

# Conscientização e utilização de terapias combinadas à base de artemisinina entre mães de crianças menores de cinco anos em uma área de governo local na Nigéria

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## ABSTRACT

**Introduction:** One of the challenges of malaria control is inappropriate treatment and development of resistance by its causal agent (plasmodium species). Artemisinin-based combination therapies (ACTs) was adopted as first-line treatment for malaria to improve quality of the treatment. This study aimed at assessing the mothers' of under-five children's awareness and utilisation of ACTs in Egbedore LGA osun state Nigeria. **Method:** Descriptive cross-sectional design was used. Eight hundred and thirty seven mothers of under-five children were selected through stratified random sampling technique. **Results:** The findings revealed that malaria should be treated promptly because it makes children not to go to school regularly (31.9%), it causes poverty (20.4%) and the main reason why more than six out of 10 people go to hospital for treatment (20.3%). However, majority (94.0%) thought witch crafting was the reason for prompt treatment. Drugs identified by the mothers for treatment of malaria include Aspirin (85.7%), Chloroquine/ Nivaquine tablet /syrup (71.8%), herbal preparation (agbo) (71.8%), Artesunate-Amodiaquine tablet (7.2%) and Coartem (Artermether/ Lumefantrine) (4.4%). Only few of the respondents mentioned Artesunate plus amodiaquin 3.2% and Coartem 1.7% as new recommended ACT for treatment of malaria. Utilisation of this ACTs was very low among the respondents as only 3.3% and 2.4% claimed to have treated their children with Coartem and Artesunate plus amodiaquin respectively. The major sources of the respondents' medicines are Pharmacy/chemist/patent medicine store (49.0%) and public health facilities (41.4%). **Conclusion:** Findings of this study showed that level of awareness and utilisation of recommended ACTs for the treatment of uncomplicated malaria at home was poor in Egbedore LGA, effort must be intensified to promote utilisation of the new recommended ACTs with a view to reducing malaria morbidity and mortality.

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**Key words:** Awareness; Utilisation; Artemisinin-Based Combination Therapies; under-five



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## Background

The burden of malaria is very huge on human beings, between 124 and 283 million episodes of malaria fever were estimated to have occurred worldwide in 2013 (WHO, 2014) These cases led to estimated 584,000 deaths in which 90 percent occurred in the African Region alone. These deaths are reported to be mainly among under-five children in sub-Saharan Africa as an estimated 437,000 under-five children died due to malaria in 2013 (UNICEF, 2014).

The first and most frequent clinical presentation in malaria attack is fever (Orimadegun, 2010). Many caregivers prefer to give their children herbal preparation because they believe it cures fevers completely. The first orthodox medication that is commonly used is anti-pyretic, which is usually Paracetamol syrup followed by Chloroquine (Orimadegun et al., 2008; Oyedeji et al., 2009; Ebuehi and Adebajo, 2010). Orimadegun et al. (2008) found out in their study that Chloroquine was the most common drug (54.2%) caregivers gave to children who had malaria attacks. Similarly, Oyedeji et al. (2009) found out that 81% of their respondents gave their children Chloroquine and other drugs at home before taking them to health facilities. Other drugs were Amodiaquine, Quinine and Sulphadoxine pyrimethamine / Fansidar, Phensic and Alabukun. Antihistamines such as Chlorpheniramine and Promethazine are sometimes added to relieve allergic reactions (Oyedeji et al., 2009).

The recommended treatment for malaria attacks is artemisinin-based combination therapy (ACT) (WHO, 2008). The World Health Assembly resolution in May 2007 urged member states to promote use of Artemisinin-based

combination therapies and to implement policies that prohibit the production, marketing, distribution and use of counterfeit anti-malarial drugs (WHO, 2008). In Nigeria, the drug of choice for treatment of uncomplicated malaria as recommended in the treatment policy is Artemether-Lumefantrine (AL). It is an artemisinin combination therapy (ACT) that is effective with prompt action against all forms of malaria species (FMOH, 2010a). Other ACTs that can be used when Artemether-Lumefantrine is not available are Amodiaquin plus Artesunate, Dihydroartemisinin plus Piperaquine plus Trimethoprim and Artesunate-mefloquine (FMOH, 2010a). However, consumption of these ACTs is still very low in many of the malaria endemic nations. WHO in 2008 indicated that access to ACT was poorer as just average of 3% of children were treated with it in few countries like Benin, Cameroon, Central African Republic, Gambia, Ghana, Uganda and Zambia. Adewole and Faparusi (2015) found out in their study that only 14% of children were treated with ACTs in a study conducted in a local government area in South West Nigeria. It was on this premise that this study assessed the mothers' level of awareness and utilisation of current treatment recommendations (ACTs) for malaria in children in the study area.

## **Material And Methods**

### **Research design**

The study was a descriptive cross sectional survey to assess mothers' of under-five's level of awareness and utilisation of Artemisinin-based combination therapy in the treatment of malaria. Its findings are a part of a larger study that involved mothers of under-five children in Egbedore local government area (LGA) in Osun state, South Western Nigeria.

### **Study Setting**

Egbedore local government area is located at the North West of the state and covers approximately 102 square kilometres of land (Egbedore LGA, 2008). It is made up of 10 political wards and had population of 73,969, consisting of 37,302 males and 36,667 females (Federal Republic of Nigeria 2009). The inhabitants of Egbedore LGA are predominantly Yorubas of the Oyo extraction and their major occupations are farming and trading. There are 22 primary health care facilities owned by the LGA and one National Primary Health Care Centre (Egbedore LGA, 2008).

### **Study population**

The population for this study were mothers of under-five children residing in Egbedore LGA in Osun State South-West of Nigeria. The mothers were reached through their different households. The inclusion criterion was living in the selected communities in Egbedore LGA for a minimum of one year.

### **Sampling technique**

The study's respondents were selected through stratified random sampling technique.

### **Instrumentation**

Data were collected from the selected mothers with the aid of a thoroughly validated structured interviewer-administered questionnaire that comprised open and close-ended questions. It was originally prepared in English and translated into Yoruba language and back translated into English to check the consistency. The questionnaire sought information on name of nearest health facility to the respondents' households, their demographic characteristics, knowledge of causes, transmission and symptoms of malaria, knowledge of home management of malaria, knowledge of complications of malaria and practices of home management of malaria.

### **Method of data collection**

The researchers trained seven research assistants to administer the questionnaire in the respondents' homes after obtaining consent from the head of households and the respondents. Data were collected every day for two weeks, 837 questionnaires were initially distributed but 832 were retrieved because five participants refused outright to continue with the study, however, another five were randomly selected to replace them. The incorrectly filled copies of the questionnaire were identified on a daily basis, and the researcher and the research assistants concerned revisited the households involved to effect corrections. Thus 837 completed copies of the questionnaire were analysed.

### **Ethical consideration**

An approval was obtained from Ladoke Akintola University of Technology (LAUTECH) Teaching Hospital Osogbo, Osun state ethical committee. Written permission was also obtained from the chairman of Egbedore local government area, the head of the household and the study participants.

Data analysis was done using descriptive statistics of frequency, percentage, mean and standard deviation.

## **Results**

Analysis of the respondents' demographic characteristics revealed that half (50.2%) of them were between 25 and 34 years old, the mean age was 31.9 while the standard deviation was 9.0. The modal educational status was secondary school with majority of them being traders. Majority (73.7%) of the mothers belong to nuclear family.

Table 1 presents the opinion of the mothers on why malaria should be treated promptly. Some (31.9%) of the mothers indicated that malaria makes children not to go to school regularly and thereby makes them dull. Only 20.3% of the mothers believed that malaria is the main reason why more than six out of 10 people go to hospital for treatment, 20.4% stated that malaria causes poverty and reduces the money families use to take care of their children. Large proportion (94%) of the mothers indicated that malaria is caused by witchcraft. Other reasons that were mentioned by the respondents were that three (3) out of 10 deaths of young children are due to malaria and that it is responsible for at least one out of death of 10 women during childbearing.

FIGURE 1 displays the mothers' level of awareness of available medicine for the treatment of malaria. Majority (85.7%) of the respondents mentioned Aspirin, this is followed by those (71.8%) who indicated Chloroquine/ Nivaquine tablet /syrup and herbal preparation (agbo) as medicines known while only 7.2% and 4.4% mentioned Artemisinin-Based Combination Therapy (ACT) (Artesunate-Amodiaquine tablet and Coartem [Artemether/Lumefantrine]) respectively.

Table 2 presents the mothers' awareness of new recommended medicine for the treatment of malaria. Majority (72.3%) of the mothers indicated administration of Chloroquine/ Nivaquine syrup, one dessert spoonful twice daily for three days for children of 4-6 years and for those who are between age six months and three years 69.2% mothers mentioned administration of Chloroquine/ Nivaquine syrup one teaspoonful twice daily for three days. Few (3.2%) of the mothers stated that children under one year should be given Artesunate ½ tablet Amodiaquin ½ tablet daily for three days, while 1.7% mothers indicated use of one tablet of Coartem twice daily for 3 days for children aged six months to three years and two tablets of Coartem twice daily for three days for children aged 4 to 8 years.

Table 3 describes mothers' utilisation of available medicines for treatment of malaria fever in their communities. Majority (78.0%) of the mothers stated that they always give their children Aspirin or teething powder whenever the children had malaria fever while 70.4% indicated administration of paracetamol syrup or tablets to their children. Most (61.9%) of the mothers indicated that they were always giving their children herbal preparation (agbo) to treat malaria fever. Many (47.9%) of the mothers claimed they always give their children Chloroquine/ Nivaquine tablet /syrup whenever they had malaria fever. Only 3.3% and 2.4% mentioned administration of Coartem tablet and Artesunate-amodiaquin tablet respectively for treatment of malaria fever among their under-five children.

Mothers' description of administration of their medicine of choice to their children whenever they had malaria is displayed in Table 4. Most (67.7%) of the mothers treated their children who had malaria fever with Chloroquine/ Nivaquine, only few of them administered Coartem (2.3%) and Artesunate with Amodiaquin (2.7%) (ACT) to their children.

Table 5 shows various sources of medicine administered to the under-five children by their mothers. Pharmacy/chemist/patent medicine store were mostly patronized by the respondents (49.0%), this is followed by public health facility (Health centre, hospital, maternity) 41.4%. Few (4.8%) mothers indicated that they got their drugs from drug hawkers while only 0.8% got medicines from private health facility/hospital.

## Discussion

Some of the challenges to effective treatment of malaria among children include poor perception of severity of malaria, wrong beliefs about its cause, delay in seeking appropriate treatment as well as non-compliance to treatment by the mothers and caregivers (Falade et al., 2006; Ajayi et al., 2008). The findings of this study show that large proportion of the mothers associated witchcrafting to malaria illness. This belief will in turn affect their treatment seeking behaviour. In effect, the initial belief that malaria is as a result of witchcrafting might have altered the care-seeking behaviour leading to delay in treatment and its consequent complications, high morbidity and mortality. Most often, care or treatment-seeking behaviour is a function of individual's health beliefs about the cause and cure of the illness that is deep-rooted in the culture of such individual. This finding corroborates what Sreeramareddy et al. (2006) reported in their studies that D'Souza (1999) found out that some illnesses were even categorised as 'not for hospital'. In that case, such illnesses will not be reported in the hospitals until they are highly complicated. However, some of the respondents stated that malaria did not allow their children to go to school regularly and thereby making them dull as well as consuming large sum of the family's money.

Findings of this study show that majority of the mothers identified Aspirin, Chloroquine/ Nivaquine tablet /syrup and herbal preparation (agbo) as available medicines for treatment of malaria. This has been found in many previous studies in rural areas. Similarly, the most utilized medicines by the respondents for treating malaria fever was Aspirin and Paracetamol, majority of them also gave their sick children herbal preparation (agbo). This finding is still characteristic of what obtains in many rural areas in Sub Sahara Africa (Ajayi et al 2008; Adewole and Faparusi 2015). It also corroborates findings by Orimadegun et al. (2008) and Oyedeji et al. (2009) who found out in their study that Chloroquine was the most common drug caregivers gave to children who had malaria attacks at home before taking them to health facilities. Adewole and Faparusi (2015) also found out that 86% of their respondents used drugs like chloroquine, sulphadoxine-pyrimethamine and various form of analgesic to treat malaria among their children. Falade et al., (2006) also stated that large number of women in rural areas mentioned herbal therapy as their first line of treatment because they believe it cures fevers completely. Implication of this finding is that there is need for improved health education in health facilities and

various communication media for mothers and caregivers on the importance of giving their children full dose of recommended Artemisinin-Based Combination Therapy (ACT) whenever their children have malaria fever.

Mothers' knowledge of the new recommended (Artemisinin-based combination therapy (ACT)) for treatment of uncomplicated malaria attacks in this study is greatly low. Very few of the mothers knew the new recommended ACT, most of the mothers referred to Chloroquine/ Nivaquine syrup as the new anti-malarial drugs. The finding is consistent with previous studies in similar environment by Ajayi et al (2008) where none of their respondents knew Arthemeter Lumefantrin before their study. Chloroquine/Nivaquine is an old antimalarial drug that is always available in most remote areas at affordable price, this must have been factors enhancing its wide consumption among young and old people. Since most of the respondents were not aware of existence of ACT, automatically they could not use them thus this study revealed poor utilisation of the drugs. Increasing dissemination of information on the new ACT in rural communities is still very significant in promoting its use among the rural dwellers for effective management of malaria. Making the drugs accessible and affordable to the consumers is also a paramount responsibility of the government.

In this study, the commonest source of anti-malaria drugs was pharmacy/chemist/patent medicine store, many of the respondents also got their drugs from public health facility (Health centre, hospital, maternity). This has been common source of antimalarial and antipyretic drugs in Nigeria and most countries in Sub Saharan Africa because of their closeness to the people in the community and their prompt service (Hetzel, et al 2008). The finding is in consonant with the studies on malaria and malaria treatment seeking behaviour where high proportion of their respondents patronized medicine stores and pharmacies for malaria treatment. (Falade et al., 2006; Sreeramareddy et al., 2006; Sumba et al., 2008; Shretta et al., 2013) Implication of this in community health care is that there is need for regular enlightenment programmes for these outlets to improve their performance with a view to ensuring dispensing live-saving drugs.

Table 1: Mothers' opinion on significance of prompt treatment of malaria

Mothers' opinion	FREQUENCY (n= 837)	PER CENT
Malaria is the main reason why most people go to hospital (more than 6 out of 10)	170	20.3
Three (3) out of 10 deaths of young children are due to malaria.	81	9.7
Out of the death of 10 women during childbearing, malaria is responsible for one	53	6.3
Malaria causes poverty and reduces the money families use to take care of their children	174	20.4
Malaria makes children not to go to school regularly and thereby makes them dull.	267	31.9
Malaria is caused by witchcraft	787	94.0

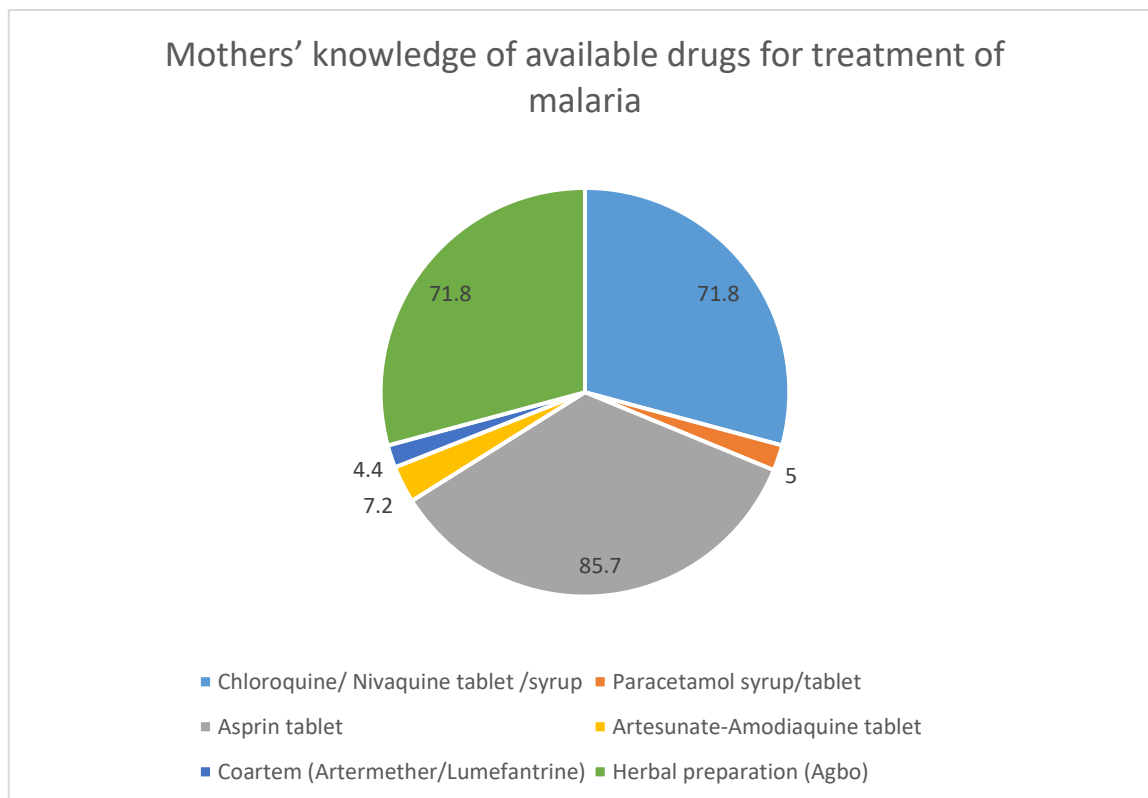


Figure 1: Mothers' knowledge of available drugs for treatment of malaria

Table 2: Mothers' knowledge of new recommended treatment for malaria (ACTs)

MEDICINES	FREQUENCY (n= 837)	PER CENT
Give a child (6 months – 3 years) Chloroquine/ Nivaquine syrup 1 teaspoonful twice daily for 3 days	579	69.2
Give a child (4 – 6 years) Chloroquine/ Nivaquine syrup 1 dessert spoonful twice daily for 3 days	605	72.3
Give a child (6 months- 3 years) 1 tablet of Coartem twice daily for 3 days	14	1.7
Give a child (4-8 years) 2 tablets of Coartem twice daily for 3 days	14	1.7
Give a child (under 1 year) Artesunate ½ tablet Amodiaquin ½ tablet daily for 3 days	27	3.2
Give a child (1-7 years) Artesunate 1 tablet Amodiaquin 1 tablet daily for 3 days.	12	1.4

Table 3: mothers' utilisation of available Medicine for treatment of malaria among under-five children

Available medicines	Utilisation of the available drugs					
	Always		Occasional		Never	
	F	%	F	%	F	%
Paracetamol syrup / tablet	589	70.4	208	24.9	40	4.8
Aspirin//teething powder	653	78.0	145	17.3	39	4.7
Chloroquine/ Nivaquine tablet /syrup	401	47.9	172	20.5	264	31.5
Artesunate- amodiaquin tablet	20	2.4	28	3.3	789	94.3
Coartem tablet	28	3.3	31	3.7	778	93.0
Herbal preparation (agbo)	518	61.9	197	23.5	122	14.6

Table 4: Mothers' description of administration of their medicine of choice to their children whenever they had malaria

Medicine of choice	Frequency (n = 837)	Per cent
Give a child (6 months – 3 years) Chloroquine/ Nivaquine syrup 1 teaspoonful twice daily for 3 days	474	56.6
Give a child (4 – 6 years) Chloroquine /Nivaquine syrup 1 dessert-spoonful twice daily for 3 days	567	67.7
Give a child (6 months- 3 years) 1 tablet of Coartem twice daily for 3 days.	19	2.3
Give a child (4-8 years) 2 tablets of Coartem twice daily for 3 days	19	2.3
Give a child (under 1 year) Artesunate ½ tablet Amodiaquin ½ tablet daily for 3 days	23	2.7
Give a child (1-7 years) Artesunate 1 tablet Amodiaquin 1 tablet daily for 3 days	15	1.8

Table 5: Sources of medicines used by the mothers

Sources of medicine	Frequency (n= 837)	Per cent
Public health facility (Health centre, hospital, maternity)	347	41.4
Pharmacy/chemist/patent medicine store	410	49.0
Hawkers	15	1.8
Private health facility/hospital	7	.8
Hawkers and chemists	18	2.1
Hawkers	51	4.8
Total	837	100.0

## Conclusion

Nigeria changed the drug of choice for treatment of uncomplicated malaria from chloroquine/Nivaquinne to Artemisinin-based combination therapy (ACT) since January 2005 for effective and prompt cure of the disease, yet the level of awareness and utilisation is still very low among mothers of under-five children. There is still need for information, education and communication (IEC) on administration of ACT to raise level of awareness among the mothers and other people thus improving rational use of the drugs. Further research is recommended to document level of awareness and utilisation of ACT by health care providers and consumers in the rural communities.

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