

## Self treatment of Malaria and its management in communities of Guyana

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**Abstract:** In Guyana the continued high incidence of malaria is due to increased mining and logger's activities. In addition, behavioral patterns and attitudes of indigenous communities coupled with similar features in miners and loggers – all itinerant in nature- contribute significantly to interrupted/broken/incomplete treatments. This research assessed the use of self-treatment and also determined the various actions taken to manage malaria illness, especially among high risk individuals. This survey assessed the treatment-seeking pattern of malaria infection among fifty patients who visited Malaria clinic of Georgetown Public Hospital. Among the study population, 16% of the victims responded having sufficient information about malaria. Whilst most of the victims embraced the idea of self-administration (88%), 12% did not support the idea of self treatment. After careful examination, it was thought that the 12% of victims that was against self treatment may be as a result of advanced technology and availability of information on malaria like drug resistance and misdiagnosis. The study was able to draw trepidation of high risk malarial patients towards care and treatment. Self-treatment at home is the major action taken to manage malaria. Therefore efforts should be made to improve the availability of effective antimalarials to communities in rural areas with malaria, particularly through the use of community health workers, health posts, drug sellers, and shop owners. [R. Kurup and H. Kumar. **Self treatment of Malaria and its management in communities of Guyana.** *Nat Sci* 2014;12(1):87-92]. (ISSN: 1545-0740). <http://www.sciencepub.net/nature>. 13

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### 1. Introduction

Malaria is a major health problem in the tropics and sub-tropics. The Center for Disease Control (CDC) estimates that there are 300-500 million cases of malaria each year and more than 1 million people die each year. It presents a major disease hazard for travelers to warm climates (1). According to the "World malaria report" 2011, there were 216 million cases of malaria and an estimated 655,000 deaths in 2010 (2).

Most of Guyana's population reside on a narrow coastal strip that is largely devoid of active malaria transmission however malaria remains endemic in the interior geopolitical regions, i.e., Regions 1, 7, 8, and 9. In this primarily Amazonian tropical rainforest district, the sylvatic *Anopheles darlingi* is considered the primary vector for malaria transmission. Population is very small and scattered, but there is a sizeable itinerant group of miners and loggers that moves not only throughout the interior and coastal areas of Guyana, but also into the neighboring countries of Brazil, Venezuela, and Suriname (3, 4, 5).

*P. falciparum* causes severe morbidity and mortality and continues to be the dominant species. The average number of malaria cases in Guyana was approximately 48,805 between 1991 and 1998 which were reduced during 1999 and 2000. In order to achieve malaria free areas such as in coast lands where 85% of Guyana's population resides, a new drug schedule was introduced in the latter-half of 1999 to treat *P. vivax* and *P. falciparum* malaria cases (6).

The aim of this study was to assess the knowledge of patients with regard to self treatment of malaria and management among malaria infected population of Guyana.

### 2. Materials and Methods

**Study Area:** Guyana is located along the north-eastern coast of South America. It is an English-speaking country with an area of 215, 000 km<sup>2</sup> and a population of approximately 770, 000. The population includes people of East Indian (49.5%) and African descent (35.6%) together with Amerindians (6.8%) and people of other ethnic groups (8.1%).

The study was conducted at the Malaria Clinic at Georgetown Public Hospital Cooperation. A sample of fifty (50) participants was randomly selected to voluntarily participate in this study during the month of September – November 2011.

**Ethical Considerations:** Ethical clearance was obtained from the Ethical Review Committee (ERC) under the Ministry of Health, Guyana. The objectives of the study were explained to patients who attended the clinic. Full verbal explanation of the study was given to members who participated in the study. Written consent was then obtained from malaria patients before inclusion as participants.

**Data Analysis:** The data were double entered in Microsoft Excel data sheets; cross checked and analyzed using SPSS 11.0. Descriptive statistics were carried out to measure relative frequencies, prevalence percentages and averages of the variables.

Table 1: Socio-demographic characteristics of respondents in Malaria clinic.

CHARACTERISTICS	n	%
<b>Gender</b>		
Male	37	74.0
Female	13	26.0
<b>Age</b>		
< 20	12	24.0
20 - 29	15	30.0
30 - 39	11	22.0
40 - 49	7	14.0
50 - 59	4	8.0
> 60	1	2.0
<b>Religion</b>		
Hindu	7	14.0
Christian	33	66.0
Muslim	5	10.0
Others	5	10.0
<b>Marital status</b>		
Married	22	44.0
Single	27	54.0
Divorced/Separated/Widow	1	2.0
<b>Ethnicity</b>		
East Indian	16	32.0
African	11	22.0
Portuguese	1	2.0
Amerindians	3	6.0
Mixed	19	38.0
<b>Educational Background</b>		
No education	1	2.0
Primary	9	18.0
Secondary	31	62.0
Tertiary	5	10.0
Graduates	4	8.0
<b>TYPE OF STRUCTURE IN HOUSEHOLD:</b>		
<b>Type of Roof</b>		
Grass/Leaves	2	4.0
Tiles	2	4.0
Asbestos	-	-
Zinc	41	82.0
Canvas	-	-
Wood	5	10.0
<b>Type of Wall</b>		
Cane	-	-
Cement Blocks	26	52.0
Clay Blocks	2	4.0
Bricks	1	2.0
Stones & Cement	3	6.0
Wood	18	36.0

### 3. Results

A total of 50 patients with malaria were interviewed who attended malaria clinic at Georgetown Public Hospital. The study had 26% females and 74% males. Detailed socio-demographic characteristics are presented in Table 1. Majority of the patients were Christians (66.0%), mixed ethnic

group (38.0%), secondary level educated (62.0%) and single (54.0%). Almost 82.0% of respondents said they live in houses with zinc roof whereas only 52.0% said they have cement blocks for their walls, 36% said they have wooden walls.

Table 2 present the respondents' knowledge about malaria, as well as its transmission. All the participants said they have heard of malaria. The respondents said the source of information about malaria were from friends (17, 34%), family (16, 32%), Health facility (11, 22%), poster/pamphlets (5, 10%), and other sources (Radio, TV, community meetings, church, school, community center). All respondents associated the disease transmission with mosquito bites and 96% believed malaria could lead to death if not treated. About 60.0% people associated malaria transmission with the bites of mosquito which had fed on malaria patients, 40% of patients claimed that malaria was spread by dirty stagnant water, 1% responded that it was transmitted by touching infected person while 3% people have no idea how malaria is transmitted. 96% believed that malaria is prevalent at their working area and 30% believed malaria prevalent at residing area.

46% of respondent said they are well aware of malaria whereas only 48% said they are aware only to an extent and 14% said they don't know about malaria. Symptoms of malaria such as intermittent fever, headache, loss of appetite, vomiting and general body weakness, were most frequently mentioned. Other symptoms mentioned were cough, respiratory distress, abdominal pain, loss of appetite, diarrhoea, body pains, and loss of energy, rigor and cramps. The majority of the respondents visited a laboratory to confirm malaria whereas 26% did self diagnosis. It clearly showed that 86% of persons were treated by a doctor or physician while 14.0% of persons were not treated by a doctor. In total, 74% said that they had tried self treatment at home with 48% tried anti malarial drugs, 37.8% tried pain killers and 13.5% tried bush medicine.

Education level did not influence significantly the type of treatment respondents would select for malaria treatment. 22% of the participants initiated treatment several months of acquiring malaria, 18% after one month and 12% initiated treatment after a week. 36% participants said they received treatment after 4-7 days of getting malaria whereas 50% of the participants received treatment between 1-3 days. Main reasons given for a delay in initiating treatment and visiting health services after onset of malaria were inaccessible health services, financial problems, and lack of awareness. Ways known to prevent mosquito breeding, as well as treatment and therapy of malaria are demonstrated in Table 1.3. Based on the study conducted in Guyana, majority of respondents seek

treatment for malaria from drug stores, dispensaries/health centers, or hospitals. Home treatment and self treatment were also practiced by most respondents. Respondents said that anti-malarial drugs were bought from markets or shops because the shops has less waiting time (18, 48.6%), prior knowledge of the same drug (12, 32.4%), drugs were cheap (1, 2.7%), dissatisfaction with health services (6, 16.2%) and carelessness about the disease (6, 16.2). A total of 68% participants believed that the self treatment was effective.

The common anti malarial drug used by respondents were chloroquine (12.0%), quinine (4.0%), primaquine (2.0%), other drugs (18.0%), while 42.0% were not certain of the drugs they used. Based on information received, it clearly showed that 66.0% persons responded positively towards the initiative, 32.0% responded negatively, while the remaining 2.0% do not know whether or not self treatment of malaria would reduce mortality rate. Transportation, receiving medication easily, financial problems and poor advice were given as reasons for not receiving prompt and effective treatment.

Table 2: Reported knowledge on malaria by respondents in the malaria clinic

Variable	n	%
Heard of malaria	50	100.0
<b>Source of information</b>		
Friend	17	34.0
Family	16	32.0
Posters/Pamphlets	5	10.0
Radio	1	2.0
TV	4	8.0
Community Meetings	3	6.0
Church	1	2.0
Community Center	1	2.0
Health Facility	11	22.0
School	4	8.0
<b>Malaria could cause death if not treated?</b>		
Yes	48	96.0
Don't Know	2	4.0
Mosquito bites	30	60.0
Dirty Stagnant Water	20	40.0
Working without Rest	1	2.0
Don't Know	3	6.0
<b>Mode of Transmission</b>		
Mosquito	50	100.0
<b>Is Malaria prevalent in your working area?</b>		
Yes	48	96.0
No	2	4.0
Don't Know		
<b>Malaria prevalent in your Residing Area</b>		

Yes	15	30.0
No	28	56.0
Don't Know	7	14.0
<b>Are you aware of Malaria?</b>		
Well Aware	23	46.0
To an Extent	24	48.0
No Idea	3	6.0
<b>Symptoms</b>		
Fever	46	92.0
Cough	10	20.0
Respiratory distress	5	10.0
Vomiting	31	62.0
Diarrhoea	13	26.0
Abdominal pain	13	26.0
Rigor	3	6.0
Sweating	27	54.0
Headaches	40	80.0
Chills	28	56.0
Body Pain	30	60.0
Loss of energy	31	62.0
Loss of appetite	33	66.0
Don't Know	1	2.0
<b>Adequate information on Malaria</b>		
Yes	7	14.0
No	36	72.0
Don't Know	7	14.0
<b>If No, What information would you like to get?</b>		
Information on Treatment	14	28.0
information on Prevention	20	40.0
Information of Control	25	50.0
Nature of Disease	8	16.0
Signs and Symptoms	4	8.0
Don't Know	1	2.0
<b>Information be communicated through</b>		
Family member	6	12.0
Friend	6	12.0
Church	-	-
Radio	6	12.0
TV	12	24.0
Posters/pamphlets	8	16.0
Community health worker	3	6.0
Newspaper	8	16.0
Health Facility	14	28.0
Community meetings	12	24.0
Don't Know	1	2.0
<b>Have you ever had Malaria?</b>		
Yes	38	76.0
No	12	24.0

Table 3: Attitude and Practices of respondents towards Malaria treatment and therapy

<b>What/who diagnosed for confirmation of malaria: within 24 hours after onset of illness:</b>		
Self/Family	13	26.0
Clinical (Health worker)	10	20.0
Laboratory	25	50.0
Not Diagnosed	6	12.0
<b>(Overall diagnosis after onset of illness:</b>		
Self/ Family	8	16.0
Clinical	10	20.0
Lab Tests	28	56.0
<b>Duration Since you got Malaria</b>		
One Week	6	12.0
One Month	9	18.0
Several Months	11	22.0
Not sure	24	48.0
<b>How long after treatment received:</b>		
Same day	7	14.0
1 - 3 days	25	50.0
4 - 7 days	18	36.0
<b>Treated by a doctor or physician:</b>		
Yes	43	86.0
No	7	14.0
<b>Tried any medication without consulting doctor or pharmacist</b>		
Yes	37	74.0
No	12	26.0
<b>If yes, what medication/remedy tried:</b>		
Antimalarials	18	48.6
Pain killers	14	37.8
Alternative medicine (Bush medicine)	5	13.5
<b>Purchasing of antimalarial drugs without prescription – if yes, what is the cause:</b>		
Prior knowledge of the same drug	12	32.4
Less expensive	1	2.7
Save time	18	48.6
Peer influence	1	2.7
Illness was mild	6	16.2
Dissatisfaction with health services	6	16.2
<b>Treatment effective or beneficial:</b>		
Yes	34	68.0
No	3	6.0
<b>Compliance as it relates to taking malaria drugs:</b>		
Yes, I finished all the tablets prescribed	39	78.0
No, I sometimes forgot to take the pills	4	8.0
No, I didn't complete the entire treatment because I	7	14.0

felt		
<b>Drug(s) taken to prevent malaria:</b>		
Chloroquine	6	12.0
Quinidine	2	4.0
Primaquine	1	2.0
Other	9	18.0
Don't know	21	42.0
Chloroquine & Quinidine	3	6.0
Chloroquine, Primaquine & Quinidine	2	4.0
Primaquine & Quinidine	2	4.0
Quinidine & others	1	2.0
Quinidine & Sulfamethoxazole	2	4.0
Chloroquine & Primaquine	1	2.0
<b>Where purchase or get antimalarial drugs:</b>		
Malaria control programmes	13	26.0
Private clinic	2	4.0
Health post/ Health Center	10	20.0
Pharmacy	18	36.0
Market / Shop	11	22.0
Drug shop	2	4.0
Friend	-	-
<b>Why prefer to buy antimalarial drugs from markets or shops/friends:</b>		
Close to home	6	12.0
Cheap	6	12.0
Easily accessible	30	60.0
Short waiting time	8	16.0
<b>Other household member take malaria drugs:</b>		
Yes	21	42
No	29	58
<b>Support keeping emergency malarial medication for self-administration:</b>		
Yes	45	90
No	5	10
<b>If given the opportunity, what is your capability of self-administration:</b>		
Will be nervous / scared	5	10.0
Not sure	10	20.0
Will be confident	35	70.0
<b>Factors that prevents receiving prompt and effective treatment for malaria:</b>		
Transportation (Too far)	28	56.0
Too expensive	2	4.0
Doesn't have time to seek treatment	3	6.0
Forgets to take pills as prescribed	4	8.0
Nothing, I readily receive treatment	13	26.0
<b>Would self-treatment reduce mortality (death) rate:</b>		
Yes	33	66.0
No	16	32.0

Don't Know	1	2.0
<b>Could malaria be prevented:</b>		
Yes	37	74.0
No	8	16.0
Don't Know	5	10.0
<b>Personal protective measures used to guard against malaria infection:</b>		
Use repellants	20	40.0
Use mosquito coils	12	24.0
Use mosquito nets	42	84.0
Close windows and Doors	4	8.0
Gauze wires in windows	4	8.0
Do nothing	3	6.0
Other - Treat drinking water	-	-

#### 4. Discussion

The study population appears to be relatively knowledgeable of the etiology, symptoms, and treatment of malaria. The majority of the population correctly identified mosquitoes as the disease vector. Studies conducted in Colombia and Nigeria found that the source of malaria, and means of transmission, were largely unknown (7, 8). However, not all studies have reported a poor understanding of etiology. Two studies in Guatemala reported that more than 90% of respondents recognized mosquitoes as the malaria vector (9, 10). In our study population there is still a significant number of respondents who believe that malaria can be contracted by drinking dirty water. One of the studies in Guatemala also found this belief to exist in more than 50% of their study population (10). Also, the population demonstrated a good understanding of the symptoms of malaria like fever, headache, chills and loss of energy. The level of knowledge of malaria transmission was also similar as in other studies (11).

The majority of respondents in Guyana also correctly identified anti malarial drugs as the treatment of choice. Some individuals however, did state that traditional bush medicines could cure malaria. This belief was also reported in nearly 50% of a study population in Guatemala (12). Nevertheless, the level of knowledge of malaria in Guyana's population appears to be relatively good, and may be related to the relatively good level of education and literacy of the study population.

Self-treatment with anti malarial drug is reported to be widespread in malaria-endemic countries. However, results obtained in Guyana suggested that majority of the respondents self treated with anti malarial drugs as in other parts of the world (13). While many individuals self-treated at home with anti malarial drugs before seeking medical attention, 26.0% of the cohort did eventually present to a health

care facility. Studies in Guatemala, Ethiopia, and Kenya found that more than 60% of individuals self-treated (usually with anti-malarials) and did not seek medical attention (14, 15, 16, 17). A similar study was conducted with technical support from MSH/RPM *Plus* during 2005 – 2006 among miners in Guyana, on availability and use of antimalarials. This study had only 11.3% participants who could identify the primary symptoms of malaria. 37.6% could self diagnose malaria and 46.7% received malaria treatment from a friend/boss or local shop (18).

In addition, the main delay in seeking medical attention in Guyana's population was comparable to the results reported elsewhere (10). Many of the respondents delayed seeking medical attention because transportation was not readily available. Although there are many clinics in close proximity to the towns around Guyana, individuals working in the interior often have to wait until they return home to obtain health services. This was especially true among those who contracted malaria while working in the mines where access to health services is limited, hence, would tend to reduce mortality (death) rate in Guyana.

More than one third of respondents waited for several days before seeking medical attention because they did not think they had a serious illness. Individuals who were infected with malaria for the first time were more likely to delay for this reason than were those who had been previously infected. This suggests that symptom recognition may be a problem in individuals infected for the first time.

Although it was conducted in a public clinic, the study population may not be representative of the general population. Majority of malaria infections in Guyana are known to occur in middle aged males working in the bush (19), and therefore the sample population is representative of the burden of the malaria disease. However, the results found in this study may be compared to previous studies which were also limited by the same factors (20).

#### 5. Conclusion

In summary, the study concludes that individuals working in the interior often have to wait for several days to return to the coast where health services are widely available, hence, self – treatment of malaria is beneficial for curing the disease by creating awareness among general population, pharmacy owners and health care workers

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