

## ОРИГІНАЛЬНІ ДОСЛІДЖЕННЯ

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**Background:** The world health organization (WHO) estimates that every 45 seconds an African child dies of malaria while several others lay ill. Also, studies have shown that home-based management of malaria could improve prompt access to antimalarial medications for African children.

**Objective:** This study aimed at assessing the home based management practices among care givers of children below five years in Delta State.

**Methods:** This study was a descriptive cross-sectional survey used to assess the home based management practices of malaria in children under age five. 459 consenting Caregivers of children under five (6 to 59 months) were purposively selected from different churches during Sundays and Wednesdays midweek services through balloting from two communities in Central and North Senatorial Districts of Delta State (Oghara and Obiaruku). Prior to the commencement of the study, the caregivers were thoroughly counselled on the objectives of the study, and a pretested structured interviewer administered questionnaire was used for administration in English, Urhobo and Ukwuani languages.

**Results:** The study revealed that 86.93% respondents have good knowledge of malaria, and 60% commenced treatment within 24hrs. It also showed that 58.4% preferred anti-malarial combination therapies with arthemether-lumefantrine combination accounting for 34.0% drug options. Drug sources for home based malaria management were mainly from Pharmacy 40.5%, Drug sellers such as chemist 55.1% while information sources on choice of therapy and dosage were mainly from chemist 32.7%; health personnel 25.7%; neighbours 7.5% and self-based on previous experience 36.6%.

**Conclusion:** The study revealed very good knowledge of malaria and good management practices as well as good treatment seeking behaviours amongst the caregivers.

**Keywords:** *malaria; home-based management; practices; children; caregivers.*

**Problem statement and analysis of the latest research**

Malaria is the leading cause of morbidity and mortality among children below five years of age in sub-Saharan Africa. The World Health Organization (WHO) estimates that every 45 seconds an African child dies of malaria while several others lay ill<sup>1</sup>. In Nigeria, it constitutes the highest disease burden among children and accounts for 30% of all childhood deaths [2]. Malaria has also been shown to be responsible for high school absenteeism, neuro-disability and impairment of cognitive development in children [3,4].

It is estimated that 92% of these deaths occur at home; hence, mothers and caregivers are of foremost importance in recognizing mild or severe malaria disease and seeking treatment for their wards. Most caregivers begin treatment at home with antimalarial drugs and antipyretics bought from patent medicine stores [5,6], without a prescription and usually administered in inappropriate doses [7]. Thus, less than 15% of the malaria episodes treated at home are treated correctly.

Prompt and effective treatment of all children with malaria

is a critical element of malaria control. Treatment with effective antimalarial therapy is essential and African leaders have committed to ensuring that 80% of malaria episodes are adequately treated within 24hours of onset of symptoms [8].

Home-based management of malaria is a broad concept which encompasses hygiene, nutrition, lifestyle, environmental factors, socio-economic factors and self-medication. Home-based practices of malaria among caregivers of children below five years are an important determinant which ensures restoration of sound health to the child. A number of research works have been done to assess the reason for the increase in morbidity and mortality rates of malaria infection in children below five years. Although, the economic burden of malaria in sub-Saharan Africa especially among children below five years of age has been assessed previously, the extent and variation of this burden remains unclear. Home-based management of malaria could improve prompt access to antimalarial medications for African children as documented by several studies which have investigated home based management practices of malaria caregivers in children below five years and beyond in various parts of Nigeria and beyond[9,10,11]. Although these studies made significant observations as to the knowledge level of these care givers, their preferred source of drugs and their drug treatment practices, there still exists gaps as to the home management practices in Delta State hence the need for this study. This is a part of a larger study examining malaria management practices in children below 5 years with ethical approval of the Hospitals Management Board of Delta State with reference number A551/188. We undertook here to assess the level of knowledge of malaria, self-care practices and drug treatment patterns and practices and health seeking behaviour among care givers.

**Materials and Methods****Study Design**

This study was a cross-sectional survey used to assess the home based management practices of malaria in children below five.

**Study Setting**

The study is a descriptive, cross sectional study carried out in two purposively selected communities from Central and North Senatorial Districts of Delta State (Oghara and Obiaruku). Delta State comprises of 25 Local Government Areas with various ethnic groups. The major ones are Urhobo, Igbo, Isoko, Itsekiri and Ijaw. These ethnic groups share a common ancestry, as such their culture presents with elements of similarity. It is an oil and agricultural producing State of Nigeria with a population of 4, 098,291 people (males: 2,674,306 females: 2,024,085).

Oghara is a town in Ethiope West Local Government Area of Delta State. It is one of the major clans of the Urhobo ethnic group. It has various educational institutions which include primary schools, secondary schools and tertiary institutions such as the Delta State

Polytechnic situated in Otefe and the Western Delta University situated in Ogharefe-Oghara. The Delta State University Teaching Hospital is also located in Oghara and it is one of the two tertiary health institutions in the State. Oghara is made up of three sub-clans namely Ovade, Ogharefe and Ogharefe governed by a chieftancy system with the Ovie of Oghara as King. The major occupation of the Oghara people is farming and the land is rich in agricultural produce such as Palm Oil, Rubber, Cassava and Plantain. The Oghara people are well-known for their hospitality and Straight-forwardness. Oghara plays host to a number of oil and gas companies. Amongst these is Pan Ocean which has its flow station at Ovade in Oghara. Presently there are about ten petroleum depots in Oghara.

Obiaruku town is a well grown town extending 18 km North of the River Ethiope and a predominant trade zone found in the southern part of Nigeria. It shares borders to the North with the Benin division, on the South by her inherent brothers the Akashiada clan, on the West by the Urhobos and the South East by fellow Ukwuani's, Umukwata. The geographical position of Obiaruku places the town at focal point of trade between her boundary counterparts, the Akashiadas, the Urhobos, the Ikas and her former heritage the Idus. The town is a growing rural centre and headquarters of the Ukwuani Local Government council area the last in three Local Government Areas given to the second largest ethnicity in Delta State of Nigeria. Obiaruku settlers are inherent farmers and fisher men, yams and cassava cultivated for subsistence and export.

**Study Population**

The study population was made up of caregivers (mothers) of children below 5 years who fell within the age range of 18-62years.

**Sample and Sampling Technique**

A total number of 459 consenting caregivers were randomly selected for the study from different churches on different Sunday's and Wednesdays during mid-week services through balloting. This was to ensure that different categories of the caregivers were represented. The samples were drawn from caregivers in the two senatorial districts of Delta State.

**Instrumentation for Data Collection**

A pretested structured interviewer administered questionnaire was used. The questionnaires were administered in English, Urhobo and Ukwuani languages. The purpose of the questionnaire was explained to the respondents before administration. Effort was made to maintain respondent confidentiality by omitting their names to create a sense of awareness that the information provided could not be linked to them.

**Sample Size Determination and Data Analysis.**

A total of 459 respondents were used in this study. Data collected was entered into Microsoft Excel, rechecked for accuracy and loaded into the Statistical Package for Social Sciences (SPSS) version 21 IBM USA for descriptive statistics.

**Ethical Consideration**

In addition to the ethical approval obtained from the Hospitals Management Board with reference number A551/188 as stated above, approval was also obtained from the pastors-in-charge and parish priests of churches used.

**Results**

**Socio-demographic Profile of Respondents**

Table 1 shows the socio-demographic of the respondents. 24.4% of caregivers fall within the age brackets of 20 – 25 years, 22% (26 – 30 years), 22.7% (35 – 40) and 11.1% above 40 years. 19.2% of the caregivers had only one child under their care 47.2% had two while 18.1% and 20% had three and above three under their care respectively and 48.6% of respondents were married, majority (89.5%) had on form of education or the other, while majority (43.6%) were businessmen and woman, 18.3% had formal employment and 6.3% were house wives while 22% were either artisans or students.

**Table 1: Socio-demographics of Caregivers N=459**

Variables	Frequency	%	
<b>Gender of Caregiver</b>	Females	335	73.0
	Males	124	27.0
<b>Relationship With Child</b>	Mother	291	63.4
	Father	79	17.2
	Guardian	89	19.4
<b>Age of Caregiver</b>	20-25 years	112	24.4
	26-30 Years	101	22.0
	31-40 Years	104	22.7
	>40 Years	51	11.1
<b>Number of Children under care</b>	1 Child	88	19.2
	2 Children	196	42.7
	3 Children	83	18.1
	>3 Children	92	20.0
<b>Marital Status</b>	Single	38	8.3
	Married	223	48.6
	Separated	34	7.4
<b>Education</b>	Widowed	11	2.4
	None	48	10.5
	Primary	60	13.1
	Secondary	134	29.2
<b>Occupation</b>	Tertiary	207	45.1
	Farming	6	1.3
	Business	200	43.6
	Informal Employment	29	6.3
	Formal Employment	84	18.3
	House Wife	39	8.5
Others	101	22.0	

**Knowledge of Caregivers towards Malaria**

Majority of the respondents knew that mosquito bite is the cause of malaria, 48.4% identified fever as sign/symptoms of malaria, 31.2% headache, 12.4% and 2.6% as shivering and body pain respectively also 70.8% identified symptoms as high fever, while 17.6% and 13.5% as persistent cough and convulsion as most alarming symptoms respectively (Tab. 2).

**Malaria Home Management Practices of caregivers**

The self-care and home management practice of caregivers is shown in table 3. Their responses indicated that 60% commenced treatment of malaria immediately the symptoms were identified and 9.2% had other options such as not treating or just observing. On the reasons for which treatment may not have commenced immediately, 24.8% adduced there was no drug at home, while 5.0% said there was no money, 15.9% felt it may

**Table 2: Caregivers Level of Knowledge on Malaria**

Question	Responses N=459	
	F	%
<b>Knowledge of Transmission</b>	Mosquito bite	399 86.9
	Drinking Dirty Water	25 5.4
	Dirty Surroundings	20 4.4
	Others	15 3.3
<b>Knowledge of Signs and Symptoms Malaria</b>	Fever	222 48.4
	Shivering	57 12.4
	Body Pains	12 2.6
	Loss of Appetite	37 8.0
	Headache	143 31.2
<b>Perception of Alarming Symptoms</b>	Convulsion	62 13.5
	Persistent Cough	35 7.6
	Persistent Diarrhea	37 8.1
	High Fever	325 70.8

**Table 3: Malaria Home Management Practices of Caregivers**

Question	Responses N=459	F	%
<b>Timing For Treatment Initiation</b>	Immediately	257	60.0
	Later than 24Hours	132	28.8
	After 2-3 Days	28	6.10
	Others	42	9.2
<b>Reasons for Late Treatment Initiation</b>	No Drugs at Home	114	24.8
	No Money	23	5.0
	Not Serious	73	15.9
	Usually Wait and See	249	54.2
<b>Duration of Treatment Delay</b>	Within 1 Day	332	72.3
	2-3 Days	113	24.6
	Above 3 Days	24	5.23
<b>Preferred First Point of Call</b>	Home	33	7.2
	Hospital	362	78.9
	Pharmacy	32	7.0
	Patent Medicine Store	32	7.0

not be serious while 54.2% agreed to usually waiting to observe. The respondents also identified their preferred first point of call to be the hospital (78.9%) with poor consultations to pharmacy and patent medicine stores.

**Drug Treatment Practice**

The responses of caregivers on the various drugs adopted for home management of malaria is shown in Table 4. The most preferred drug used for treatment by the respondents was arthemether-lumenfrantrene combination (34%). Source of information on choice of therapy were predominantly health personnel with 36.6% based on previous experience. Sources of drugs used as well as their correct dosage for treatment were predominantly from health personnel and previous experiences with financial constraints as the reason adjudged for home based management of malaria.

**Discussion**

**Knowledge of Caregivers towards Malaria**

The study revealed a very good knowledge of malaria as majority of respondents know that malaria is caused through the bite of mosquito as well as their ability to identify the signs and symptoms to include fever, shivering, headache, loss of appetite and body pains. These observations are in tandem with symptoms observations of earlier studies by Chukwuocha *et al.* [12]; Okeke and Okafor [13], and Chukwuocha [9] that identified fever, headache, body pain and cough. Likewise, several Ugandan based studies like ACTwatch Group [14,15] and Tabuti [16], have reported a significant association of fever with malaria with two studies reporting high association of fever to malaria in 2009 and 2012 respectively. This very good knowledge of malaria as regards vector of transmission and causes have also been reported in another study by Zayyad *et al.* [17] in which more than half of respondents reported good knowledge of malaria in a University community in Northern Nigeria. This study however does not agree with the reports of Press [18] which found respondents associating cause of malaria to heat from sun light, fried food

**Table 4: Drug Treatments Used for Home Management of Malaria**

Question	Responses N = 459	F	%
<b>Most Preferred Malaria Therapy</b>	Antimalaria	98	21.4
	Mono therapy		
	Antimalaria	268	58.4
	Combination Therapy		
<b>Most Preferred Drugs Utilized</b>	Antimalaria Herbs	23	5.0
	Others	70	15.3
	Chloroquine	47	10.2
	Fansidar	45	9.8
	Quinine	98	21.4
	Arthemether-Lumefantrine	156	34.0
	Combination Therapy		
	Others	113	24.6
<b>Source of Information on Choice of Therapy</b>	Chemist	150	32.7
	Health Personnel	118	25.7
	Neighbours	23	5.0
<b>Source of Drug Used for Therapy</b>	Self-Based on Previous Experience	168	36.6
	Friends	15	3.3
	Pharmacy	186	40.5
	Drug Sellers Such as Chemist	253	55.1
	Left Over from Previous Hospitals	5	1.1
<b>Source of Information on Dosage</b>	Drug Seller	163	35.5
	Self-Based on Previous Experience	216	47.1
	Physician	48	10.5
<b>Reasons for Home Based Treatment</b>	Others	32	7.0
	No Money	248	54.0
	High Cost of Treatment	187	40.7
<b>Action Taken if Symptoms Persist</b>	Distance of Health Facility	8	1.7
	Visit Hospital	284	61.9
	Herbal	104	22.7
<b>Preventive Practices</b>	Others	71	15.5
	Mosquito Nets	174	37.9
	Maintain Clean Surroundings	155	33.8
	Take Herbs	50	10.9
	Indoor Spray	80	17.4

and hard work. This improvement in knowledge may be due to improved public health education of malaria to residents in the area.

**Malaria Self Care Practices of in the Home**

The study revealed that more than half of the care givers commenced malaria treatment immediately it was diagnosed or symptoms were identified while few of them did after 24 hours. This practice of early treatment of malaria is in line with the malaria treatment guidelines of the WHO which recommends that treatment of malaria episodes should commence at least within 24hours of onset of symptoms [8]. However, this is not in line with those reported in other parts of Africa like Ghana, Ethiopia and Tanzania where high delay for commencement of malaria treatment has been reported among caregivers of children

[19,20,21,22]. In exceptional cases of non-commencement of early treatment, non-availability of drugs and personal symptom observation to ensure adequate treatment were adjudged for such practices. They however submitted that in cases of persistent symptoms, their preferred first point of call was the hospital for most respondents while others patronized pharmacy and patent medicine stores respectively. The caregiver's attitude towards obtaining care from the hospital was higher than that reported by Chukwuocha [9], who also observed that caregivers obtained care from patent medicine stores and the use of herbal remedies.

#### Pattern of Drug Treatment Practices of Malaria Care givers

Treatment options for caregivers revealed that a small number preferred antimalarial herbs and other options of therapy while majority of them preferred antimalarial combination therapy, only a few preferred anti malaria monotherapy. The high use of antimalaria combination therapy is in line with the new malaria treatment policy of the WHO [1,23] for the handling of malaria resistant parasites. The percentage use of ACTs was also higher than that reported by Chukwuocha [9], these findings contradict earlier reports on the high use of chloroquine for malaria management at home [5,9,24]. Although the use of other drugs such as Fansidar and Quinine has been previously reported by Zayad *et al.* [17] and Chukwuocha [9], this study also reported the use of other options such as herbal remedies as reported by Wilcox and Bodeker [25], Palafox *et al.* [26] and Uguru *et al.* [27].

Majority of respondents admitted that the choice of therapy was from previous experiences and the chemist while a few got their choice of therapy from health personnel and neighbors. The drug they used for treatment were obtained mainly from the pharmacy and patent medicine sellers. These observations are in line with that reported by Palafox *et al.* [26] Uguru *et al.* [27] and Uzochukwu *et al.* [28] that information sources for home management of uncomplicated malaria were usually from diverse sources such as community pharmacists, community extension health workers, patent medicine sellers and herbalists.

Relative to the reasons given for home management of malaria, it was identified that high cost of treatment and lack of money were all responsible for the choice of home management. This observation has been previously reported by Uzochukwu *et al.* [28,29] that cost of malaria diagnostic tests and treatment were major influencers of self-treatment options for malaria in Nigeria. The preventive practices also reported in this study where using mosquito nets, maintaining clean surroundings, taking herbs and using indoor sprays that agrees with those earlier reported by Okeke *et al.* [5] and Musoke *et al.* [30]

#### Conclusion

The study concluded that there exists a very good knowledge of malaria amongst the caregivers. Early commencement of treatment by the caregivers was very high and this fell within the 24 hours as recommended by the WHO treatment guidelines for malaria. Although self-medication practices also persisted, this was influenced by their previous experiences with treatment options gotten from health personnel and high cost of treatment. Drug treatment pattern of care givers was mostly antimalarial combinations and hospitals were their first point of call in cases where malaria symptoms persisted than usual after their attempt to manage the situation.

#### Authors Contribution

Concept and Design – Arute JE

Date Collection – Arute JE

Analysis of Data – Odili VU

Drafting and Revisiting – Arute JE

Visiting approval – Odili VU and Arute JE

#### Conflicts of Interest

No conflict is declared by the authors.

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