<sup>7</sup> Curiously less than half of the respondents in this study take action within 24 hours of malarial attack and this is contrary to the fundamental principles of the Roll Back

Malaria programme where early diagnosis and prompt treatment of illness is key.<sup>7, 8</sup> Apparently, the cost of treatment remains a strong barrier to seeking treatment.<sup>12,13</sup>

About 70% of the respondents still use Chloroquine, as first line treatment option for malaria and only 7.5% of the respondents had heard of Artemisinin Combination Therapy (ACT); even fewer of them had ever used it. Although the high cost of the drug was commonly given as a reason for not using it, others do not know where to get the drugs. Thus, it is glaring that a major challenge to current malaria control strategies is the need to deliver appropriate information and treatment tools to these communities on the periphery of the health system. There is also the need to remove cost barriers so that these effective modern drugs can be afforded. Other studies also revealed similar result as majority of their populations used chloroquine as the first line treatment against malaria.<sup>14, 15</sup> The fact that chloroquine is readily available may account for its high use irrespective of its low efficacy. A visit to most of the medicine's shops revealed that majority of the patent medicine vendors do not have Artemisinin Combination Drugs their shelves.

Respondents with higher education are generally more informed, more health conscious and have better purchasing power. This explains why they are more knowledgeable about the cause and symptoms of malaria. They are also more likely to know about and use ACT. This was corroborated by findings in a study carried out in Ogun State.<sup>10</sup>

## Conclusion

Although effective tools in ACTs are now available to treat malaria many mothers and caregivers in the community do not use them. Identified barriers include ignorance of the existence of the tools and their prohibitive costs. It is hereby recommended that aggressive social marketing of these commodities be embarked upon along with innovative cost cutting measures in order to break the affordability barrier.

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