

# Knowledge, attitudes and practices about malaria in an urban community in south-western Nigeria

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## Abstract

**Background & objectives:** Oyo is an urban community in Oyo state of south-western Nigeria and it is holoendemic for malaria. Information was collected on the knowledge, attitudes and practices (KAP) of inhabitants of Oyo town in relation to malaria.

**Methods:** A cross-sectional survey of 192 households with the aid of self- or researcher-administered questionnaires was carried out to identify factors associated with the disease in the area.

**Results:** About 93.2% (n=192) of respondents recognized mosquito bites as the cause of malaria. A small proportion of children (13.7%) and adults (5.3%) received prompt treatment; however, more adults (65.8%) got correct dosage of antimalarials than children (38.7%). About 90% of suspected malaria cases in children and adults were first treated at home with local herbs or drugs, purchased from medicine stores. The use of insecticide-treated nets (ITNs) was scarce as only 16.7% of households used them for their children. Other reported malaria prevention methods include the use of insecticides (79.7%) and herbs (44.3%). In all, 17 (8.9%) of households did not have screening nets on their windows and 6.3% of 175 households with screening nets on their windows had rusty and torn nets. The level of education of heads of households was a strong predictor of positive malaria-related KAP. Window types and environmental hygiene were associated with prevalence of malaria in households.

**Interpretation & conclusion:** The control of malaria cannot be achieved without full involvement of the affected communities; the available tools for control can only be effective and sustainable if the local communities are mobilized and empowered with knowledge. It is suggested that health education campaigns be intensified; chemist shop-keepers and mothers being important target groups.

**Key words** Antimalarials; households; insecticide-treated nets; malaria; south-west Nigeria

## Introduction

Malaria remains one of the most serious global health problems and is not only a major cause of suffering and death, but also the cause of many socioeconomic problems<sup>1</sup>. Malaria is endemic throughout Nigeria with perennial malaria transmission<sup>2</sup> and is responsible for 60% outpatient visits to health facilities, 30% childhood deaths, 25% of deaths in children under one year, and 11% of maternal deaths (4,500 die

yearly). The financial loss due to malaria annually is estimated to be ~132 billion Naira in the form of treatment cost, prevention and loss of man-hours<sup>3</sup>.

Proven effective options to reduce morbidity and mortality include early diagnosis, combined with prompt effective therapy and malaria prevention through reduction of human-vector contact, emphasizing the use of insecticide-treated nets (ITNs). However, incorrect beliefs or inappropriate behaviour

can interfere with the effectiveness of these control measures<sup>4</sup>. Understanding communities' perceptions of cause, symptoms, identification and treatment of malaria is an important step towards developing strategies aimed at controlling the disease<sup>5</sup>, and determining the level of implementation of planned activities of a malaria control programme. KAP studies on malaria have been carried out in various parts of Africa<sup>4,6-8</sup>. This study was undertaken: (i) to evaluate the knowledge, attitudes and practices (KAP) of residents of Oyo town on malaria; (ii) to investigate the available malaria intervention tools; and (iii) to provide useful information for designing effective malaria control programmes in the area.

### Material & Methods

**Study area:** The study was carried out between January and February 2007 in Oyo, an urban town in Oyo state, south-western Nigeria. It lies in the tropical rainforest belt, and according to the 1991 census it has an estimated population of 3,452,720. Oyo town is made of three Local Government Areas (LGAs), namely Oyo East, Oyo West and Atiba LGAs. The native language in Oyo is Yoruba. Malaria is endemic in this area and occurs throughout the year with peaks during the rainy season. The local economy is based on agriculture and trading.

**Study design:** The design of the study was descriptive and cross-sectional. The sample population was selected by a cluster random sampling procedure. The three LGAs of Oyo town were divided into districts. Two districts were selected randomly from each LGA for the study.

**Data collection and analysis:** Questionnaires were designed, pre-tested and standardized, and were self- or researcher-administered to the heads of selected households (or the next most responsible household members in the absence of the head) and other concerned members. The purpose of the study was very carefully explained to them and their consents were individually obtained before the questionnaire was administered. Questions were asked on household

demographics and history of malaria fever in the previous one month of study, pediatric malaria fever treatment, treatment of malaria in adults, household knowledge and prevention of malaria, and household characteristics. All answers were numerically coded on each questionnaire and data analysis was based on chi-square test to assess linear tendency and compare proportions. The student's *t*-test was used to compare means. Analyses were performed using SPSS Statistical software version 16.0.

### Results

A total of 835 people were found to be current residents of the 192 households that took part in the study. Household size ranged from 1 to 9 with an average household size of 4 people, male-headed households predominated (82.3%). The sample population had a total of 421 (50.7%) males, 410 (49.3%) females, and 4 people with their genders undisclosed. Table 1 shows the distribution of the sample population by age. The ages of household heads ranged from 26 to 85 yr with an average age of 45.7 yr. Majority of the heads of household were salaried while 11.5% were without formal education (Table 2). Overall, 23.6% of the study population reported having cases of malaria illness within the period of one month prior to the survey.

**Table 1. Age distribution of sample population in a KAP study carried out in Oyo town, Nigeria**

Age range (yr)	Number	Percentage
0-11 months	12	1.4
1-4	77	9.2
5-9	108	12.9
10-14	117	14.0
15-19	85	10.2
20-29	113	13.5
30-39	114	13.7
40-49	119	14.3
50-59	57	6.8
≥60	32	3.8
Unknown	1	0.1
	835	100

**Table 2. Educational level and occupation of heads of households in a KAP study carried out in Oyo town, Nigeria**

Education level	Frequency within studied population*
Never attended school	22 (11.5)
Some or completed primary education	19 (9.9)
Some or completed secondary education	37 (19.3)
Above secondary education	112 (58.3)
Unknown	2 (1)
Total	192 (100)
Occupation	Frequency within studied population**
Unemployed	8 (4.2)
Clergy men/women	5 (2.6)
Business men/women	28 (14.6)
Salary earners	96 (50.0)
Artisans	26 (13.5)
Farmers/Traders	29 (15.1)
Total	192 (100)

\*Distribution of heads of household according to educational level differs significantly ( $\chi^2 = 9.512$  df = 4,  $p < 0.05$ ); \*\*Distribution of heads of household according to occupation differs significantly ( $\chi^2 = 11.541$ , df = 5,  $p < 0.05$ ); Figures in parentheses denote percentage.

Among 192 households interviewed, 108 had caregivers who reported malaria illness in children <10 yr of age, while 176 households had respondents to the questions on treatment of malaria in adults. The symptoms and treatment of malaria cases in children and adults are summarized in Table 3. Level of education of heads of household was a strong predictor of taking the sick to the clinic as the first line of action, giving correct dosage of antimalarials to the child and giving prompt treatment within 24 h of onset of illness ( $p < 0.05$ ). Source of health care sought had a significant association with the child getting the correct dosage of antimalarials. Majority of the children who got correct dosage sought health care from the clinics.

It was widely perceived that mosquito bite was the

**Table 3. Symptoms and treatment of malaria in children and adults of Oyo town, south-western Nigeria**

Variable	Frequency (%)		<i>p</i> -value
	In children	In adults	
<i>Symptoms*</i>			
Headache	50.9	90.3	<0.05
Body pain	25.9	81.8	<0.05
High body temperature	91.7	69.9	<0.05
Chills and shivering	23.1	26.1	ns
Poor appetite	74.1	50.8	<0.05
Dizziness	3.7	13.6	<0.05
Vomiting	45.4	16.5	<0.05
Convulsion	11.1	1.7	<0.05
Others	12	11.9	ns
<i>First line of action</i>			
Self treatment	70.4	70.3	ns
Seek health care	29.6	29.7	ns
<i>Recovery from self treatment</i>			
Yes	59.2	79.7	<0.05
No	40.8	20.3	<0.05
<i>Source of health care</i>			
Drug shop	12.7	27.5	<0.05
Community health worker	20.6	19.5	ns
Traditional doctor	7.9	13	ns
Hospital/Clinic	55.6	38.9	<0.05
Others	3.2	1.3	ns
<i>Use of antimalaria</i>			
Yes	74.1	65.5	ns
No	25.9	34.5	ns
<i>Dosage of antimalaria</i>			
Correct	38.7	65.8	<0.05
Incorrect	36.3	28.1	<0.05
Can't remember	25	6.1	<0.05
<i>Promptness of treatment</i>			
Within 24 h of onset of illness	13.7	5.3	<0.05
One day after onset of illness	31.3	32.4	ns
More than 1 day after onset	55	63.2	<0.05

\*Percentage total exceed 100% because of multiple responses; ns = Not significant.

cause of malaria (93.2%). In 71 households (37%), intense sunshine was identified as the cause of malaria. Other reported causes of malaria were cold weather (2.1%), flies (1%) and stress (34.4%). Very few (1%) household heads replied not knowing the cause of malaria. Reported types of preventive measures used against malaria included herbs (44.3%),

preventive drugs (26.6%), insecticides (79.7%), repellents (4.7%), mosquito coils (14.1%), bednets (18.2%), and others (16.7%). Six household heads (3.1%) reported not using any preventive measure. Of the 35 households who used bednets, 32 of them had children <10 yr. When asked about the best treatment for malaria, 190 heads of household responded. Nineteen (10%) heads of household believed that herbs were the best, 4 (2.1%) reported that prevention of the disease was the best, however, 55 (28.9%) respondents did not know what was best in the treatment of malaria.

Majority of the houses were rented accommodation constructed with concrete bricks and 77 (40.1%) households had their windows made of wood. About 17 (8.9%) households did not have screening nets on their windows. While 11 (6.3%) of the 175 households had rusted and torn screening nets on their windows and 17 (8.9%) houses were characterized by crowded sleeping conditions ( $\geq 4$  people sleeping in same room). A total of 126 (65.6%) households maintained a reasonable level of hygiene, having their environments free of growing bush, stagnant water and refuse dump sites and 80.7% (155) stored their water in covered containers, while 8.9% (17) households made use of uncovered water storage methods and 10.4% (20) used both covered and uncovered types. Types of window and environmental hygiene were significant predictors of malaria prevalence in households.

### Discussion

Adults and caregivers of children reporting malaria illness in this study were knowledgeable about the common symptoms of malaria; this is expected from a population in a malaria endemic area with 70–80% having formal education. Proportions reporting these symptoms varied between children and adults. More adults reported headache and body pains than children; as it could be difficult for a child, especially one <5 yr of age, to report these symptoms. More children were reported to exhibit vomiting than adults. It was impressive to discover that the use of

antimalarial drugs was common in the treatment of malaria in the study area, but only a few (especially children) got prompt treatment and correct dosage. For strategies to control the impact of malaria in children to be effective, antimalarial drugs should be given to children promptly at a proper dosage, to be active against the parasite<sup>9</sup>. Home management for malaria was very common in the study area, conforming with findings of most researchers in Africa, where majority of families treat their children for malaria at home but treatment was often incomplete and inadequate<sup>7</sup>. Identifying predictors or factors associated with sub-optimal practices that may be amenable to intervention may help managers of malaria control programmes to focus resources to increase the proportion of children receiving optimal treatments<sup>9</sup>. This study revealed predictors such as level of education of head of household and source of health care sought.

Malaria control depends heavily on prompt, effective treatment and not knowing the correct dose may be a barrier to effective case management. Given these results, in an urban setting, public health interventions may best be focused on modifications in control programmes which increase clinic attendance. This could be achieved by educational messages targeted, especially towards uneducated mothers and stressing the potential severe consequences of fever illness in children. Such a strategy would limit the improper use of self-administered antimalarials which has become increasingly important with the spread of drug resistance and the move to more complicated regimes like combination therapy<sup>7</sup>.

There was a wide acceptance of mosquito bites as the cause of malaria. This relatively high level of knowledge was due to higher levels of education, a greater access to media information and contact with modern health services found in urban settlements. Higher level of knowledge in an urban area was also seen in Colombia<sup>8,10,11</sup>.

While current international efforts at malaria control are targeted towards the use of insecticide-treated

nets (ITNs) for prevention via vector control, only 18.2% (35) of households, in this study use it as a preventive method. Educating community members regarding the beneficial effects of using ITNs and implementing their use is an appropriate intervention to achieve high control of malaria vector in endemic areas<sup>12</sup>. A sizeable percentage (19%) of households still believed in the use of herbs as the best treatment of malaria. This is not very surprising since the belief in traditional medicine is widely upheld in the study area.

In conclusion, malaria public health enlightenment efforts should be intensified. Chemist shop-keepers and mothers are important target groups for education campaigns. Health workers at different levels of health care delivery system should disseminate relevant information about malaria and mosquito vectors within the community. This awareness could be increased by focusing media announcements, organizing short seminars at PTA (Parents-Teachers Association) meetings in schools and in offices. Effective malaria preventive methods should be affordable, and support should be provided and adequately monitored to make treatments free and reach the target groups, especially, the vulnerable populations (the children and pregnant women). Studies are underway to investigate human factors that mitigate against the distribution and use of free insecticide-treated nets (ITNs) in the area.

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