

Assessment of Mother's Knowledge and Attitude towards Malaria Management among Under Five (5) Years Children in Okemesi – Ekiti, Ekiti – West Local Government, Ekiti State Estrjkl

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Abstract

Background: Malaria remains a major global public health and development challenge especially in tropical Africa. Plasmodium falciparum, the deadliest form of the malaria parasite, is responsible for the vast majority of the mortality and morbidity associated with malaria infection. This study therefore, aims to evaluate the caregiver's knowledge, attitude and practice regarding malaria and treatment of children below five (5) years in the rural community.

Methods: A community-based cross sectional survey was conducted in different households among mothers' with children below five (5) years of age selected by systematic random sampling. In total, 50 respondents were interviewed in the rural community using a semi-structured, paper-based questionnaire designed to capture information on socio-demographic characteristics, active knowledge, treatment seeking behaviour of caregivers/parents, types of treatment employed by the care-givers and personal protective measures against Malaria.

Results: Most respondents correctly associated malaria with infected female anopheles mosquito bites (99.7%) and reported that they will seek treatment within 24 hours of noticing the first symptoms of malaria. Although the respondents were unaware of the susceptibility of children to malaria parasite, thirty seven percent (37%) preferred to use herbs while (17%) will take children to the clinic/dispensary for treatment. Caregivers also make use of artemisinin based combination therapy (ACT) (7%), analgesics (5%), antibiotics (5%) but majority of the respondents use self-prescribed palliative drug combinations/over-the-counter drugs (40%) in treating malaria. They were also aware of preventive measures against malaria such as insecticide treated bed-nets (28%), but there was low ownership and usage of the bed nets among respondents as only 19% of them have access to bed nets. Other preventive measures include spraying with insecticide (29%), wearing long sleeved clothes (29%), and draining of stagnant water (13%).

Conclusion: There was dearth of information percolating to mothers most especially on current trends in management, control and prevention of acute uncomplicated malaria in the endemic rural community. Provision of affordable healthcare facilities by government and improved patronage coupled with sound integration of health information and education policy would enhance and promote change of attitude, behaviour and practice will help in combating malaria in the rural endemic settings.

Keywords Malaria; Age; Mortality; Female Anopheles mosquito; Caregivers/Mothers; Children

Introduction

Malaria is a life threatening parasitic disease transmitted by female anopheles mosquitoes. Malaria is a highly prevalent tropical disease, with high morbidity, mortality and high economic and social impact. As of December 2015, it accounted for 214 million cases and 438,000 deaths globally with sub-Saharan Africa accounting for 88% and 90% of cases and deaths respectively [1]. Despite reported decline in infection and mortality [2], malaria remains the fourth leading cause of under-five mortality in the sub-region [3]. Children are particularly susceptible to the disease due to their poorly developed immune system. This is further confounded by evolving resistance of the

pathogen, Plasmodium falciparum, to drugs and insecticides. Current strategies for controlling malaria continually evolve through collective action [2-4]. There have been advances in terms of new drugs and vaccines, eradication is still a way off and many health strategies now focus on malaria prevention and control. The rural population in Africa is often regarded as poor, ignorant and ill-equipped, with inadequate social infrastructure making the people more prone to many diseases, especially malaria. Thus, many intervention measures have been directed at reduction of the morbidity and mortality rates in rural communities. The rural community chosen for this study has been known for prevalence of malaria. The study aims at determining the level of awareness of mothers about malaria management and the possible treatment used in combating malaria in Okemesi-Ekiti, Ekiti State, Nigeria. This study set out to determine the knowledge, practice

and attitude of caregivers regarding treatment of children (below 5 years) with malaria in Okemesi – Ekiti community.

Material and Methods

Okemesi-Ekiti is a town in Ekiti West Local Government Area of Ekiti State, South-West Nigeria. The town lies within latitudes 7°55' N and 7°80' N of the equator and longitudes 4°55' E and 4°59' E of the Greenwich meridian. Human settlement pattern is linear and the houses are built in similar regular pattern along major roads [5]. It is located in the rainforest, at about 541 meters above sea level.

Qualitative descriptive survey method was utilised to collect information on mother's knowledge and attitude towards management of malaria among children under five years of age. The survey approach was considered appropriate since the research was concerned with gathering unmanipulated data.

Using the stratified sampling technique, fifty (50) questionnaires were distributed and forty one (41) were returned back to the enumerator. The fifty (50) caregiver randomly selected from the community comprises of ten (10) men and forty (40) women, since women are the major care giver. The filled questionnaires were compiled and collated for statistical analysis. Data collected from the questionnaire were compared with case files of children at the Primary Health Care (PHC) facilities at the Local Government level to assess correlational relationship.

This research adopted the ex-post-facto design because in the course of conducting this research, the researcher had no control over the variable under investigation. Copies of the questionnaire were given to respondents at maternity centre, home and work place. In addition to instrument, the respondents were given verbal instructions and clarification where necessary. All data collected were entered into the computer, double-checked, verified and analysed using MS Excel 2010.

Ethical Considerations

All aspects of the study were approved by Kwara State University Research Committee and Ethical Review Board. Verbal and written Informed consent was obtained from the mothers'/respondents. They were assured of voluntary participation, confidentiality of their responses and the opportunity to withdraw at any time without prejudice in line with the Helsinki Declaration was emphasised [6].

Results

Questionnaires were used to conduct the survey about the knowledge of malaria from care-givers. Majority of the respondents (72.09%) were between the ages of 21–50 (Figure 1). Only 10 (23.26%) and 2 (4.65%) were between the ages on 15-20 and 51-60 respectively.

The result shows that only 55% (22/40) of the parents/caregivers are aware that female anopheles mosquitoes are responsible for malaria (Table 1). While 2.5% (1/40) believes that rat can cause malaria, 7.5% (3/40) believes that dogs can cause malaria, 5% (2/40) believes that cockroach is a vector and can transmit malaria to human. 30% (12/40) did not know the vector responsible for malaria transmission.

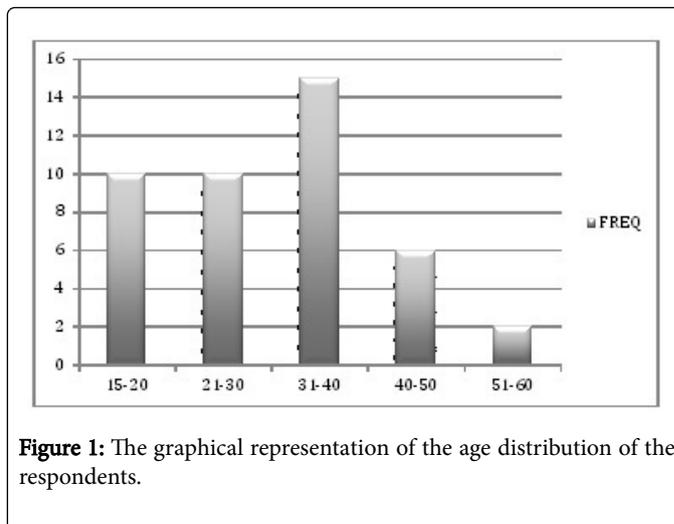


Figure 1: The graphical representation of the age distribution of the respondents.

Vectors	Frequency	Percentage (%)
Rat	1	2.5
Dog	3	7.5
Female Anopheles Mosquitoes	22	55
Cockroach	2	5
I do not Know	12	30
Total	40	100

Table1: Knowledge of care- givers about malaria.

The care-givers were able to ascertain some sign and symptoms of malaria which ranges from chills < dizziness/vomiting/do not know signs < body pain/loss of energy < headache < loss of appetite < high body temperature (Figure 2).

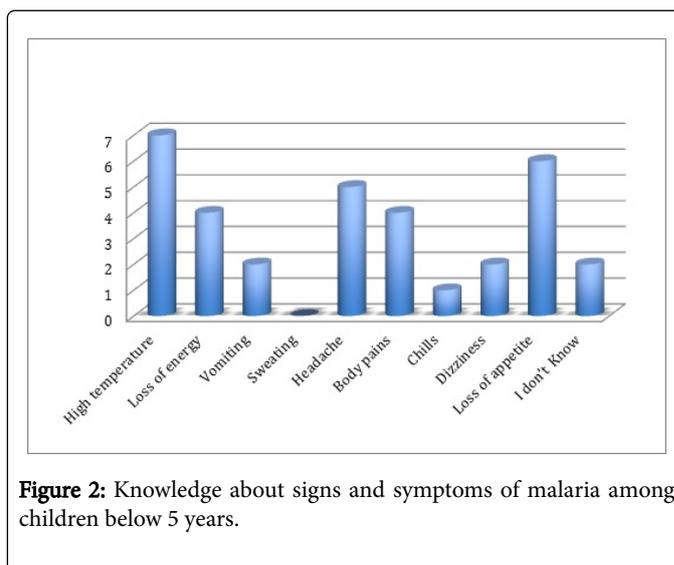


Figure 2: Knowledge about signs and symptoms of malaria among children below 5 years.

The study shows that 92% care-givers have knowledge about different methods used in preventing the spread and control of malaria among children below 5 years of age (Table 2).

Prevention	Frequency	Percentage (%)
Draining of stagnant water	3	13
Wearing long sleeved clothes	7	29
Making fire and smoke	4	17
Spraying with insecticide	7	29
Trimming bushes around the house	0	0
Cleaning dark corners in the house	1	4
I don't Know	2	8
Total	24	100

Table 2: Knowledge about ways to prevent and control malaria.

Only 8% are not aware of any preventive measure. The most commonly used preventive measures are spraying with insecticide and

wearing long sleeved clothes, both accounting for 58%, while the two least preventive approaches are trimming bushes around the house and cleaning dark corners in the house accounted for only 4%.

The personal preventive measure as declared by the respondent ranges from use of repellent < burning of cow dung/leaves/do nothing < use broom < use of mosquito coil < gauze wire in windows < use of mosquito nets (Table 3). Most of the respondents 46% (16/35) visit patent shops or pharmaceutical shops for drug, 37% (13/35) believes in fetching herbs from the bush as effect way of combating malaria, 17% (6/35) seeks treatment from the clinic while none of the respondent seeks treatment from native doctor (Table 4).

Very few parents believe in exclusive breast feeding as the breast milk is said to contain everything needed in combating all forms of ailment (5%); only few parents uses ACT (7%), others use others anti malaria (5%) but most of the parents use self-prescribed palliative drug combinations popularly called Akape (40%) or concoction (31%), because is cheap and tend to be very effective treatment against malaria (Table 5).

Preventive measure	Frequency	Percentage
Use repellents	1	3%
Gauze wire in windows	6	21%
Use mosquito nets	8	28%
Use mosquito coil	6	21%
Use broom	4	14%
Burn cow dung/leaves	2	7%
Do nothing	2	7%
Total	29	100%

Table 3: Personal protection measures to guard against malaria.

Where do you go for treatment?	Frequency	Parentage
Patent shop/Medicine pharmacy	16	46%
Clinic/Dispensary	6	17%
Native doctor	0	0%
Use of herbs (Agbo)	13	37%
Total	35	100%

Table 4: Treatment seeking behaviour of caregivers/parents.

The study shows the various medications used by care-givers in treating malaria. The treatment ranges from Ciprofloxacin, Tetracycline, Amoxycillin, etc < mild antibiotics (Septrin)/Analgesic/ Other Anti-Malaria/Exclusive Breastfeeding < ACT < Agbo < Self-prescribed palliative drug combinations (Akape).

Discussion

Malaria still kills some 0.5–2.5 million people per year in the tropics. Resistance to the cheap, most commonly used antimalarial continues to spread alarmingly and could outpace drug development.

Treatment	Frequency	Percentage
Concoction (Agbo)	13	31%
Self-prescribed palliative drug combinations / Over-the-counter drugs (Akape)	17	40%
Artemisinin based combination therapy (ACT)	3	7%
Exclusive breast feeding	2	5%
Other anti-malaria drugs	2	5%
Analgesics (Paracetamol, Panadol, Ibuprofen)	2	5%
Mild Antibiotic (Septrin)	2	5%
Other antibiotics (Ciprofloxacin, Tetracycline, Amoxycillin, etc.)	1	2%
Total	42	100%

Table 5: Types of Treatment employed by the care-givers in treating malaria.

The artemisinin derivatives have had an important clinical impact both on the treatment of resistant falciparum malaria and on the incidence of disease in low-transmission areas. A few promising new antimalarial are being tested clinically but there is an imperative need for cheap, well-tolerated drugs that can be used in short courses, and for strategies to delay the onset of drug resistance. Bed nets have been shown to reduce the incidence of severe malaria in many areas but an effective vaccine is urgently needed. Patients with malaria usually present with non-specific and irregular fever, chills, headache, and malaise. Vomiting occurs in approximately 2 percent of children, and loss of appetite in 6 percent of the children.

Malaria is so common that any patient who has been in a malaria prevalent area in the previous two months (usual incubation period, two weeks) should be considered to have malaria until it has been proved otherwise. The blood tests show a normal white-cell count and mild thrombocytopenia. The diagnosis is confirmed by microscopy of stained thin and thick blood films, at a magnification of 1000. The intra-erythrocytic parasites should be identified (if the species is uncertain, it should be considered to be *P. falciparum*) and counted. The treatment of malaria depends on the severity of the infection, the patient's age, the degree of background immunity (if any), the likely pattern of susceptibility to anti-malarial drugs, and the cost and availability of such drugs. The role of mosquitoes as vectors of transmission was demonstrated by Ross at the turn of the century. Since then, the behaviour of the malaria parasite and the mosquito vectors have been studied extensively and the knowledge gained has contributed immensely to various strategies for malaria control. These control programmes have often overlooked the role that communities' beliefs, attitudes and behaviour can play in the transmission, treatment and control of the disease [7].

Hlongwana et al. [7] report on knowledge, attitudes and practices (KAP) household survey undertaken with 320 respondents in Northern Swaziland. This was the premier KAP in Swaziland and was meant to provide baseline data before the implementation of a malaria elimination strategy at the community level. 99.7% of respondents correctly associated malaria with mosquito bites and 90% reported that they would seek treatment within 24 hours of seeing the first symptoms of malaria. Indoor residual spraying (IRS) was reported at 87.2% while bed net ownership was reported at 38.8%. Despite the high level of knowledge about malaria within the surveyed communities, there was little information coming to people via their preferred source of information—traditional community district meetings. Similarly, while the Department of Health (similar to the Ministry of Health in Uganda) promoted measures such as Community Health Workers (CHWs) and Rural Health Motivators (RHMs), they also generated very little information for the communities about malaria. The most important source of information was currently the health facilities, which in Nsaabwa's context are inadequate. The importance of availability of information through proper rural community channels is echoed by another study in North Western Tanzania, which highlights the need to address the challenge of illiteracy amongst the local residents [8,9]. Both studies highlight that hearing about malaria is a good foundation onto which other activities like prevention and control can build. A number of KAP studies have also been undertaken within an urban setting. While some had a bias towards children [10], others were more general. These studies raise interesting issues to keep in mind from the mixed results in correlation between education level and knowledge about malaria to the cost of malaria treatment as a fraction of household income [11,12]. Oreagba et al. [13] conducted a study in Southwest Nigeria to

determine the malaria knowledge and treatment choices of fever by mothers of children under the age of five. It was found that majority of the mothers had very low knowledge of malaria, while urban care givers reported higher use of health centres than their rural counterparts. In line with some previous studies the majority of mothers indicated that chloroquine was the major drug used against malaria; there were misconceptions about right dosage, especially among residents in rural areas. The three so-called benign malarial, *P. vivax*, *P. malariae*, and *P. ovale*, should all be treated with chloroquine. High-grade resistance to chloroquine in *P. vivax* has been reported from Oceania [14,15], but elsewhere the parasite remains generally sensitive and responds rapidly. Children tolerate anti-malarial drugs relatively well. Chloroquine is usually well tolerated, although it commonly produces pruritus in dark skinned patients, and in the treatment of acute malaria it may cause nausea, dysphoria, and very rarely, a transient neuropsychiatric syndrome or cerebellar dysfunction. Recent studies have shown that the traditional 3 day course of treatment of 25 mg (base) per kilogram of body weight (10 mg/Kg initially, 10 mg/Kg at 24 hours, and 5 mg/Kg at 48 hours) can be compressed into 36 hours for convenience. The choice of treatment for *P. falciparum* depends on the parasite's sensitivity to antimalarial drugs in the area where the infection was acquired. Known sensitive infections (e.g., those from North Africa, Central America north of the Panama Canal, Haiti, or the Middle East) should be treated with chloroquine. Where there is low-grade resistance to chloroquine, amodiaquine (35 mg/Kg over a period of three days) is a more effective alternative [16]. Chloroquine-resistant infections in most of Africa and some parts of Asia and South America usually respond to a single-dose combination of a long-acting sulfonamide usually sulfadoxine and pyrimethamine. Although both amodiaquine and sulfadoxine-pyrimethamine are well tolerated in treatment, neither should be used as a prophylactic drug, because of potential toxicity (amodiaquine can be associated with agranulocytosis and hepatitis, and sulfadoxine-pyrimethamine can be associated with exfoliative dermatitis, hepatitis, and blood dyscrasias). Unfortunately, resistance to sulfadoxine-pyrimethamine has developed rapidly in many areas (particularly in South America and Southeast Asia). The derivatives of artemisinin (qinghaosu) obtained from qinghao, or sweet wormwood (*Artemisia annua*), and developed as pharmaceutical agents in China, are the most rapidly acting of all antimalarial drugs. These drugs are not registered and therefore not generally available in many countries, but they have been used extensively for the treatment of drug-resistant falciparum malaria in China and Southeast Asia. In both severe and uncomplicated malaria they have given faster relief of fever and considerably faster clearance of parasites than other antimalarial agents, without evident toxicity [17]. Three compounds have been used: the parent, artemisinin, and two more active derivatives (a water-soluble hemisuccinate, artesunate, and an oil-soluble ether, artemether), both of which are metabolized to a biologically active metabolite, dihydroartemisinin. Indeed, artesunate can be considered a prodrug for dihydroartemisinin. Over a million patients have been treated with the artemisinin derivatives. No serious toxicity has been reported [18]. However, in experiments with animals, artemether, the closely related compound arteether, and the metabolite dihydroartemisinin have induced a consistent, but unusual, selective pattern of damage to some of the brain-stem nuclei [19]. The relevance of these findings to their use in humans is unresolved but remains a cause of concern. Artesunate is the most rapidly acting of the available compounds, possibly because it is immediately bioavailable (as dihydroartemisinin) after intravenous injection, and it is absorbed rapidly after oral or intramuscular administration. The strategies for

combating malaria now focus on reducing mortality and morbidity through early diagnosis and prompt treatment. Uncomplicated malaria may degenerate in under-five-year-old patients if not properly managed. Like other febrile illnesses, it is often subjected to home treatment by caregivers [20-22]. In a recent study, Ajibade [23] reported that 81% of his respondent mothers did not display satisfactory knowledge of drug schedules and doses. He also found a significant correlation between mothers' educational status and type of home treatment with unlettered mothers most likely use herbs. Age of household head, source of income and urban or rural location of residents have further been identified among other factors responsible for care seeking behaviour for children under five years [24]. Urgent interventions are, therefore, required towards improving home management of childhood malaria by adequately addressing identified influencing factors. Operators of patent medicine stores, as current preferred initial contact for malaria management, should also be included in such interventions. A serious problem of over-prescription of anti-malarial to patients without malaria has been found across the continent. However, since most patients with fever and malaria are treated before they get to the formal sector, ensuring best targeting of anti-malarial in the places such as shops where patients, and especially rural poorer patients, go, is essential.

The reported high patronage of patent medicine vendors by the care givers in this study may be linked to the convenient service and accessibility of drugs from the patent medicine stores [13]. Most of the caretakers were well informed about the major symptoms of malaria, which correspond to the current clinical case definition of malaria. Knowledge about malaria transmission is, however, shrouded in many misconceptions. Though the human dwellings in the study communities conferred no real protection against mosquitoes, bed net usage was low while residents combated the nuisance of mosquitoes with insecticide sprays, burning of coils and herbs, which they largely considered as temporary measures. Home treatment of malaria combining herbs and over-the-counter drugs and inadequate doses of drugs was widespread. More importantly, rural dwellers may not be able to afford the cost of a complete treatment regimen for malaria likely to be prescribed at the health centre hence they may opt for the patent medicine vendors who are often willing to sell a few tablets instead of a complete course of treatment [25].

Conclusion

Many of the caregivers of children under five years in the study do not have adequate knowledge on the cause, control and treatment of malaria. Most of the parents know the actual vector responsible for the spread of malaria and they take preventive measure such as spraying insecticide, wearing long sleeved clothes, use of mosquito net, gauze wire in windows and doors and the use of mosquito coil. Treatment seeking behavior has been shown to be related to the cost, availability and cultural beliefs about the causes and effective cures for malaria-like symptoms. There is therefore need for urgent interventions to promote and adopt updated appropriate management strategies against malaria in rural areas. While acknowledging the need for urgent interventions to improve home management of childhood fever, consideration must be given to the socio-economic and cultural context of drug use. Interventions to encourage responsible, state-of-the-art and effective management should aim at increasing the knowledge base of the population at large (including the mothers, schoolchildren, market sellers, and shop-keepers). Deployment of more resources and trained health professionals in the order of public

health physicians, registered nurses and mid-wives, environmental health officers, community health officers, community health extension workers, into rural communities would holistically enhance better malaria control and health care delivery.

Competing Interests

The Authors declare no conflict of interest.

Authors' Contributions

OAO conceived the idea, designed the questionnaire, and developed the manuscript. HOS and AAA restructured the concept and assisted to develop the manuscript. OTA administered the questionnaire, gathered and selected useful publications. OEA provided critical technical insights and input. OAO and HOS supervised the entire work. All authors read and approved the final manuscript.

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References

1. World Health Organization (2016) Malaria Fact Sheet.
2. Murray CJ, Rosenfeld LC, Lim SS, Andrews KG, Foreman KJ, et al. (2012) Global malaria mortality between 1980 and 2010: a systematic analysis. *Lancet* 379: 413-431.
3. World Health Organization (2015) World Malaria Report, Geneva.
4. O'Meara WP, Mangeni JN, Steketee R, Greenwood B (2010) Changes in the burden of malaria in sub-Saharan Africa. *Lancet Infect Dis* 10: 545-555.
5. Ayodele OS (2012) Groundwater Quality Appraisal of Some Hand-Dug Wells and Boreholes around Okemesi and Ikoro Area, Southwestern Nigeria. *Glob J Sci Fro Res Env Earth Sci* 12: 2.
6. World Medical Association Declaration of Helsinki (2001) Ethical principles for medical research involving human subjects. *Bull World Health Organ* 79: 373-374.
7. Hlongwana KW, Mabaso ML, Kunene S, Govender D, Maharaj R (2009) Community knowledge, attitudes and practices (KAP) on malaria in Swaziland: a country earmarked for malaria elimination. *Malar J* 8: 29.
8. Maitland K (2008) Severe malaria: Lessons learned from the management of critical illness in children. *Trends Parasitol* 22: 457-462.
9. Mazigo HD, Obasy E, Mauka W, Manyiri P, Zinga M, et al. (2010) Knowledge, Attitudes, and Practices about Malaria and Its Control in Rural Northwest Tanzania. *Malar Res Treat* 2010: 794261.
10. Njama D, Dorsey G, Guwatudde D, Kigonya K, Greenhouse B, et al. (2003) Urban malaria: primary caregivers' knowledge, attitudes, practices and predictors of malaria incidence in a cohort of Ugandan children. *Trop Med Int Health* 8: 685-692.
11. Akazili JMA, Aikins M, Binka FN (2007) Malaria treatment in Northern Ghana: What is the treatment cost per case to households? *Afr J Health Sci* 14: 70-79.
12. Ahmed SM, Haque R, Haque U, Hossain A (2009) Knowledge on the transmission, prevention and treatment of malaria among two endemic populations of Bangladesh and their health-seeking behaviour. *Malar J* 8: 173.
13. Oreagba AI, Onajole AT, Olayemi SO, Mabadeje AFB (2004) Knowledge of malaria amongst caregivers of young children in rural and urban communities in Southwest Nigeria. *Trop J Pharm Res* 3: 1.

14. Rieckmann KH, Davis DR, Hutton DC (1989) Plasmodium vivax resistance to chloroquine? *Lancet* 2: 1183-1184.
15. Murphy GS, Basri H, Purnomo, Andersen EM, Bangs MJ, et al. (1993) Vivax malaria resistant to treatment and prophylaxis with chloroquine. *Lancet* 341: 96-100.
16. Watkins WM, Sixsmith DG, Spencer HC, et al. (1984) Effectiveness of amodiaquine as treatment for chloroquine-resistant Plasmodium falciparum infections in Kenya. *Lancet* 1: 357-359.
17. Looareesuwan S (1994) Overview of clinical studies on artemisinin derivatives in Thailand. *Trans R Soc Trop Med Hyg* 88 Suppl 1: S9-11.
18. World Health Organization (2004) The Prevention and Management of Severe Anaemia in Children in Malaria-Endemic Regions of Africa: A Review of Research.
19. Brewer TG, Peggins JO, Grate SJ, Petras JM, Levine BS, et al. (1994) Neurotoxicity in animals due to arteether and artemether. *Trans R Soc Trop Med Hyg* 88 Suppl 1: S33-36.
20. Deming MS, Gayibor A, Murphy K, Jones TS, Karsa T (1989) Home treatment of febrile children with antimalarial drugs in Togo. *B World Health Organ* 67: 695-700.
21. Fawole OL, Onadeko MO (2001) Knowledge and home management of malaria fever by mothers and care givers of under five children. *West Afr J Med* 20: 152-157.
22. Olaogun AA, Ayandiran O, Olosode OA, Adebayo A, Omokhodion F (2005) Home management of childhood febrile illnesses in a rural community in Nigeria. *Aust J Rural Health* 13: 97-101.
23. Ajibade BL (2013) 'Mothers' Action and Preferences of Treatment of Febrile Illnesses among under- five -year- old Children in Osun State. *J Biol Agr Healthc* 3: 148-155.
24. Oyekale AS (2015) Assessment of Malawian Mothers Malaria Knowledge, Healthcare Preferences and Timeliness of Seeking Fever Treatments for Children Under Five. *Int J Env Res Public Health* 12: 521-540.
25. Kaona F, Sijunza MT, Manyando C, Khondowe S, Ngoma GK (2000) Utilisation of malarial drugs at a household level: results from a KAP study in Choma, southern province and Mporokoso, northern province of Zambia. *Cent Afr J Med* 46: 268-270.