



**UNIVERSITI PUTRA MALAYSIA**

***FACTORS ASSOCIATED WITH HEALTH SEEKING BEHAVIOR FOR  
MALARIA TREATMENT AMONG CAREGIVERS OF UNDER-FIVE  
CHILDREN WITH FEVER IN IMO STATE, NIGERIA***

**EMILIA OLUCHI SAMPSON**

**FPSK(M) 2018 35**



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**By**

**EMILIA OLUCHI SAMPSON**

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia,  
in Fulfillment of the Requirements for the Degree of Master of Science**

**May 2018**

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of the requirement for the degree of Master of Science

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**May 2018**

**Chairman : Rosliza Abdul Manaf, PhD**  
**Faculty : Medicine and Health Sciences**

**Background:** Malaria is a vector-borne disease that affects millions of people globally yearly. Malaria affects mainly young children under-five years and pregnant women. Appropriate health seeking-behavior (HSB) is important when seeking treatment for children under-five years with fever. Appropriate HSB among the caregivers will help the children to have better prognosis of malaria, because treatment will be initiated early.

**Objective:** The aim of this study is to determine the HSB practices among caregivers of children under-five years with fever in Imo State Nigeria and factors associated with HSB.

**Methodology:** A cross sectional study was conducted in Imo State, Nigeria. Multistage random sampling was employed, in the first stage four local governments out of 27 local governments was selected at random. In the second stage, simple random sampling with proportionate to size was employed to select the number of participants from each of the four selected local government. Appropriate HSB was operationally defined as seeking treatment from health facility within 24 hours of onset of fever. Data was obtained using guided self-administered questionnaire that was distributed to the caregivers. The inclusion criteria include caregivers of children under-five years that had fever two weeks prior to the study in Imo State Nigeria. Data was analyzed using IBM SPSS version 22.

**Result:** A total of 553 respondents was recruited, response rate of 98.9 %. Only 18.6% of the caregivers demonstrated appropriate HSB. There was significant association between appropriate HSB and caregiver's age ( $\chi^2 = 43.833$ ,  $p = 0.001$ ), caregiver's relationship to child ( $\chi^2 = 4.573$ ,  $p = 0.032$ ), occupation ( $\chi^2 = 20.861$ ,  $p = 0.001$ ), monthly income ( $\chi^2 = 19.630$ ,  $p = 0.001$ ), number of household member ( $\chi^2 = 38.354$ ,  $p = 0.001$ ), ethnicity ( $\chi^2 = 8.183$ ,  $p = 0.004$ ), child's age ( $\chi^2 = 50.619$ ,  $p = 0.001$ ), child's gender ( $\chi^2 = 26.604$ ,  $p = 0.001$ ), caregivers knowledge of malaria that children under-five are vulnerable groups ( $\chi^2 = 8.103$ ,  $p = 0.017$ ), caregivers knowledge that pregnant women are vulnerable groups to malaria ( $\chi^2 = 17.721$ ,  $p = 0.001$ ), caregivers knowledge on the use of mosquito coil ( $\chi^2 = 4.715$ ,  $p = 0.030$ ). Regarding caregivers preventive practice, there was significant association between bringing the child home before dawn ( $\chi^2 = 11.415$ ,  $p = 0.003$ ), using mosquito coil ( $\chi^2 = 6.200$ ,  $p = 0.045$ ), clearing of bushes around the house ( $\chi^2 = 8.922$ ,  $p = 0.012$ ) and deciding factor for child's treatment ( $\chi^2 = 24.242$ ,  $p = 0.001$ ). Using a p-value of 0.05 as the significant level, predictors of HSB in final model are occupation (aOR= 1.882; 95%CI: 1.014-3.493), number of household members (aOR=2.504; 95%CI=1.464-4.283), ethnicity (aOR=11.641; 95%CI=3.337-40.601), child's age (aOR=2.804; 95%CI=1.485-5.295), child gender (aOR=2.760; 95%CI=1.536-4.958) and decision making (aOR= 0.142; 95%CI=0.032-0.619).

**Conclusion:** Caregivers' health-seeking behavior was poor for fever cases among under-five year children. It is necessary to educate caregivers, especially for early treatment and appropriate use of health facilities for fever. This finding can help promote awareness and improve interventions in communities.

**Keywords:** Health-seeking, malaria, caregivers, under-five children, Nigeria.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

**FAKTOR BERKAITAN DENGAN TINGKAH LAKU PENCARIAN  
KESIHATAN BAGI RAWATAN MALARIA DALAM KALANGAN  
PENGASUH KANAK-KANAK BAWAH LIMA TAHUN YANG DEMAM DI  
NEGERI IMO, NIGERIA**

Oleh

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**Latar belakang:** Malaria merupakan penyakit bawaan vektor yang menjejaskan ribuan manusia seantara dunia setiap tahun. Jangkitan Malaria boleh menjejaskan kesihatan kanak-kanak bawah lima tahun dan wanita mengandung. Tingkah laku mendapatkan rawatan kesihatan (HSB) yang besesuni adalah penting semga mendapatkan rawatan bagi kanak-kanak di bawah lima tahun yang demam. HSB yang sesuai dalam kalangan penjaga akan membantu kanak-kanak mendapatkan prognosis malaria yang lebih baik kerana rawatan sewajarnya dapat diberikan seawalnya.

**Objektif:** Tujuan kajian ini adalah untuk menentukan amalan HSB dalam kalangan penjaga kanak-kanak di bawah lima tahun yang megdai di negeri Imo, Nigeria dan faktor berkaitan dengan HSB.

**Metodologi:** Kajian keratan rentas telah dijalankan di negeri Imo, Nigeria. Persampelan random multiperingkat telah digunakan, Dealam peringkat pertama, empat kerajaan tempatan daripada 27 kerajaan tempatan telah dipilih secara random, Di dalam peringkat kedua, persampelan random mudah bersekadaran dengan saiz telah digunakan bagi memilih bilangan peserta dari setiap empat kerajaan tempatan. HSB yang sesuai secara operasional telah didefinisikan sebagai rawatan pencarian dari fasiliti kesihatan dalam tempoh 24 jam bermulanya demam. Data telah diperolehi menggunakan soal selidik urus sendiri dibimbing yang telah diedarkan kepada penjaga. Kriteria rangkuman termasuk penjagu kanak-kanak bawah lima tahun yang

demam dua minggu sebelum kajian di negeri Imo, Nigeria. Data telah dianalisis menggunakan SPSS IBM versi 22.

**Dapatan:** Sejumlah 553 responden telah direkrut, kadar respon ialah 98.9 %. Hanya 18.6% pengasuh yang menunjukkan HSB yang sesuai. Terdapat perkaitan yang signifikan antara HSB yang sesuai dengan usia penjaga ( $\chi^2 = 43.833$ ,  $p = 0.001$ ), hubungan penjaga dengan kanak-kanak ( $\chi^2 = 4.573$ ,  $p = 0.032$ ), pekerjaan ( $\chi^2 = 20.861$ ,  $p = 0.001$ ), pendapatan bulanan ( $\chi^2 = 19.630$ ,  $p = 0.001$ ), bilangan ahli isi rumah ( $\chi^2 = 38.354$ ,  $p = 0.001$ ), etnik ( $\chi^2 = 8.183$ ,  $p = 0.004$ ), usia kanak-kanak ( $\chi^2 = 50.619$ ,  $p = 0.001$ ), gender kanak-kanak ( $\chi^2 = 26.604$ ,  $p = 0.001$ ), pengetahuan pengasuh tentang malaria kanak-kanak bawah lima tahun yang merupakan golongan rentan ( $\chi^2 = 8.103$ ,  $p = 0.017$ ), pengetahuan penjaga mengenai wanita mengandung yang merupakan golongan rentan pada malaria ( $\chi^2 = 17.721$ ,  $p = 0.001$ ), pengetahuan penjaga tentang penggunaan koil nyamuk ( $\chi^2 = 4.715$ ,  $p = 0.030$ ). Berkenaan amalan preventif penjaga, terdapat pertalian yang signifikan antara membawa kanak-kanak pulang sebelum senja ( $\chi^2 = 11.415$ ,  $p = 0.003$ ), menggunakan koil nyamuk ( $\chi^2 = 6.200$ ,  $p = 0.045$ ), membersihkan semak di sekeliling rumah ( $\chi^2 = 8.922$ ,  $p = 0.012$ ) dan faktor penentu bagi rawatan kanak-kanak ( $\chi^2 = 24.242$ ,  $p = 0.001$ ). Dengan menggunakan nilai p-value 0.05 sebagai tahap kesignifikanan, prediktor HSB dalam model akhir pekerjaan (aOR= 1.882; 95%CI: 1.014-3.493), ahli isi rumah (aOR=2.504; 95%CI=1.464-4.283), etnik (aOR=11.641; 95%CI=3.337-40.601), usia kanak-kanak (aOR=2.804; 95%CI=1.485-5.295), gender kanak-kanak (aOR=2.760; 95%CI=1.536-4.958) dan pembuat keputusan (aOR= 0.142; 95%CI=0.032-0.619).

**Kesimpulan:** Tingkah laku mendapatkan rawatan kesihatan di kalangan penjaga adalah rendah bagi kes demam dalam di kalangan kanak-kanak lima tahun. Oleh sebab itu, terdapat keperluan untuk mendidik penjaga, terutama bagi meadapcit kan rawatan awal dan penggunaan fasiliti kesihatan yang sesuai bgai demam. Dapatan ini dapat membantu menggalakkan kesedaran dan memperbaiki intervensi dalam komuniti.

**Kata kunci:** Pencarian kesihatan, malaria, penjaga, kanak-kanak bawah lima tahun, Nigeria.

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I certify that a Thesis Examination Committee has met on (18<sup>th</sup> May 2018) to conduct the final examination of Emilia Oluchi Sampson on her thesis entitled “Factors Associated with Health Seeking Behavior for Malaria Treatment among Caregivers of Under-five Children with Fever in Imo State, Nigeria” in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U. (A) 106] 15 March 1998. The Committee recommends that the student be awarded the Master of Science.

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## TABLE OF CONTENTS

	<b>Page</b>
<b>ABSTRACT</b>	i
<b>ABSTRAK</b>	iii
<b>ACKNOWLEDGEMENTS</b>	v
<b>APPROVAL</b>	vi
<b>DECLARATION</b>	viii
<b>LIST OF TABLES</b>	xi
<b>LIST OF FIGURES</b>	xiii
<b>LIST OF APPENDICES</b>	xv
<b>LIST OF ABBREVIATIONS</b>	xvii
<b>CHAPTER</b>	
<b>1 INTRODUCTION</b>	<b>1</b>
1.1 Background of the study	1
1.2 Problem Statement	3
1.3 Significance of study	5
1.4 Research questions	5
1.5 Objectives	6
1.5.1 General objective	6
1.5.2 Specific objectives	6
1.6 Research hypotheses	6
<b>2 LITERATURE REVIEW</b>	<b>7</b>
2.1 Epidemiology of malaria in Nigeria	7
2.1.1 Malaria among general population	7
2.1.2 Malaria in children	7
2.2 Health seeking behavior	8
2.2.1 Components of health seeking behavior	8
2.2.2 Benefits of appropriate health seeking behavior	9
2.2.3 Consequences of inappropriate health seeking behavior	9
2.3 Pattern of seeking treatment for malaria	10
2.3.1 Types of malaria treatment	12
2.3.2 Malaria preventive programs in Nigeria	15
2.4 Factors associated with health seeking behavior practices for malaria treatment	17
2.4.1 Socio-demographic factors of caregiver	17
2.4.2 Child characteristics	22
2.4.3 Knowledge on malaria	23
2.4.4 Preventive practices	25
2.4.5 Access to health facilities: distance and transport	25
2.4.6 Decision making in health seeking behavior	26
2.5 Conceptual framework	27

<b>3</b>	<b>MATERIALS AND METHODS</b>	29
3.1	Study location	29
3.2	Study design	31
3.3	Study duration	31
3.4	Sampling	31
	3.4.1 Study population	31
	3.4.2 Sampling population	31
3.5	Sampling and recruitment technique	31
	3.5.1 Sample size estimation	31
	3.5.2 Sampling frame	32
	3.5.3 Sampling unit	32
	3.5.4 Sampling method	33
3.6	Inclusion and Exclusion criteria	34
	3.6.1 Inclusion	34
	3.6.2 Exclusion criteria	34
3.7	Study instrument	34
3.8	Study Variables	37
	3.8.1 Dependent variable	37
	3.8.2 Independent variables	37
3.9	Operational definition of variables	38
3.10	Quality control of study instrument	39
	3.10.1 Content validity	39
	3.10.2 Face validity	40
3.11	Internal consistency of the questionnaire	40
3.12	Ethical approval	40
3.13	Data collection	41
3.14	Data analysis	41
<b>4</b>	<b>RESULTS</b>	43
4.1	Response rate	43
4.2	Test of Normality	43
4.3	Socio-Demographic Characteristics of the caregivers	43
4.4	Characteristics of the N child	45
4.5	Caregivers' health seeking behavior	45
4.6	Caregivers' knowledge of malaria	47
4.7	Caregivers' malaria prevention behavior	48
4.8	Caregivers' distance to health facility and transport	49
4.9	Caregivers' decision making in seeking treatment for the child	50
4.10	Association between socio-demography and health seeking behavior of caregivers'	50
4.11	Association between child characteristics and health seeking behavior	52
4.12	Association between knowledge of malaria and health seeking behavior	52
4.13	Association between caregiver's malaria preventive practice and health seeking behavior	54

4.14	Association between access to health facility (distance and transport) and HSB	55
4.15	Association between caregiver decision making, deciding factor when seeking treatment for the child and health seeking behavior	56
4.16	Predictors of health seeking behavior	57
<b>5</b>	<b>DISCUSSION</b>	<b>60</b>
5.1	Introduction	60
5.2	Health seeking behavior	60
5.3	Socio-Demographic Characteristics of the Respondents	62
5.3.1	Age of caregiver	62
5.3.2	Relationship to child	62
5.3.3	Marital status	63
5.3.4	Level of Education	63
5.3.5	Occupation	63
5.3.6	Household monthly income	64
5.3.7	Number of household members	64
5.3.8	Ethnicity	64
5.3.9	Place of residence	65
5.3.10	Age of the child	65
5.3.11	Gender of the child	65
5.4	Knowledge on malaria	66
5.5	Malaria preventive practice	66
5.6	Access to health facility (distance and transport)	67
5.6.1	Distance to health facility	67
5.6.2	Transport to health facility	67
5.7	Decision making	68
5.7.1	Deciding factor	68
<b>6</b>	<b>SUMMARY, CONCLUSION AND RECOMMENDATIONS FOR FUTURE RESEARCH</b>	<b>69</b>
6.1	Summary of the research	69
6.2	Conclusion	69
6.3	Strengths and Limitation of the Study	70
6.3.1	Strength of the Study	70
6.3.2	Limitations of the Study	70
6.4	Recommendations and Further Studies	70
	<b>REFERENCES</b>	<b>72</b>
	<b>APPENDICES</b>	<b>81</b>
	<b>BIODATA OF STUDENT</b>	<b>100</b>
	<b>LIST OF PUBLICATIONS</b>	<b>101</b>

## LIST OF TABLES

<b>Table</b>	<b>Page</b>
3.1 Selected LGA in Imo State, total population, percentage of population studied in each LGA, and number of household sampled in each LGA	33
3.2 Operational definitions of variables	38
3.3 Internal consistency of the Questionnaire	40
4.1 Socio-demographic characteristics of the caregivers' (N = 553)	44
4.2 Characteristics of child (N=553)	45
4.3 Caregivers' health seeking behavior (N = 553)	46
4.4 Characteristics of appropriate and inappropriate HSB (N553)	47
4.5 Caregivers knowledge of malaria (N= 553)	48
4.6 Caregivers' malaria prevention behavior (N = 553)	49
4.7 Caregivers' distance to health facility and transport (N = 553)	50
4.8 Caregivers' decision making in seeking treatment for the child (N = 553)	50
4.9 Association between caregivers socio-demography, and health seeking behavior (N=553)	51
4.10 Association between child characteristics and health seeking behavior (N= 553)	52
4.11 Association between caregivers knowledge of malaria and health seeking behavior (N= 553)	53
4.12 Association between malaria preventive practice and health seeking behavior (N=553)	54
4.13 Association between access to health facility (distance and transport) and health seeking behavior (N= 553)	56
4.14 Association between decision making, deciding factor and health seeking behavior (n= 553)	56

4.15	Simple logistic regression showing crude odd ratio (OR) of predictors of health seeking behavior (N=553)	58
4.16	Multiple logistic regression showing adjusted odd ratio (OR) of predictors of health seeking behavior	59



## LIST OF FIGURES

<b>Figure</b>	<b>Page</b>
2.1 Conceptual framework of factors associated with health-seeking behavior for malaria treatment among caregivers of under-five children with fever in Imo state, Nigeria	28
3.1 Map of Nigeria	30
3.2 Map of LGA in Imo State Nigeria	30



## LIST OF APPENDICES

Appendix		Page
A	UPM Ethical Approval Letter	81
B	Approval Letters from four selected Local Government Ethical	84
C	Respondents information sheet and consent form	88
D	Study questionnaire	91
E	Sample size calculation	97



## LIST OF ABBREVIATIONS

AOR	Adjusted odd ratio
ACTs	Artemisinin-based combination therapy
AL	Artemether-lumefantrine
AA	Artesunate-amodiaquine
FMOH	Federal Ministry of Health
HSB	Health Seeking Behavior
IRS	Indoor Residual Spraying
ITN:	Insecticide treated net
IPT	Intermittent Preventive Therapy
IPTp	intermittent preventive treatment of malaria in pregnancy
LLIN	Long Lasting Insecticide Net
LGA	Local Government Areas
MPR	Malaria Programme Review
NMCP	National Malaria Control Programme
NPC	National Population Commission
NMSP	National Malaria Strategic Plan
NMEP	National Malaria Elimination Programme
OR	Odd ratio
PMI	President's Malaria Initiative
RBM	Roll Back Malaria
SPSS	Statistical Package for Social Sciences
SP	sulphadoxine-pyrimethamine
UNICEF	The United Nations Children's Fund
WHO	World Health Organization

# CHAPTER 1

## INTRODUCTION

### 1.1 Background of the study

Malaria is a vector-borne disease (Centers for Disease Control and Prevention, 2014). Malaria affects millions of people globally each year and the disease is a global health problem (World Health Organization, 2012). In 2015, there were an estimated 212 million cases of malaria globally (World Health Organization, 2016). Global burden of malaria remained heavily intense in 15 countries; Africa region has the highest burden, these countries account for an estimated 80% of the global malaria cases. African Region has the highest cases of malaria (88%), followed by the South-East Asia Region (10%) and 2% in the Eastern Mediterranean Region. In the year 2015, there were an estimated 438 000 malaria deaths globally; approximately 69% were children under five years of age (WHO, 2016). Malaria death among under-five children globally in the year 2000 has decreased from 723,000 to 306,000 in 2015. African Region has the heaviest malaria burden (World Health Organization, 2015). Malaria is avoidable and curable, increased efforts are dramatically reducing the malaria burden globally.

Malaria is caused by Plasmodium parasites. Malaria parasites include plasmodium falciparum, plasmodium malariae, plasmodium vivax and plasmodium ovale and they are human malaria species. Plasmodium Falciparum is the most common and dangerous malaria parasite. The parasites are transmitted to people through the bites of infected female Anopheles mosquitoes, called malaria vectors. The biting time is usually between dusk and dawn (WHO, 2012). Malaria is an acute febrile illness. In a non-immune individual, symptoms appear 7 days or more usually 10 to 15 days, after the infective mosquito bite (Hawker, Begg, Blair, Reintjes & Weinberg, 2005). Signs and symptoms of malaria include fever headache, back pain, chills, sweating, myalgia, nausea, vomiting and diarrhea (White & Breman, 2013). When these symptoms occur, If not treated within 24 hours, plasmodium falciparum malaria could progress to severe illness, which usually leads to death. Children with severe malaria often develop one or more of the following symptoms: severe anemia, respiratory distress in relation to metabolic acidosis, or cerebral malaria (WHO, 2016). Children with cerebral malaria is associated with convulsion, and repeated in up to 50% of children with cerebral malaria. Seizures are also common among children and may manifest as tonic-clonic eye movements. While in adult it is rare, it occurs in less than 3% of adults. Children suffering from cerebral malaria especially those with hypoglycemia, repeated seizures and deep coma develops residual neurological deficit when they have regain their consciousness. Congenital malaria happens in less than 5% of newborns of infected mother (WHO, 2012). In adults, multi-organ involvement is also common (White & Breman, 2013).

Malaria complications are mostly among young children under five years and pregnant women (White & Breman, 2013). People with low immune system are also at risk of getting malaria (WHO, 2012). In area with unstable transmission of malaria, pregnant women are prone to severe infections and they are the vulnerable groups to high level of anemia, hypoglycemia and acute pulmonary edema. Malaria in pregnancy may cause fetal distress, premature labor, still birth or low birth weight (110g). Fetal death occurs in severe malaria in pregnant women. Maternal death from hemorrhage at childbirth is correlated with malaria induced anemia (White & Breman, 2013).

In Nigeria malaria is of national concern and constitutes a major public health problem despite the curable nature of the disease. Nigeria bears up to 25% of the malarial disease burden in Africa, hence contributing significantly to the one million lives lost per year in the region, which mostly consists of children and pregnant women. Malaria is the leading cause of mortality in children under the age of five, and is responsible for an estimated 300,000 total deaths annually (National Population Commission NPC, National Malaria Control Programme NMCP & ICF International, 2012).

Important investments in malaria control have been made in Nigeria. Nigeria has set a target to achieve pre elimination status of malaria and reduce malaria related mortality to zero by 2020 (National Malaria Strategic Plan 2014 - 2020). Despite these efforts to prevent malaria, malaria parasite prevalence is still high in Nigeria (National Malaria Elimination Programme NMEP & Federal Ministry of Health FMOH, 2014-2017). However this is because in Nigeria most people practice different health seeking behavior in treating malaria. Most people in Nigeria uses self-medication in treating malaria, use of local herbs, use of spiritualists/traditional priests services or the use of clinics or hospital services (Jimoh, Sofola., Petu & Okorosobo, 2007).

Appropriate treatment of malaria within 24 hours of onset of fever could help reduce malaria illness (WHO, 2012). Malaria is treated usually at health facilities, at community level diagnosis and treatment could be effective when access to facilities is limited. In community-level, effectiveness of malaria control events is influenced by recognizing the symptoms early and ensuing appropriate treatment seeking behavior (Das & Ravindran, 2010). Health seeking behavior (HSB) practice among caregivers of children under the age of five with malaria in Nigeria is poor. Study revealed that caregivers do not seek appropriate treatment within 24 hours when they notice that the child has malaria; they tend to observe the child for some days to be sure if the child has malaria or not. However the delay in seeking treatment for some caregivers is because of cultural belief, while for some caregivers is because they cannot make decision in the child's treatment, they have to wait for the father to come back before they will sought treatment for the child. Moreover most of the caregivers preferred to take their children to prayer houses (Chukwuocha, Okpanma, Nwakwuo & Dozie, 2014). In another study conducted in Nigeria, result shows that HSB of caregivers for their under five children during fever was inappropriate. In the study, 78.3% of caregivers gave drugs to their under five children as initial treatment when they notice that the child has fever, highest proportion of caregivers purchased drugs

from a patent medicine vendor. However only 1.8% of mothers took their children to hospital on noticing fever (Lovelyn, Betrand & Godswill, 2016). A study among two states in Nigeria, result shows that caregivers usually seek treatment for their under-five children with fever from pharmacies or drug shops, 49% in Cross River and 31% in Bauchi (Odu et al., 2015). Treatment seeking behavior and preventive practices towards malaria illness is among the reasons of high malaria in Nigeria. It is essential to understand the culture and traditions of malaria endemic communities in Nigeria; these form the basis of community members' values that shape the attitudes of the community members on malaria control and elimination topics. Frequently these local beliefs influence community members' action on fight against malaria more than any other factor (Aribodor, Ugwuanyi & Aribodor, 2016).

## **1.2 Problem Statement**

According to the World Malaria Report 2015, 214 million of new malaria cases reported globally ranging between 149–303 million with an estimated death of 660 000 globally. Africa is the most affected continent with about 90% of all malaria deaths occur in Africa (WHO, 2012). This is followed by the South-East Asia Region (7%) and the Eastern Mediterranean Region (2%) (WHO, 2015). Malaria death among under-fives children globally was estimated at 306 000, of which, 292 000 of affected children were from the African Region (WHO, 2015).

Malaria is endemic in Nigeria with yearly transmission; it is estimated that 160 million (97%) of the Nigeria population is at risk of malaria (NMSP, 2014–2020). Despite the curable nature of malaria, it still constitutes a major public health problem in Nigeria. This is as a result of the geographic location of Nigeria which makes the climate suitable for malaria transmission throughout the country. Almost everyone in the country is at risk of malaria transmission, except for the minority 3% who are located at an altitude of 1,200 to 1,400 meters, where the transmission risk is relatively low. This is due to the intensity and seasonality of transmission and mosquito vector species (NPC, NMCP, & ICF International, 2012).

The National Malaria Strategic Plan (NMSP) 2014-2020 data revealed that the prevalence of malaria parasite is still high in Nigeria, with an average of 42% parasite prevalence among children under five years (NMSP, 2014 – 2020). In terms of burden to the healthcare system, malaria reportedly accounts for an estimated of 60% of outpatient visits in Nigeria and 30% of hospitalizations. In Nigeria, malaria is responsible for 11% of maternal mortalities (NPC, NMCP & ICF International, 2012). Malaria is the cause of death in children under-five, and is accountable for an estimated 300,000 total deaths annually. 25% of infant death and 20% of under-five death (Malaria Operational Plan, MOP, 2015).

The WHO pointed out that uncomplicated malaria can progress to severe malaria rapidly, among people with no immunity or low immunity. Severe falciparum malaria

is always fatal without treatment. In order to achieve prompt and appropriate treatment, programmes should ensure prompt and early diagnosis to allow effective treatment within 24 to 48 hours of the onset of malaria symptoms to prevent complications associated with malaria (WHO, 2015).

In Nigeria malaria also utilizes a massive economic and social burden on families, communities, and the country, causing yearly loss of about 132 billion Naira for treatment and prevention as well as hours of absent from work (Jimoh et al., 2007).

Caregivers mind set should be changed towards HSB of their under five children. Study have shown the prevalence of inappropriate HSB, inappropriate HSB among caregivers of under-five children in Nigeria is still high, whereby 51.1% of caregivers were not likely to seek treatment for their children within 24 hours of onset of malaria symptoms. Among the 51.1% of caregivers, 21.4 % of the caregivers delayed more than 24 hours before they sought treatment because of financial problems, 14.4 % delayed treatment because of negative belief and culture influences, 7 % of the caregivers waited for the child's father to return home, while 5.7 % of the caregivers delayed more than 24 hours because of distance to health facility (Chukwuocha et al., 2014).

Another study conducted in Nigeria using nationwide data among caregivers of under-five children with fever, result showed that HSB for fever among caregivers of under-five children was poor throughout Nigeria, where only 31% of caregivers sought care from health facilities (Abdulkadir & Abdulkadir, 2016). This is far below the set targets of the national malaria program of 80% by 2013 (NMCP 2009-2013). The researchers pointed out that to improve HSB; there is a need to improve literacy by providing targeted education to special groups including the uneducated people, and also to empower mothers to make decisions concerning health care (Abdulkadir & Abdulkadir, 2016).

HSB studies among caregivers of children under the age of five years have been conducted in various states in Nigeria and other parts of the world. These involved several locations including Bauchi and Cross river (Odu et al., 2015), national cross-sectional survey (Abdulkadir & Abdulkadir, 2016), study was conducted in Northern Nigeria (Millar et al., 2014), another study was conducted in North- Central Nigeria (Abdulkadir et al., 2015). Whereas Chukwuocha, et al. (2014) conducted a study in South-Eastern part of Nigeria, in Imo State, a study conducted in Anambra State South-Eastern Nigeria by (Lovelyn, et al. 2016), Orimadegun & Ilesanmi (2015) conducted a study in Ise-Orun, Ekiti State Nigeria.. HSB studies among caregivers of children under the age of five years conducted in other parts of the world were malaria cases are high includes, Najnin, Bennett & Luby, (2011) conducted a study in Bangladesh which 59% of the study population sought care from the trained healthcare providers. A study conducted in Ethiopia by Hwang et al. (2010) only 36.5% sought any kind of treatment from public and private health facilities or hospitals, health extension workers, pharmacies, shops, and traditional healers. Study conducted in

Myanmar by Thandar, Kyaw, Jimba & Yasuoka (2015), the most frequented place of treatment for caregivers was the midwife in primary health service provider (31.9%). However studies in Nigeria the most frequent place of treatment for the caregivers was drug shops. There has not been a study to determine the factors associated with HSB among caregivers of under-five children with malaria in Imo state Nigeria, hence this study is planned to be conducted in Imo state Nigeria. There is a need for a study in this area to obtain accurate and reliable baseline data to provide guidelines on HSB among caregivers of under-five children with malaria in the region in order to reduce inappropriate HSB in the region especially among the caregivers of children under the age of five year.

### **1.3 Significance of study**

This study will serve as additional information on the HSB of caregiver's of children under-five years specifically to the Imo state population. Findings from this study would improve HSB; prevent delay in seeking treatment of malaria and the consequences. It is vital that children under the age of five years, pregnant women and others have access to prompt treatment within 24 hours of the onset of symptoms, to prevent the progression of malaria illness, which could be rapid and progress to severe malaria and death. The findings and recommendations of the study would contribute to the body of knowledge in research. It will help the Imo state administration to plan and implement effective programs to help patients seek appropriate treatment in the region. Moreover, this study will make an animated contribution to research in this field and will result in considerable advantages for both the patients themselves and the community as a whole.

### **1.4 Research questions**

- i. What are the Health Seeking Behavior practices for malaria treatment among caregivers of children under five years with fever in Imo State Nigeria?
- ii. What are the socio-demographic characteristics of caregivers (age, educational level, occupation, household income, marital status, ethnicity, number of household members, and place of residence), characteristics of the child (age and sex of the child), knowledge of malaria (symptoms of malaria, vulnerable groups of malaria, causes of malaria, knowledge on preventive measures and diagnosis of malaria), preventive measures, access to health facility (distance and transport) and decision making among caregivers of children under five years with fever in Imo State Nigeria?
- iii. Is there an association between socio-demographic factors of caregivers, characteristic of child, knowledge of malaria, preventive measures of malaria, access to health facility distance and transport and decision making among caregivers of children under five years who had fever during the two weeks prior to the study and appropriate HSB in Imo State Nigeria?

## **1.5 Objectives**

### **1.5.1 General objective**

The general objective of this study is to determine the HSB practices for malaria treatment and its associated factors among caregivers of children under-five years in Imo State Nigeria.

### **1.5.2 Specific objectives**

- i. To describe the HSB practices among caregivers of children under-five years who had fever two weeks prior to the study in Imo State Nigeria.
- ii. To determine the socio-demographic factors of caregivers (age, educational level, occupation, household income, marital status, ethnicity, number of household members, and place of residence), characteristics of child (age and sex of the child), knowledge of malaria (symptoms of malaria, vulnerable groups of malaria, causes of malaria, knowledge on preventive measures and diagnosis of malaria), preventive measures, access to health facility (distance and transport) and decision making among caregivers of children under five years with fever in Imo State Nigeria.
- iii. To determine the association between health seeking behavior and:
  - a. Socio-demographic of caregiver
  - b. Child characteristics
  - c. Knowledge on malaria
  - d. Preventive practices
  - e. Access to health facility (distance and transport)
  - f. Decision making
- iv. To determine the predictors of HSB among caregivers of children under-five years who had fever two weeks prior to the study in Imo South Nigeria.

## **1.6 Research hypotheses**

There is significant relationship between health seeking behavior and:

- a. Socio-demographic of caregiver
- b. Child characteristics
- c. Knowledge on malaria
- d. Preventive practices
- e. Access to health facility
- f. Decision making

## REFERENCES

- Abdulkadir, M. B., & Abdulkadir, Z. A. (2016). A cross-sectional survey of parental care-seeking behavior for febrile illness among under-five children in Nigeria. *Alexandria Journal of Medicine*.
- Abdulkadir, M. B., Ibraheem, R. M., & Johnson, W. B. (2015). Sociodemographic and clinical determinants of time to care-seeking among febrile children under-five in North-Central Nigeria. *Oman medical journal*, 30(5), 331.
- Abubakar, A., Van Baar, A., Fischer, R., Bomu, G., Gona, J.K. & Newton, C. R. (2013) Socio-Cultural Determinants of Health-Seeking Behaviour on the Kenyan Coast: A Qualitative Study. *PLoS ONE* 8(11): e71998. doi:10.1371/journal.pone.0071998.
- Aribodor D. N., Ugwuanyi I. K., & Aribodor, O. B. (2016). "Challenges to Achieving Malaria Elimination in Nigeria." *American Journal of Public Health Research*, vol. 4, no. 1 38-41. doi:10.12691/ajphr-4-1-6.
- Ameh, S., Welaga, P., Kabiru, C. W., Ndifon, W., Ikpeme, B., Nsan, E., & Oyo-Ita, A. (2015). Factors associated with appropriate home management of uncomplicated malaria in children in Kassena-Nankana district of Ghana and implications for community case management of childhood illness: a cross-sectional study. *BMC public health*, 15(1), 1.
- Ahmed S, Adams A, Chowdhury M, Bhuiya A. (2000). Gender, socioeconomic development and health-seeking behaviour in Bangladesh. *Social Science and Medicine* 51: 361–71.
- Ajayi, I. O, Falade, C.O, Adeniyi, J.D, Bolaji, M.O. (2002) The role of patent medicine sellers in home management of childhood malaria: a situational analysis of experience in rural Nigeria. *International Community Health Education*. 21(3): 271–81.
- Baker, T. L. (1994) *Doing social research* (2nd ed.). New York: McGraw-Hill Inc.
- Basu, S., Andrews, J., Kishore, S., Panjabi, R., & Stuckler, D. (2012). Comparative performance of private and public healthcare systems in low- and middle-income countries: A systematic review, *PLoS Medicine* 9(6): e1001244. doi:10.1371/journal.pmed.1001244.
- Chukwuocha, U. M., Okpanma, A. C., Nwakuo, G. C., Dozie, I. N. S. (2014). Determinants of Delay in Seeking Malaria Treatment for Children Under-Five Years in Parts of South Eastern Nigeria. *Journal Community Health* (2014) 39:1171–1178.
- Chukwuocha, U.M. (2012). Malaria Control in Nigeria. *Primary Health Care* 2:118. doi:10.4172/2167-1079.1000118.

- Centers for Disease Control and Prevention CDC, (2014). National notifiable diseases surveillance system.
- Dida N, Darega B and Abebe A., (2015). Treatment Seeking Behavior and Associated Factors Among Malaria Suspected Patients in Bale Zone, Southeast Ethiopia: Institution-Based Cross-sectional Study. *Journal of Family Medicine* 2(1): 5.
- Das, A., & Ravindran, T. S. (2010). Factors affecting treatment-seeking for febrile illness in a malaria endemic block in Boudh district, Orissa, India: policy implications for malaria control. *Malaria journal*, 9(1), 1.
- Deressa, W., Ali, A. & Berhane, Y. (2007). Household and socioeconomic factors associated with childhood febrile illnesses and treatment seeking behaviour in an area of epidemic malaria in rural Ethiopia. *Trans R Soc Tropical Medicine Hygiene*, 101(9) 939-947. doi.org/10.1016/j.trstmh.2007.04.018.
- Deressa, W., & Ali, A. (2009). Malaria-related perceptions and practices of women with children under the age of five years in rural Ethiopia. *BMC Public Health*, 9(1), 1.
- Ezeliora, B. and Ezeokana, J.O. (2011) Inhibiting influences of some traditional practices in the home on girl-child's interest development in science. *African Journal of Political Science and International Relations*, 5(7), 341-346
- Franckel, A., & Lalou. R., (2009). Health-seeking behaviour for childhood malaria: household dynamics in rural Senegal." *Journal of biosocial science* 41(01) 1-19.
- Federal Ministry of Health (2011) National guidelines for diagnosis and treatment of malaria National Malaria and Vector Control Division Abuja-Nigeria.
- Federal Ministry of Health, National Malaria and Vector Control Division Abuja-Nigeria, (2005)
- Federal Ministry of Health & National Malaria Control Programme, Abuja, Nigeria. Strategic Plan 2009-2013.
- Faraclas, N. (2005) Nigeria pidgin. Taylor and Francis united states of America.
- Gerald, M. (2015) Assessing Factors Influencing Health Seeking Behavior for Malaria Treatment in Children under Five Years in Rwimi Town Council Kabarole District. *International Journal of School and Cognitive Psychology* 2(151). doi:10.4172/2469-9837.1000151.
- Gething, P.W., Kirui, V.C., Alegana, V.A., Okiro, E.A., Noor, A.M., Snow, R.W. (2010) Estimating the number of paediatric fevers associated with malaria

infection presenting to Africa's Public Health Sector in 2007. *PLoS Med* 7(7): e1000301. doi:10.1371/journal.pmed.1000301

Huebler, F. (2008) Adult literacy in Nigeria

Holtz, T. H., Kachur, S. P., Marum, L. H., Mkandala, C., Chizani, N., Roberts, J. M., & Parise, M. E. (2003). Care seeking behaviour and treatment of febrile illness in children aged less than five years: a household survey in Blantyre District, Malawi. *Transactions of the Royal Society of Tropical Medicine and Hygiene*, 97(5), 491-497.

Hwang, J., Graves, P. M., Jima, D., Reithinger, R., Kachur, S. P., & Ethiopia MIS Working Group. (2010). Knowledge of malaria and its association with malaria-related behaviors—results from the Malaria Indicator Survey, Ethiopia, 2007. *PLoS One*, 5(7), e11692.

Hasegawa, A., Yasuoka, J., Ly, P., Nguon, C., & Jimba, M. (2013). Integrating child health services into malaria control services of village malaria workers in remote Cambodia: service utilization and knowledge of malaria management of caregivers. *Malaria journal*, 12(1), 1.

Hawker, J., Begg, N., Blair, I., Reintjes, R. and Weinberg, J., (2005), Communicable disease control handbook, 2<sup>nd</sup> ed Massachusetts United States of America. Blackwell.

Hetzel M. W., Dillip, A., Lengeler, C., Obrist, B., Msechu, J.J., Makemba, A.M., Mshana, C., Schulze, A. & Mshinda, H. (2008). Malaria treatment in the retail sector: Knowledge and practices of drug sellers in rural Tanzania. *BMC Public Health*. (8):157. doi: 10.1186/1471-2458-8-157.

Igoche & Oguonu (2006). Artemisinin combination therapy and treatment of malaria in children at the university of Nigeria teaching hospital, Enugu.

Idowu, O.A., Mafiana, C.F., Luwoye, I.J. & Adehanloye O. (2008) Perceptions and home management practices of malaria in some rural communities in Abeokuta, Nigeria. *Travel medicine and infectious disease*.6(4) 210-214, doi: <http://dx.doi.org/10.1016/j.tmaid.2007.10.007>.

Jimoh, A., Sofola, O., Petu, A., and Okorosobo, T. (2007). Quantifying the economic burden of malaria in Nigeria using the willingness to pay approach Cost Effectiveness Recourse Allocation. 5(6.) doi: 10.1186/1478-7547-5-6.

Kassile, T., Lokina, R., Mujinja, P., & Mmbando, B. P. (2014). Determinants of delay in care seeking among children under five with fever in Dodoma region, central Tanzania: a cross-sectional study. *Malaria journal*, 13(1), 1.

Karyana, M., Devine, A., Kenangalem, E., Burdarm, L., Poespoprodjo, J. R., Vemuri, R., Anstey, N.M., Tjitra, E., Price, R.N. & Yeung S. (2016).

Treatment-seeking behaviour and associated costs for malaria in Papua, Indonesia. *Malaria Journal* 15(536), doi: 10.1186/s12936-016-1588-8

Kanté, A. M., Gutierrez, H. R., Larsen, A. M., Jackson, E. F., Helleringer, S., Exavery, A., & Phillips, J. F. (2015). Childhood illness prevalence and health seeking behavior patterns in rural Tanzania. *BMC public health*, 15(1), 1.

Laar, A. S., Laar, A. K., & Dalinjong, P. A. (2013). Community perception of malaria and its influence on health-seeking behaviour in rural Ghana: a descriptive study.

Lawal, A. M., Balogun, S. K., & Bada, B. V. (2014). Knowledge of Transmission, Malaria Belief and Health-Seeking Behaviour in Oye-Ekiti Local Government Area of Ekiti State, Nigeria. *American Journal of Rural Development*, 2(1), 8-12.

Lovelyn O. A, Betrand N. O, Godswill, N. (2016), Family and Social Determinants of Health seeking behaviour of caregivers of febrile children in an urban city of South-Eastern Nigeria. *Archives of Medicine*.

Lemeshow, S., Hosmer, D. W., Klar, J., and Lwanga, S. K. (1990). Adequacy of sample size in health studies. Chichesterwiley

Millar, K. R., McCutcheon, J., Coakley, E. H., Brieger, W., Ibrahim, M. A., Mohammed, Z. & Sambisa, W. (2014). Patterns and predictors of malaria care-seeking, diagnostic testing, and artemisinin-based combination therapy for children under five with fever in Northern Nigeria: a cross-sectional study. *Malaria journal*, 13(1), 1.

Malik, E., Hanafi, K., Ali, S., Ahmed, S. E., & Mohamed, K. (2006). Treatment-seeking behaviour for malaria in children under five years of age: implication for home management in rural areas with high seasonal transmission in Sudan. *Malaria journal*, 5(1), 1.

Müller, O., Traoré, C., Becher, H., & Kouyaté, B. (2013). Malaria morbidity, treatment-seeking behaviour, and mortality in a cohort of young children in rural Burkina Faso. *Tropical Medicine & International Health*, 8(4), 290-296.

Malaria Operational Plan FY 2015, President's Malaria Initiative Nigeria

Malaria Indicator Survey MIS, National Population Commission NPC, & National Malaria Control Programme NMCP, (2012).

Makundi, E. A., Malebo, H. M., Mhame, P., Kitua, A. Y. & Warsame, (2006), Role of traditional healers in the management of severe malaria among children below five years of age: the case of Kilosa and Handeni Districts, Tanzania. *Malaria Journal*, 5(58). doi: 10.1186/1475-2875-5-58

Malaria Strategic Plan 2010-2015 -Towards Malaria Elimination

Ministry of Health 2006, Case definitions for infectious diseases in Malaysia

Najnin, N., Bennett, C. M., & Luby, S. P. (2011). Inequalities in care-seeking for febrile illness of under-five children in urban Dhaka, Bangladesh. *Journal of Health, Population and Nutrition*, 523-531.

Ngarivhume, T., Charlotte I. E/ A, Joop, T. V. M. & Westhuizen, J. H. V. (2015). Medicinal plants used by traditional healers for the treatment of malaria in the Chipinge district in Zimbabwe. *Journal of Ethnopharmacology*, 224–237. <http://dx.doi.org/10.1016/j.jep.2014.11.011>.

National Population Commission of Nigeria, 2006

National Malaria Elimination Programme & Federal Ministry of Health (2014-2017) Malaria Business Plan.

National Malaria Strategic Plan (NMSP), 2014-2020.

National Malaria Control Programme (2009–2013), Strategic Plan.: A Road Map for Malaria Control in Nigeria. 2008, Abuja: Nigeria's Federal Ministry of health.

National Population Commission & ICF International Rockville, (2014) Nigeria demographic and health survey.

National Population Commission, National Malaria Control Programme, Measure DHS ICF International Calverton, Maryland United States, (2012). Nigeria Malaria Indicator Survey 2010, Federal Republic of Nigeria Abuja, Nigeria.

National Malaria Control Programme. National malaria strategic plan (2009–2013). Abuja: Federal Ministry of Health; 2009.

Nigerian Demographic and Health Survey (2011) Federal Ministry of Health, Abuja.

Nigeria Malaria Fact Sheet (2011). United States Embassy in Nigeria.

Orimadegun, A. E., & Ilesanmi, K. S. (2015). Mothers' understanding of childhood malaria and practices in rural communities of Ise-Orun, Nigeria: implications for malaria control. *Journal of family medicine and primary care*, 4(2), 226.

Odu, B. P., Mitchell, S., Isa, H., Ugot, I., Yusuf, R., Cockcroft, A., & Andersson, N. (2015). Equity and seeking treatment for young children with fever in Nigeria: a cross-sectional study in Cross River and Bauchi States. *Infectious Diseases of Poverty*, 4(1).

Obrist, B., Iteba, N., Lengeler, C., Makemba, A., Mshana, C., Mshinda, H., Nathan, R., Alba, S., Dillip, A., Hetzel, M.W. & Mayumana, I, Schulze, A. (2007).

Access to health care in contexts of livelihood insecurity: a framework for analysis and action. *PLoS Medicine*. doi:10.1371/journal.pmed.0040308.

- Oko, N. F., Odikamnor, O. O., Uhwo, C. A., Okereke, C. N., Azi, S. O., & Ogiji, E. D. (2014). Epidemiology of malaria among children aged 1 to 15 years in Southeast Nigeria. *Journal of Public Health and Epidemiology*,6(11), 390-397. doi: 10.5897/JPHE2014.0631.
- Olaogun, A.A.E., Adebayo, A.A., Ayandiran, O.E., Olasode, O.A. (2006). Effects of mother's socioeconomic status on the management of febrile conditions in their under five children in a resource limited setting. *BMC International Health and Human Rights* 6:1.
- Okeke, T. A. Okafor, H. U. & Uzochukwu, B. S. C. (2006). Traditional healers in Nigeria: perception of cause, treatment and referral practices for severe malaria. *Journal of Biosocial Science*,38(4), 491-500. doi: <https://doi.org/10.1017/S002193200502660X>
- Okeke, T. A. & Okeibunor, J.C. (2010). Rural–urban differences in health-seeking for the treatment of childhood malaria in south-east Nigeria. *Health Policy* 95, 62–68. doi:10.1016/j.healthpol.2009.11.005.
- Para-Mallam, F.J. (2010). Promoting gender equality in the context of Nigerian cultural and religious expression: beyond increasing female access to education. *Compare: Journal of comparative and international education* 40 (4), 459–477.
- Rutebemberwa, E., Kallander, K., Tomson, G., Peterson, S. & Pariyo, G. (2009). Determinants of delay in care-seeking for febrile children in eastern Uganda. *Tropical Medicine & International Health*14.4 (2009): 472-479.
- Romay - Barja, M., Cano, J., Ncogo, P., Nseng, G., Santana - Morales, M. A., Valladares, B., Riloha, M. & Benito, A. (2016). Determinants of delay in malaria care-seeking behaviour for children 15 years and under in Bata district, Equatorial Guinea. *Malaria journal*,(15)187. DOI 10.1186/s12936-016-1239-0.
- Roll Back Malaria, World Health Organization & UNICEF, (2005). World Malaria Report 2005.
- Silweya, D., & Baboo, K. S. (2013). Barriers to prompt malaria treatment among under five children in Mpika District. *Medical Journal of Zambia*,40(4), 121-125.
- Sonkong, K., Chaiklieng, S., Neave, P., & Suggaravetsiri, P. (2015). Factors affecting delay in seeking treatment among malaria patients along Thailand-Myanmar border in Tak Province, Thailand. *Malaria journal*, 14(1), 1-8.
- Sreeramareddy, C. T., Shankar, R. P., Sreekumaran, B. V., Subba, S. H., Joshi, H. S., & Ramachandran, U. (2006). Care seeking behaviour for childhood

illness-a questionnaire survey in western Nepal. *BMC international health and human rights*, 6(1), 1.

Smith, L. A., Bruce, J., Gueye, L., Helou, A., Diallo, R., Gueye, B., & Webster, J. (2010). From fever to anti-malarial: the treatment-seeking process in rural Senegal. *Malaria Journal*, 9(333), 10-1186.

Thandar, M. M., Kyaw, M. P., Jimba, M., & Yasuoka, J. (2015). Caregivers' treatment-seeking behaviour for children under age five in malaria-endemic areas of rural Myanmar: a cross-sectional study. *Malaria journal*, 14(1), 1-10.

Tabuti, J. R.S. (2008). Herbal medicines used in the treatment of malaria in Budiope County, Uganda *Journal of Ethnopharmacology* 116 33–42

Taffa N, Chepngeno G (2005). Determinants of health care seeking for childhood illnesses in Nairobi slums. *Tropical Medicine and International Health*;10(3):240–5.

Xu, J., Xu, Q., Liu, H., & Zeng, Y. (2012). Malaria treatment-seeking behaviour and related factors of Wa ethnic minority in Myanmar: a cross-sectional study. *Malaria Journal*.

Willcox, M. L. & Bodeker, G. (2004). Traditional herbal medicines for malaria. *BMJ*. 13; 329(7475): 1156–1159. doi: 10.1136/bmj.329.7475.1156

Webair, H. H. & Bin-Gouth, A.S. (2013). Factors affecting health seeking behavior for common childhood illnesses in Yemen. *Patient Preference and Adherence*, 7 1129–1138.

White, N. J., & Breman, J. G., (2013). Harrison's infectious diseases (2<sup>nd</sup> ed.). McGraw-Hill Education. China.

WHO. Roll Back Malaria; (2005). Retrieved from <https://www.google.com/search?source=hp&ei=CfYTW9bpBYflvATjzoTwBA&q=WHO.+Roll+Back+Malaria>. Accessed March 2017

World Health organization. Malaria Indicator Survey; 2013. Retrieved from <https://malariasurveys.org/toolkit.cfm>. Accessed May 2016.

World Health Organization, (2014).World malaria report 2014.

World Health organization (2016). Fact Sheet: World Malaria Day. Retrieved from [https://www.google.com/search?ei=kPkTWSvMpT\\_9QP9n7\\_YDg&q=World+Health+organization+%282016%29.+Fact+Sheet%3A+World+Malaria+Day.+&oq=World+Health+organization](https://www.google.com/search?ei=kPkTWSvMpT_9QP9n7_YDg&q=World+Health+organization+%282016%29.+Fact+Sheet%3A+World+Malaria+Day.+&oq=World+Health+organization). Accessed may 2016

World Health organization (2016). Malaria Fact sheet.

World Health organization (2016). Malaria in children under five.

World Health Report (2002). Reducing risks, promoting health life. Geneva. Retrieved from [DQ&q=World+Health+Report+%282002%29.+Reducing+risk%2C+promoting+health+life.+Geneva](https://www.who.int/publications/malaria/2002-reducing-risks-promoting-health-life-geneva). Accessed march 2016.

WHO (2012). T3: Test. Treat. Track initiative. Geneva: World Health Organization Retrieved from [https://www.bing.com/search?FORM=UP97DF&PC=UP97&q=WHO+\(2012\).+T3%3A+Test.+Treat.+Track+initiative.+Geneva%3A+World+Health+Organization](https://www.bing.com/search?FORM=UP97DF&PC=UP97&q=WHO+(2012).+T3%3A+Test.+Treat.+Track+initiative.+Geneva%3A+World+Health+Organization) Accessed march 2016.

World Health Organization WHO, (2005). The roll back malaria strategy for improving access to treatment through home management of malaria. Retrieved from <https://www.google.com/search?ei=hA4VW9q3FdbZrQG47oS4Ag&q=World+Health+Organization+WHO%2C+%282005%29.+The+roll+back+malaria+strategy+for+improving+access+to+%09treatment+through+home+manage>. Accessed April 2017.

World Health Organization, (2001). Promoting the Role of Traditional Medicine in Health System: A Strategy for the African Region. World Health Organization Regional Office for Africa.

World Health Organization, (2008). World malaria report 2008. World Health Organization. Retrieved from [http://apps.who.int/iris/bitstream/handle/10665/43939/9789241563697\\_eng.pdf;jsessionid=0A73288730C8197BD574E5F0157C977A?sequence=1](http://apps.who.int/iris/bitstream/handle/10665/43939/9789241563697_eng.pdf;jsessionid=0A73288730C8197BD574E5F0157C977A?sequence=1)

World Health Organization, (2010), Guidelines for the treatment of malaria,(3<sup>rd</sup> ed.) Geneva, Switzerland.

World Health Organization, (2010). Guidelines for the Treatment of Malaria (2nd ed.). Geneva, Switzerland.

World Health Organization, (2015). Guidelines for the Treatment of Malaria (3<sup>rd</sup> ed) Geneva, Switzerland. WHO Press.

World Health Organization, (2012). Management of severe malaria: a practical handbook (3<sup>rd</sup> ed.). WHO Library Cataloguing-in-Publication Data. Italy.

World Health Organization, (2000). Traditional and modern medicine harmonizing the two approaches World Health Organization western pacific region, a report of the consultation meeting on traditional and modern medicine: harmonizing the two approaches.

World Health Organization, (2013). World Malaria Report 2013. Geneva, Switzerland: World Health Organization.

World Health Organization & the United Nations Children's Fund 2015, Achieving the Malaria MDG Target, Reversing the Incidence of Malaria 2000–2015

World Health Organization, (2015). Fact Sheet: World Malaria Report.

World Health Organization, (2004) Roll Back Malaria Strategic framework for scaling up effective malaria case management.

World Health Organization, Rolling back malaria. World health report 1999. Geneva: World Health Organization; 1999. p. 49–63.

Yasuoka, J., Poudel, K. C., Poudel-Tandukar, K., Nguon, C., Ly, P., Socheat, D. & Jimba M. (2010). Assessing the quality of service of village malaria workers to strengthen community-based malaria control in Cambodia. *Malaria Journal*, 9(109).