

## Prevalence of Malaria in Gbalegi, Idanre Local Government Area and State Hospital, Akure, Ondo State, Nigeria

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### Abstract

The study investigated the prevalence of malaria in Gbalegi area of Idanre local government and State Hospital Akure. A total of 150 blood samples were collected from individuals using lancet and heparinised capillary tubes. Thin and thick blood smears were used to identify different Plasmodium species. Overall prevalence percentage of malaria was observed to be high in State Hospital Akure (20.7%) than in Gbalegi (20.6%). Overall prevalence of malaria infection among different occupation group in Gbalegi was highest (61.9%) in traders than in others. Malaria infection was highest (33.3%) in male traders in Gbalegi compared to female traders (15.2%). A more comprehensive research to confirm plasmodium as primary aetiology of malaria and malaria controlled programme is advocated. The risk factors for infection implicated in this study should guide formulation and implementation of prevention and control programs.

**Keywords:** Malaria; Blood smears; *Plasmodium*; Prevalence

### Introduction

Malaria has being a major disease of mankind for thousands of years. It is caused by protozoan of the genus Plasmodium and is transmitted by female Anopheles mosquitoes. Four species of Plasmodium are known to cause malaria in humans; Plasmodium falciparum, Plasmodium vivax, Plasmodium ovale and Plasmodium malariae. Other species of Plasmodium infect reptiles, birds and other mammals. It is endemic in most tropical and subtropical regions of the world. Of the four Plasmodium species that infect humans, P. falciparum is the most virulent and is responsible for the majority of morbidity and million infections and more than 1 million deaths each year, Centers for Disease Control [1]. The majority of these deaths occur in young children in sub-Saharan Africa, where one in every five childhood deaths is due to malaria. Aside from young children, pregnant women are also heavily affected, with resultant effects on maternal health and birth outcomes. Years after the first Abuja declaration, Nigeria failed in the malaria burden in 2010 leading up to the MDG's deadline. Nigeria is still recording high prevalence of malaria. While recent data indicates the number of malaria infections per year is decreasing (247 million malaria cases in 2006) the number of deaths attributable to malaria remains unchanged. According to World Health Organization, in Encarta (2007) [2] malaria is prevalent in over 100 countries and in recent years malaria has become more difficult to control and treat because malaria parasites have become resistance to drugs and mosquitoes that transmit the parasite have become resistant to insecticides.

Families are the major context within which most health problems and illness occur and have a powerful influence on health. Most health belief and behavior are developed and maintained within the family. Community perceptions, beliefs and attitudes about malaria causation, symptoms identification, treatment of malaria and prevention influences effort to address malaria and are often overlooked in control efforts and this varies from community to community and among individual households. Considering these issues it can be an important step towards developing strategies aimed at controlling malaria. Understanding who already knows about malaria and malaria prevention, who has adopted malaria prevention and who is at risk of malaria infection is a necessary precursor to identifying and targeting vulnerable population.

Health care provider can focus both on traditional physician-patient model and complement it with population based medicine for primary prevention of malaria.

The aim of this research is to determine the prevalence of malaria in Gbalegi Idanre Local Government and State Hospital, Akure, Ondo-State.

### Materials and Methods

#### Study site and survey method

This study was concurrently carried out in Gbalegi Idanre and State Hospital Akure, Ondo state Nigeria from April to June 2011. Gbalegi is a small rural community in Idanre Local Government Area, Ondo State and comprising less than 2000 people. Most members of the town are farmers and few traders. A total of 63 (males and females respectively) were screened for malaria in Gbalegi. The inclusion criteria used were age, sex, occupation, marital status and local methods in treating malarial infection in the community sampled.

#### Ethical concepts

Before the commencement of this work, a letter of introduction was collected from the Chief Medical Director of the State Hospital Akure to the officer in-charge of Haematology department and contact was made with officers in the Basic Health Center Gbalegi, Idanre to explain the purpose of the project and a standard questionnaire was used to obtain information's from each individual and through this means information was obtained on the status of infection, intervention types used and socio-economic activities of the people.

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## Collection and preparation of blood samples

Blood samples were collected from people by the medical laboratory technologist for malaria screening. Heparinised capillary tubes were used to take the blood samples for malaria. Few drops of blood were placed on slides to make thin and thick smear to check for malaria parasites and also a drop was added on the malaria kit as a confirmatory test. A maximum of 25 blood samples were collected at each sampling periods. Thick and thin blood films were made on a clean grease free slide respectively. The films were allowed to air dry and stained with Giemsa stain previously diluted in 1: 10 with distilled water. The stains were allowed to act for 30 minutes and air dried, after which the slides were screened under the microscope using 100X objective lens to view for malaria parasites.

## Results

### Age and sex prevalence of malaria in Gbalegi

A total number of males examined for infection was 19 and only 6(31.6%) were infected with malaria. The overall prevalence of malaria was 20.6% in both males and female screened. Prevalence was high (31.5%) in males than in females (15.9%) (Table 1).

### Age and sex prevalence of malaria in state hospital, Akure

A total of 87 individuals (37 males and 50 females) were screened for Malaria. 37 males were screened, 7 were positive for malaria. In females, a total of 50 people were screened; 11 were positive for malaria. The overall prevalence for malaria was 20.7% (Table 2).

### Occupational related prevalence of malarial infection in Gbalegi, Idanre

Four occupational status were identified (farmers, traders, students and civil servants). A total of 63 individuals (18 males; 45 females) were screened. The overall prevalence of malaria infection was 20.6% for both male and female individual screened. Prevalence was higher (22.2%) in males than in females (20.0%) as represented in Table 3.

### Occupational related prevalence of malaria in state hospital Akure

A total of 87 individuals (38 males; 49 females) were screened in the State Hospital based on their occupational status in Table 4.

### Marital status of screened individuals with malaria in Gbalegi

Table 5 indicates the marital status of screened individuals in Gbalegi. A total of 63 individuals were screened out of which 13 were infected with malaria (7 females; 6 males). The overall prevalence was highest in singles (50.0%) than in married (18.6%) individuals screened.

### Methods used in treatment of malarial infection in Gbalegi

A total number of 63 (19 males, 44 females) individuals were screened for the methods used in treatment of malaria (Table 6). Overall prevalence was highest (30.2%) in individuals that combine orthodox drugs and herbs. The prevalence was high (69.8%) in females than in males (30.2%) that combines both orthodox drugs and herbs.

## Discussion

The high rate of malaria infection continues to be a grave concern for communities such as Gbalegi and State hospital which is under developing countries where poverty, illiteracy, and socioeconomic disparities is the order of the day. In this study, the total prevalence of malaria that was found to be high among age group 20-29 (46.7%) and found to be low in age group 40-49 (8.3%) could probably due to the life style of the people such as dirty environment, smoking, drinking, unscreened houses which makes them easily immune-compromised. Females had high rate of malaria infection than males in State Hospital Akure metropolis, the high rate of malaria infection in females could be attributed to their social behavior such as dressing code, which in most cases involves short sleeves and shorts skirts, thereby exposing parts of their bodies to mosquitoes attack. This finding is in line with Warren and Mohmoud [3] who observed that females are at higher risk of malaria infection compared to their male counterparts. Another reason for the prevalence could be due to water lodge around resident houses, poor drainage system, bushes around houses, which are good breeding grounds for mosquitoes. Inadequate preventive and control measures might have also contributed to high rate of malaria infection in these areas. Drug resistant malaria parasite could also contribute

Age Group (Yrs)	Males		Prevalence %	Females		Prevalence %	Total		Prevalence %
	Number Screened	Number Infected		Number Screened	Number Infected		Number Screened	Number Infected	
20-29	6	4	66.7	9	3	33.3	15	7	46.7
30-39	6	2	33.3	13	3	23.1	19	5	26.3
40-49	2	NI	0	10	1	10	12	1	8.3
50-59	2	NI	0	7	NI	0	9	NI	0
60-69	2	NI	0	3	NI	0	5	NI	0
70-79	1	NI	0	2	NI	0	3	NI	0
Total	19	6	31.5	44	7	15.9	63	13	20.6

Table 1: Age and sex prevalence of malarial infection in Gbalegi. Key NI: No infection.

Age Group (Yrs)	Males		Prevalence (%)	Females		Prevalence (%)	Total		Prevalence (%)
	Number Screened	Number Infected		Number Screened	Number Infected		Number Screened	Number Infected	
20-29	14	1	7.2	20	4	20	34	5	14.7
30-39	6	2	33.3	8	2	25	14	4	28
40-49	8	3	37.5	10	3	30	18	6	33.3
50-59	6	1	16.7	8	2	25	14	3	21.4
60-69	1	NI	0	3	NI	0	4	NI	0
70-79	2	NI	0	1	NI	0	3	NI	0
Total	37	7	18.9	50	11	22	87	18	20.7

Table 2: Age and sex prevalence of malaria in state hospital, Akure. Keys: NI: No Infection.

Occupation	Male		Prevalence (%)	Females		Prevalence (%)	Total		Prevalence (%)
	Number Screened	Number Infected		Number Screened	Number Infected		Number Screened	Number Infected	
Farmers	10	1	100	8	2	25	18	3	16.7
Traders	6	2	33.3	33	5	15.2	39	7	17.9
Students	2	1	50	1	1	100	3	2	66.7
Civil	-	-	0	3	1	33.3	3	1	33.3
Servants									
Total	18	4	22.2	45	9	20	63	13	20.6

Table 3: Occupational related prevalence of malarial infection in Gbalegi, Idanre.

Occupation	Male		Prevalence (%)	Females		Prevalence (%)	Total		Prevalence (%)
	Number Screened	Number Infected		Number Screened	Number Infected		Number Screened	Number Infected	
Farmers	7	-	-	3	-	-	10	-	-
Traders	10	-	1	20	3	15	30	4	13.3
Students									
Civil	7	-	-	8	1	12.5	15	1	6.7
Servants	14	-	-	18	3	16.7	32	3	9.4
Total	38	1	2.6	49	7	14.3	87	8	9.2

Table 4: Occupational related prevalence of malarial infection in state hospital Akure.

Marital status	Male		Prevalence (%)	Females		Prevalence (%)	Total		Prevalence (%)
	Number Screened	Number Infected		Number Screened	Number Infected		Number Screened	Number Infected	
Married	11	5	45.5	48	6	12.5	59	11	18.6
Single	2	1	50	2	1	50	4	2	50
Total	13	6	46.2	50	7	14	63	13	20.6

Table 5: Marital status of individuals for malarial infection in Gbalegi.

Treatment Used	(NM=19) Number of Individuals	Prevalence %	(NF=44) Number of Individuals	Prevalence %	Total (N=63) Number of Individuals	Prevalence %
Orthodox	4	21.1	28	63.6	32	50.7
Herbs	1	5.3	1	2.3	2	3.2
Self-Medication	4	21.1	6	13.6	10	15.9
Orthodox and Herbs	10	52.6	9	20.5	19	30.2
Total	19	30.2	44	69.8	63	100

Table 6: Methods used in treatment of malarial infection in Gbalegi.

to high infection rate since most of the patients in these areas cannot afford hospital bills thereby resorting to inadequate medication. This finding agrees with Onifade et al. [4].

The high prevalence of malaria observed in males of age group 40-49 years compared to females of the same age group; could probably be that males are more negligent than females on matters relating to health generally, while the total prevalence of malaria was low in screened in State Hospital, Akure because most of them have an updated knowledge about the means of contracting malaria or due to preventive measures used. There was low rate of malaria in males and females among age group 20-29 years in State Hospital Akure probably due to their knowledge on the mode of malaria transmission. High prevalence was observed in individuals that combine orthodox drugs and herbs in Gbalegi while those that uses herbs alone were lowest [5]. The percentage prevalence was higher in males that combine orthodox drugs and herbs than in females. This was probably due to the fact that most females attend basic health center than males and they know the negative impact on misuse of herbs on the body organs [6].

## Conclusion and Recommendation

Conclusively, the prevalence of malaria is now becoming pandemic in our world most especially developing countries such as Nigeria. The issue of malaria has now become a major challenge for medical

practitioners in the world at large and this is becoming a public health concern most especially in communities of little or no awareness like Gbalegi. It is therefore recommended/required that more awareness to educate people especially the rural communities should be intensified.

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