



Knowledge Attitude and Practices of Caregivers on Management and Treatment of Childhood Malaria in Ogun State, South-Western Nigeria

**O. A. Agbeyangi^{1,*}, S. O. Sam-Wobo¹, U. F. Ekpo¹, O. A. Akinloye²,
C. F. Mafiana³ and J. B. Ajayi⁴**

¹Parasitology Unit, Department of Pure and Applied Zoology,
Federal University of Agriculture, Abeokuta Nigeria

²Department of Biochemistry, University of Agriculture, Abeokuta Nigeria

³Executive Secretary Office, National University Commission, Abuja, Nigeria

⁴Department of Microbiology, Ogun State Polytechnic, Igbesa, Nigeria

*E-mail address: oagbeyangi@yahoo.com

ABSTRACT

Home management of malaria involves presumptively treating febrile children at clinic or near home with antimalarial drugs distributed by trained members of the community provide medications and educate primary caregivers about treatment of malaria and recognition of severe illness. Structured questionnaires were administered to the parents, health workers and patent medicine vendors to determine acceptability of rectal artesunate and treatment seeking behaviours. Data obtained were analyzed using SPSS version 20 to assess association with p -value of < 0.05 . Current first line antimalarial drug for treating childhood malaria at the PHCs was artesunate derivatives (90.3%) with no usage of chloroquine derivatives (0%) and common route of administration was intra-muscular (81.4%) with least usage of rectal (6.2%). Patent medicine vendors showed that the common drug derivatives purchase for treating childhood malaria was chloroquine derivatives (89.2%) with oral (91.9%) as most common route of administration and no awareness of rectal route (0%). Cases of resistance of malaria parasites to anti-malarial drugs, mostly chloroquine derivatives (89.3%) and least with artesunate derivatives (7.1%) observed by health workers. Incomplete dosage (95.6%) and fake drug (84.9%) were described as main factors responsible for malaria parasite resistance. Patent medicine vendors have come across cases of resistance of malaria parasites to anti-malarial drugs mostly chloroquine derivatives (93.2%) with drug abuse (89.2%) and fake drug (82.4%). Treatment of malaria is challenged by inadequate health-care infrastructure and community-based interventions.

Keywords: home management of malaria, treatment seeking behaviours, Ogun State, South-western Nigeria

1. INTRODUCTION

Nigeria which is the most populous country in Africa with 170.1 million people and one of the hardest hit by malaria in the entire globe (WHO, 2010). Fifty percent of all malaria cases occur in only five of the world's countries. Nigeria has the unenviable distinction of placing first-making up 23% of all reported cases (Onwuka, 2012). The Nigerian Minister of Health claimed that malaria reduces the country's Gross Domestic Product (GDP) by 1% annually (Nigerian Vanguard, 2012).

Prompt treatment with effective antimalarial therapy is essential and African leaders have committed to ensuring that 80% of malaria episodes are adequately treated within 24 hours of onset of symptoms by 2010 (WHO/RBM, 2005). However, treatment of malaria is challenged by inadequate health-care infrastructure in many parts of Africa (Moerman, 2003). Health facilities are often resource-limited, and access to care may be limited by distance, fees, inadequate staffing, and lack of essential medicines. The direct and especially indirect costs of seeking health care from formal facilities may be substantial, providing a major barrier for many households (Wiseman, 2006).

Thus, febrile illnesses are commonly treated at home, frequently with drugs purchased from shops. It is estimated that fewer than 20% of children with malaria in endemic areas are treated in formal health-care settings. To improve access to antimalarials, the World Health Organization (WHO) is promoting home-based management of malaria (HMM) as a major strategy for Africa (WHO, 2004). HMM involves presumptively treating febrile children at or near home with antimalarial drugs distributed by trained members of the community (WHO, 2004; 2005). Community distributors provide medications and educate primary caregivers about treatment of malaria, administration of antimalarial drugs, and recognition of severe illness.

Emphasis on prompt treatment and distribution of pre-packaged antimalarials are strengths of the HMM strategy. However, there are potential downsides to presumptive treatment at home. Use of antimalarials to treat all febrile episodes, even if administered correctly, may delay treatment of other illnesses (Kallander, 2006). In addition, unnecessary over-treatment with antimalarials could promote drug resistance (Duong, 2004; Talisuna, 2004) and is likely to have substantial economic consequences (Snow, 2003; Pawar *et al.*, 2017).

Effective community case management of malaria may increase the proportion of people presenting to health facilities with severe disease. The scope of work and skills of health staff and the treatments available at health facilities may therefore have to be reviewed.

2. MATERIALS AND METHODS

Study Areas

The study was conducted in Ogun State, Nigeria; a Tropical Rain Forest Zone, lies approximately between Longitude 2°31' W and 4°31' E, and Latitude 6°31' S and 8° N, its bounded in the south partly by the Atlantic Ocean, and sharing common boundaries with Oyo, Osun, Ondo, Lagos States and Republic of Benin. The state is made up of three Senatorial

Zones i.e. Ogun Central, Ogun East and Ogun West) and four Geo-Political Zones (GPZs) i.e. Yewa-Awori, Egba, Ijebu and Remo) with five main ethnic groups namely, Egba, Ijebu, Egbado, Awori and Egun. The main occupations are Farming, Textile production (tie and dye), Fishing, Trading, Civil Servant, Public Servant and Pottering.

It has an area of 16,980.55 Square Kilometres (km²) of the 196,000 km² land area of the South-West Zone of the 192,803.07 km² of the Southern Nigeria in overall land area of 937,052.16 km² of Nigeria. It has a population of 3,751,140, (1,864,907 Males and 1,886,233 Females).

Selection of Study Sites

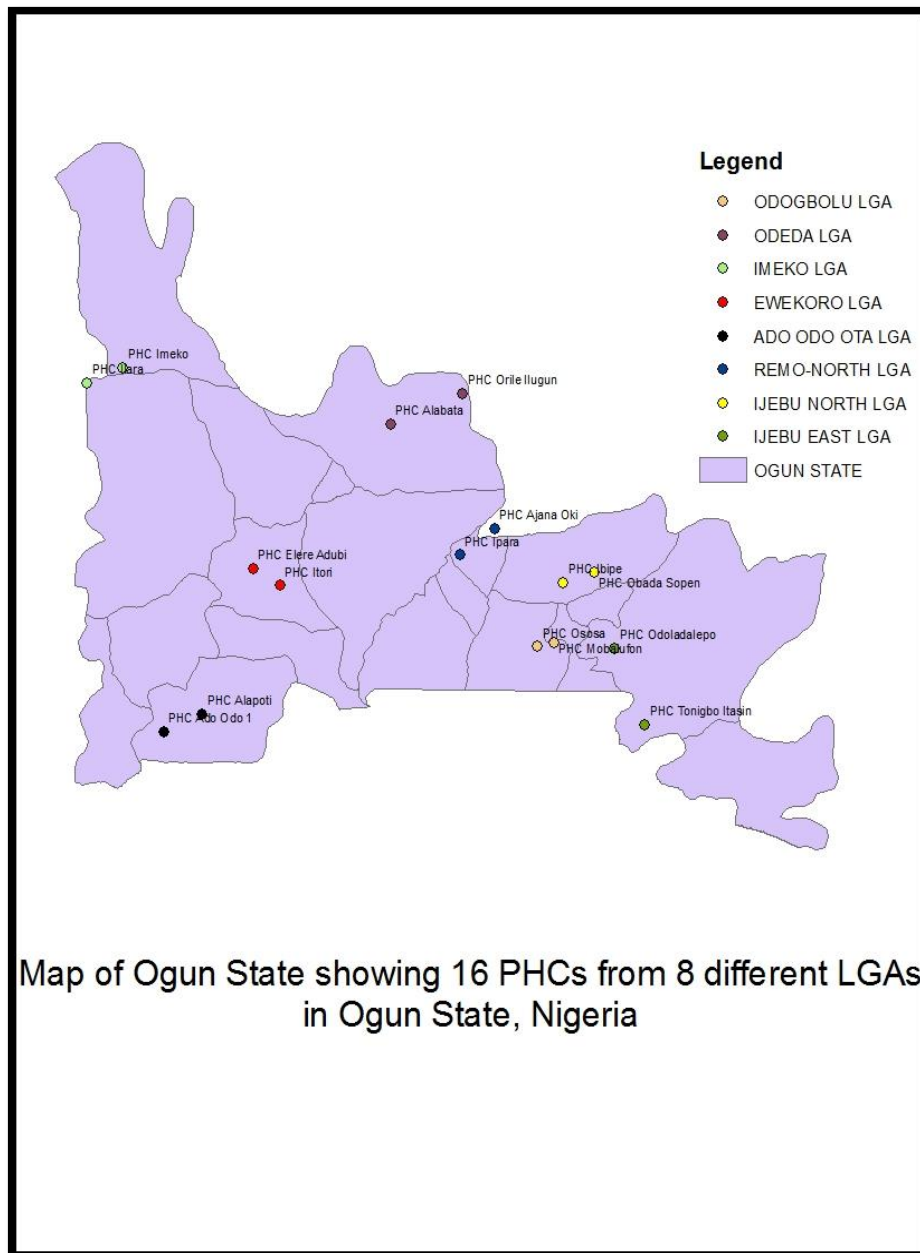


Figure 1. Map of Ogun State Showing the Selected LGAs and their PHCs Used for the Study.

Grid Systematic Method was employed in selecting sixteen (16) study centres which comprised two Primary Health Centres (PHCs) from each eight Local Government Areas (LGA) namely, Ado-Odo-Ota (ADT), Imeko-Afon (IMA), Ewekoro (EWK), Odeda (ODD), Ijebu-East (IJE), Ijebu-North (IJN), Odogbolu (ODG) and Remo-North (RMN).

GIS instrument was used to obtained co-ordinates of the PHCs and map was drawn using ArcGIS 9.3 software (Figure 1).

3. CONSENT AND ETHICAL APPROVALS

Ethical approval was obtained from Ethics Committee of Department of Biological Sciences, and Federal Medical Centre Idi-Aba Abeokuta, Ogun State, Nigeria. Permission for study was obtained from Ogun State Ministry of Health and Local Government Service Commission, Abeokuta Ogun State, Nigeria.

A Certificate of approval was obtained from National Agency for Food and Drug Administration and Control (NAFDAC) for import permission for the Plasmotrim-50/200 mg (produced by Acino Pharma Ltd Dornacherstrasse 114/ch-4147 Aesch Switzerland) used for the study and multi-centre clinical trial permission to carry out the research.

4. ADMINISTRATION OF QUESTIONNAIRES

Questionnaire was administered to the health workers in the selected PHCs during the time of treatment and sample collection and patent medicine vendors in the communities affiliated to each PHC after treatment during the time of taking co-ordinates of the affiliated communities to assess acceptability, effectiveness, safety and side effect observed on treatment with rectal artesunate and their knowledge on management and treatment of malaria disease (Table 1).

Table 1. Interviewed Health Workers and Interviewed Patent Medicine Vendors

Local Governments	Selected PHCs	Interviewed Health Workers	Interviewed Patent Medicine Vendors
Ado-Odo Ota	Alapoti.	5	4
	Ado-odo 1.	7	5
Imeko-Afon	Imeko.	10	6
	Ilara.	8	5
Ewekoro	Itori.	13	4
	Elere-Adubi.	8	4
Odeda	Ilugun.	5	4

	Alabata.	3	1
Ijebu-East	Odoladalepo	4	6
	Tonigbo.	4	4
Ijebu North	Obada.	10	7
	Ibipe.	7	5
Odogbolu	Ososa.	8	4
	Mobalufon.	7	5
Remo-North	Ipara	8	6
	Ajana	6	4
Total	16	113	74

Data Analysis

The questionnaire were entered in MS excel (MS Excel 2007) and analyzed using SPSS version 20 (IBM SPSS Incorporation). Frequencies and percentages were used to compare number of participants associated with a study variable. Averages and 95% confidence interval (CI) were used for summarizing of results. Pearson's Chi-square test, Pearson's R and Spearman correlation (r) were used to test for an association. A *p*-value of < 0.05 was regarded as significant association between the variables.

5. RESULT

Knowledge Attitude and Practice of Health Workers on Management and Treatment of Malaria Disease

Result in Table 2 showed that health workers who are Community Health Education Workers (CHEW) (33.6%) as well as Ward-Maids (32.7%) were more. The current first line antimalarial drug for treating childhood malaria at the PHCs was artesunate derivatives (90.3%) with no usage of chloroquine derivatives (0%) and most common route of administration of antimalarial drugs was intra-muscular (81.4%) with least usage of rectal route (6.2%). They have come across cases of resistance of malaria parasites to anti-malarial drugs, mostly chloroquine derivatives (89.3%) and least with artesunate derivatives (7.1%). Incomplete dosage (95.6%) and fake drug (84.9%) were described as main factors responsible for malaria parasite resistant. Health workers revealed that 7-10 persons in 10 cases (34.5%) were those that seek laboratory diagnosis of malaria more and 51-70% was bulk of attendance (45.1%) at PHCs due to malaria disease.

Fever (100%) and vomiting (100%) are observed by the health workers as the common symptoms of malaria disease showed by the children that visit the PHCs. Using insecticide treated net (ITN) (100%) was mostly agreed as the preventive measure they would advise parents/guardians of the children against malaria disease.

Table 2. Knowledge Attitude and Practice of Health Workers on Management and Treatment of Malaria Disease

Parameters	Total N (%)
MANAGEMENT AND TREATMENT OF MALARIA	
Status of health workers	
Doctor	1(0.9)
Nurse	16(14.2)
Mid-wife	16(14.2)
Dispenser	0(0)
Pharmacist	4(3.5)
Lab. Technologist	2(1.8)
Ward-Maid	37(32.7)
Community Health Education Worker	38(33.6)
Which of the following is/are the first line of drug for treating childhood malaria?	
Chloroquine derivatives	0(0)
S.-Pyrimetharmine derivatives	27(23.9)
Artesunate derivatives	102(90.3)
Herbal medicines	2(1.8)
Quinine derivatives	58(51.3)
Which of the following is/are the most common route(s) of administration of anti-malarial drugs used for childhood malaria?	
Oral	78(69.0)
Intra-muscular	92(81.4)
Intra-venous	62(54.9)
Rectal	7(6.2)

Have you come across cases of resistance of malaria to any of the following anti-malarial drug(s)?	
Chloroquine derivatives	101(89.3)
S.-Pyrimetharmine derivatives	81(71.7)
Artesunate derivatives	8(7.1)
Quinine derivatives	30(26.5)
What do you think is/are responsible for malaria parasites resistant to anti-malaria drug?	
Drug abuse	84(74.3)
Incomplete dosage	108(95.6)
Fake drug	96(84.9)
Mutation	17(15.0)
Other reasons	46(40.7)
In how many cases do you seek laboratory diagnosis of malaria before treatment?	
1-3 persons in 10 cases	26(23.0)
4-6 persons in 10 cases	33(29.2)
7-10 persons in 10 cases	39(34.5)
>10 persons in 20 cases	17(15.0)
What proportion of attendance at your PHC is due to malaria disease?	
0-20%	16(14.2)
21-50	29(25.7)
51-70%	51(45.1)
>70%	17(15.0)
What is/are the common symptom(s) of malaria disease showed by children that visit the PHC?	
Fever	113(100)
Vomiting	113(100)

Headache	87(78.0)
Convulsion	69(61.1)
Cough/catarrh	83(73.5)
Body pain	83(73.5)
Loss of appetite	84(74.3)
Nausea	92(81.4)
Chill/Cold	87(77.0)
Abdominal pain	45(39.8)
Anaemia	93(82.3)
What preventive measure(s) would you advice parents of the children against malaria disease?	
Using Insecticide treated net (ITN)	113(100)
Environmental hygiene	107(94.7)
Window/door netting	79(69.9)
Using herbs	12(10.6)
Using anti-malaria	97(85.8)
Using insecticides	91(80.5)
Using repellent	84(74.3)

Knowledge Attitude and Practice (KAP) of Patent Medicine Vendors on Management and Treatment of Malaria

Result in Table 3 showed perception of patent medicine vendors on management and treatment of malaria. Those between ages of 30-50 years (45.9%) and secondary education (58.1%) were more. Most of them are trained persons/auxiliary nurses (79.7%) and purchased anti-malarial drugs from other pharmacy/patent stores (56.8%).

They are familiar with the term 'malaria' in children (100%) and have suffered from malaria disease and their children (100%).

The patent medicine vendors showed that the common drug derivatives purchase for treating childhood malaria was chloroquine derivatives (89.2%) with oral (91.9%) as most common route of administration and no awareness of rectal route (0%).

They have come across cases of resistance of malaria parasites to anti-malarial drugs mostly chloroquine derivatives (93.2%) with drug abuse (89.2%) and fake drug (82.4%) are described as common factors responsible for malaria parasites resistance.

21-50% was bulk of attendance (35.1%) at their patent medicine stores due to malaria disease with fever (100%) observed as the common symptoms of malaria disease showed by the children that visit their stores

Table 3. Socio-Demographic Factors and KAP of Patent Medicine Vendors on Management and Treatment of Malaria

Parameters	Total (%)	
SOCIO-DEMOGRAPHIC FACTORS		
Age (years)		
15-30	33(44.5)	
31-50	34(45.9)	
>50	7(9.5)	
Educational status		
No formal education	0(0)	
Primary education	17(22.9)	
Secondary education	43(58.1)	
Post secondary education	12(16.2)	
Status of patent medicine vendors		
Doctor	0(0)	
Nurse	3(4.1)	
Mid-wife	0(0)	
Pharmacy technician	3(4.1)	
Pharmacist	0(0)	
Lab. Technologist	0(0)	
Ward-maid	9(12.2)	
Trained Person /Auxiliary Nurse	59(79.7)	
PERCEPTION ON MALARIA DISEASE		
Are you familiar with the term ‘Malaria’ in children?	Yes	74(100)
	No	0(0)
Did you or your child suffered from malaria before?	Yes	74(100)
	No	0(0)

Where did you purchase anti-malarial drugs	
Pharmaceutical industry	0(0)
Health representative of company	12(16.2)
Local wholesalers	14(18.9)
Other pharmacy/patient stores	42(56.8)
Market	1(1.4)
Herbal homes	5(6.8)
PERCEPTION ON MALARIA TREATMENT	
Which of the following antimalaria drug derivatives purchase for treating malaria?	
Chloroquine derivatives	66(89.2)
S.-Pyrimethamine derivatives	54(72.9)
Artesunate derivatives	37(50)
Herbal medicines	43(58.1)
Quinine derivatives	4(5.4)
Which of the following is/are the most common route(s) of administration of anti-malarial drugs used for childhood malaria?	
Oral	68(91.9)
Intra-muscular	51(68.9)
Intra-venous	16(21.6)
Rectal	0(0)
Have you come across cases of resistance of malaria to any of the following anti-malarial drug(s)?	
Chloroquine derivatives	69(93.2)
S.-Pyrimethamine derivatives	60(81.1)
Artesunate derivatives	12(16.2)
Quinine derivatives	13(17.6)
What do you think is/are responsible for malaria parasite resistant to anti-malaria drug?	
Drug abuse	66(89.2)

Incomplete dosage	61(82.4)
Fake drug	61(82.4)
Other reasons	35(47.3)
What proportion of attendance at your patient medicine store is due to malaria disease?	
0-20%	14(18.9)
21-50	26(35.1)
51-70%	23(31.1)
>70%	11(14.9)
Which of the following is/are the common symptom(s) of malaria disease showed by the children that visit your store?	
Fever	71(95.9)
Vomiting	47(63.5)
Headache	50(67.6)
Convulsion	22(29.7)
Cough/catarrh	51(68.9)
Body pain	47(63.5)
Loss of appetite	53(71.6)
Nausea	61(82.4)
Chill/cold	57(77.0)
Anaemia	56(75.7)

6. DISCUSSION AND CONCLUSIONS

The health workers indicated that the current first line drug for treating childhood malaria at the PHCs is Artesunate derivatives with least use of Sulfadoxine Perimethamine derivatives and no usage of chloroquine derivatives. The result showed that health workers were aware of the current WHO and Federal Ministry of Health recommendation on the treatment of uncomplicated and severe malaria disease. Related results has been reported among Caregiver and Medical Practitioners in Ogun State (Amaran *et al.*, 2013; Fatugase *et al.*, 2012; 2013), other part of Nigeria (Ezenduka *et al.*, 2014) and Africa (Ajayi *et al.*, 2008).

Cases of resistance of malaria parasites to anti-malarial drugs mostly chloroquine derivatives and least with artesunate derivatives indicated by health workers with incomplete dosage and fake drugs as the most common factors responsible for malaria parasite resistant.

The obtained result revealed that caregivers/health workers had previous knowledge on the resistance of malaria parasites to CQ and other antimalaria used in the management and treatment of malaria disease in children. The obtained result corresponds with previous reports on management and treatment of malaria in Ogun State by Omole and Onademuren (2010) and Olukosi *et al.* (2014) in Lagos State, related results has been reported in other parts of Nigeria (Abdullahi *et al.*, 2009; Adebayo *et al.*, 2015) as well as other African countries (Laufer *et al.*, 2010; Ihenetu *et al.*, 2017).

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