

# Treatment Seeking of Malaria Patients in East Shewa Zone of Oromia, Ethiopia

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## Abstract

**Background:** Prompt access to early diagnosis and effective antimalarial treatment at health facilities is one of the major strategies for reducing the burden of malaria.

**Objective:** To assess treatment seeking behaviour and its determinant factors among malaria patients attending malaria control laboratories (MCLs).

**Methods:** Health facility-based cross-sectional study was carried out in East Shewa Zone of Oromia Regional State in October 2000. The study subjects were 392 microscopically confirmed malaria patients of both sexes attending Adama, Bushoftu and Zeway MCLs.

**Results:** The results indicated that 52.6% of the total malaria cases was due to *P. falciparum* and 47.4% due to *P. vivax*. About 87% of them came directly to MCLs without seeking treatment from any other sources and treated with sulphadoxine-pyremethamine or chloroquine. While 13% used antimalarial drugs from different sources before coming to MCLs, with 72% of them being from rural areas. Only 25.5% of the patients visited the laboratories within two days while the remaining 74.5% came to MCLs three or more days after the onset of malaria illness. The main reasons cited for the delay (three or more days) were mild illness (44.2%), high workload (19.9%), financial problems (19.2%) and thought of other diseases. The satisfaction of malaria patients towards MCL services was very high (99.2%). Free laboratory service and antimalarial drugs (95.6%), short waiting time for laboratory results (84.3%), good quality of laboratory services (98.5%) with adequate and correct treatment (96.9%) were the major reasons mentioned for the high satisfaction rate.

**Conclusions:** A large proportion of malaria cases seek treatment at MCLs three or more days after the onset of malaria illness without taking medications from other sources indicating an extreme delay in early diagnosis and treatment mainly due to mild illness, financial problems, work overload and lack of access. Accordingly, more emphasis should be given on identifying innovative ways of securing antimalarial drugs particularly for people in rural areas. Resistance of *P. falciparum* to SP should be monitored and evaluated. In addition, a large proportion of malaria cases are due to *P. vivax* and studies on chloroquine efficacy against its treatment should be initiated and strengthened to enable the early detection of resistance. [*Ethiop.J.Health Dev.* 2003;17(2):9-15]

## Introduction

Malaria is the major public health problem in Ethiopia in general and in the Oromia Regional State in particular during the peak transmission season from early September to mid December.

The overlap of peak malaria transmission with harvesting time mainly in rural agricultural areas makes early diagnosis and adequate treatment difficult and cause a significant morbidity and mortality. The principle behind malaria control is that patients who are suspected of having malaria must receive full antimalarial treatment without delay through the channels of available public health services. The choice of treatment has been shown to be dependent on access, cost, attitude towards provider, and beliefs about the disease (1).

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The majorities of malaria cases in Oromia do not have access to early diagnosis and adequate treatment since about 89% of the population in the Region is residing in rural areas (2) and the health service coverage is still about 47% (3). The response to most episodes begins with home treatment usually with antimalarial drugs obtained from different sources and this may cause a delay in treatment seeking from the general health facilities (4). The former malaria control program has been integrated into the general health services since 1993. However, malaria control laboratories (MCLs) in the Region are still providing malaria diagnosis and treatment services in cooperation with the general health facilities. Therefore, the purpose of this study was to investigate treatment seeking behaviour and its determinants among malaria patients attending MCLs.

### Methods

A health facility-based cross-sectional study was carried out in East Shewa Zone of Oromia Regional State in October 2000 to determine treatment seeking behaviour and its determinant factors among malaria patients attending three MCLs. The laboratories were chosen as study sites because most of the malaria cases in Oromia are found in East Shewa Zone and assumed that they represent the areas. These laboratories have served the community since the inception of malaria eradication service in Ethiopia. Out of 36 MCLs in Oromia Regional State, five are found in East Shewa Zone. The sample size was determined using a formula for estimating a single proportion. Taking an estimated prevalence of malaria illness of 50% with 5% marginal error, a total of 392 study subjects were found to be representative after adding 2% contingency.

The study subjects were microscopically confirmed malaria patients attending Adama, Bushoftu and Zeway MCLs in the second week of October 2000. The required sample size was equally divided among the three laboratories. All patients of both sexes who were  $\geq 15$  years

and microscopically diagnosed as having *Plasmodium falciparum* or *P. vivax* were included in the study. Patients critically ill and unable to respond for the interviewers were excluded from the study. Agreement was obtained from Oromia Health Bureau, East Shewa Zone Health Department Office and from each of MCLs. Informed consent was secured from each participant and lastly, information and education was given to the study subjects with regard to malaria prevention, control, and early diagnosis and adequate treatment.

A pre-tested structured questionnaire containing questions on socio-demographic characteristics, treatment seeking behaviour, time of illness onset and initiation of treatment, history of medications for the illness and factors related to treatment seeking was specifically developed and applied for data collection. All patients fulfilling the inclusion criteria were interviewed at an exit from the laboratory after completing their diagnosis and treatment services. The interview was continued without interruption until the required number for each laboratory was completed. Data were collected by trained malaria control workers. One person was assigned per laboratory and the collection of data was completed within one week. Data thus collected were entered and analyzed using EPI INFO version 6.02 software package.

### Results

Of the total of 392 study subjects 33.2% ( $n=130$ ) and 33.7% ( $n=132$ ) were from Zeway and Bushoftu MCLs, respectively, while the remaining 33.2% ( $n=130$ ) were from Adama laboratory. The study patients consisted of 63.8% males and 36.2% females with the age ranging from 15 to 74 years. The mean and median ages of the study subjects were 27.6 and 24 years, respectively, with a SD of 11.8. Most, 50.3%, of them were in the age group of 15-24 years, followed by 25-34 years, 25.3%, and  $\geq 35$  years, 24.4%. The ethnic composition

was Oromo, 51.5%; Amhara, 30.1%; Gurage, 8.2% and Wolayta, 3.1%, with the rest comprising Tigre, Hadiya and Kembata.

Most of the respondents were Christians (84.7%) and urban dwellers (53.6%). Among the study subjects, 33.4% were farmers, 17.3% students, 15.3% housewives, 8.9% unemployed, 6.6% merchants, 5.4% daily labourers and 4.8% government employees. Concerning educational status, 39% were illiterate, 39% primary and junior school level, and the remaining high school and above. About 47% and 46% of the respondents were never married and married individuals, respectively, and 7% being separated, divorced and widowed.

The laboratory results indicated that 52.6% of the total malaria cases were due to *P. falciparum* and 47.4% due to *P. vivax*. They were treated with Sulphadoxine-Pyremethamine (SP) and chloroquine (CQ), respectively, according to the National Guideline (5). Among the total patients attending the three malaria control laboratories in October 2000, the parasite rate ranged from 41% at Zeway to 48% at Bushostu. Regarding the time interval between the onset of malaria illness and treatment seeking (diagnosis and treatment initiation) at MCLs, only 25.5% of them visited the laboratories within two days while the remaining 74.5% came to MCLs after three or more days following the onset of illness (Table 1). About 53% of those who came to MCLs three or more days after the onset of illness were from urban areas. The main reasons cited for the delay (three or more days) were mild illness, 44.2%; high workload, 19.9%; financial problems, 19.2% and thought of other diseases.

On interview about the use of antimalarial drugs before coming to MCLs, 13.3% (n=52) patients replied “yes”. Of these, 96% of them came three or more days after the onset of

Table 1: Time interval between onset of malaria illness and treatment seeking at MCLs, and reasons for delay to seek early treatment, East Shewa, Oromia, Ethiopia, 2000.

Variables	Frequency (%)
<b>Time interval (n = 392)</b>	
< one day	20(5.1)
One day	17(4.3)
Two days	63(16.1)
3-4 days	141(36.0)
> 4 days	151(38.54)
<b>Reasons for delay (&gt; two days, n = 292)</b>	
Mild illness	129(44.2)
<b>Workload</b>	58(19.9)
Financial problem	56(19.2)
Thought other disease	36(12.3)
Inaccessible health services	30(10.3)
MCL closed due to weekends	15 (5.1)
Visited other health services	12(4.1)
Very sick to come	12(4.1)
Other	29(9.9)

illness, with 72% of them being from rural areas. From the 52 patients, 63.5% bought and used drugs with prescription of health workers, 23.1% bought without prescription with prior knowledge of the same drug for the same type of illness and 11.5% due to peer influence (Table 2). Regarding the types of antimalarial drugs, CQ was bought and used by 44.2% of the respondents followed by SP, 34.6%, while others used antipyretics and antibiotics. About 40% of them obtained antimalarial drugs either from private pharmacies, drug shops or rural drug vendors and 25% bought from private clinics. The rest mentioned other sources of antimalarial drugs such as malaria control services, health stations and already leftover drugs at home. The causes of illness for the 52 malaria patients who took prior medications before seeking treatments at MCLs were *P. falciparum* (55.8%) and *P. vivax* (44.2%). On interview about the medication history for these species of malaria, about 52% of the 28 falciparum malaria cases were treated with CQ but only 21% of them used SP. However, among 24 vivax malaria cases, SP was taken by 52% but only 35% were treated with CQ.

Table 2: Utilization of antimalarial drugs and mode of prescription before treatment seeking at MCLs, East Shewa, Oromia, Ethiopia, 2000

Variables	Response	Frequency (%)
Took drug before Coming to MCL	Yes	52(13.3)
	No	340(86.7)
Mode of prescription (n=52)	Health workers	33(63.5)
	Bought without prescription	12(23.1)
	Peoples advice	6(11.5)
	Other	1(1.9)

The findings also indicated that there was a conspicuous variation in the distribution of *Plasmodium* species between patients from urban and rural areas. The proportion of *P. falciparum* and *P. vivax* was 34.5% and 65.5%, respectively, for urban residents attending Bushoftu MCL but it was 54% for *P. falciparum* and 46% for *P. vivax* among

rural patients seen at this laboratory (Table 3). Among malaria patients who attended Adama MCL, malaria illness due to *P. vivax* was 67.5% for urban and 60% for rural patients. However, *P. falciparum* was the dominant cause of malaria illness both among rural (88%) and urban (69%) malaria cases diagnosed at Zeway MCL.

Table 3: Distribution of *Plasmodium* species and urban-rural differences among malaria patients diagnosed at MCLs, East Shewa, Oromia, Ethiopia, 2003.

Name of laboratory	Residence	Malaria Cases	Species distribution	
			<i>P. falciparum</i>	<i>P. vivax</i>
Adama	Urban	80	26	54
	Rural	50	20	30
	<b>Subtotal</b>	<b>130</b>	<b>46</b>	<b>84</b>
Bushoftu	Urban	43	14	29
	Rural	89	48	41
	<b>Subtotal</b>	<b>132</b>	<b>62</b>	<b>70</b>
Zeway	Urban	87	60	27
	Rural	43	38	5
	<b>Subtotal</b>	<b>130</b>	<b>98</b>	<b>32</b>
<b>Total</b>		<b>392</b>	<b>206</b>	<b>186</b>

The satisfaction of malaria patients towards MCL services was very high, 99.2% (n=389). Free laboratory service and antimalarial drugs (95.6%), short waiting time for laboratory results (84.3%), good quality of laboratory services (98.5%) with adequate and correct treatment (96.9%) were the major reasons mentioned for the high satisfaction rate. However, three patients were not satisfied with the services they got

particularly due to the inadequate care for the antimalarial drugs while dispensing particularly breaking down of drugs with hands, non-use of gloves and mistreatment by workers.

The data were further analyzed to assess the relationships between different socio-demographic variables and the time interval between onset of malaria illness and seeking

treatment at MCLs. There were no statistically significant differences between urban and rural, residents, males and females, and Muslims and Christians in the duration of time between onset of malaria illness and treatment seeking at MCLs (Table 4).

However, malaria patients diagnosed with *P. falciparum* seem to seek treatment earlier compared to patients with vivax malaria although the difference is statistically insignificant.

Table 4: Relationships of various socio-demographic factors with duration of treatment seeking at MCLS after onset of malaria illness, East Shewa, Oromia, Ethiopia, 2000.

Variable	Duration between onset of illness and treatment seeking		
	≤ two days	>two days	OR (95% CI) <sup>a</sup>
<b>Residence</b>			
Urban	55	155	1.08(0.67, 1.75)
Rural	45	137	1 <sup>b</sup>
<b>Sex</b>			
Female	37	105	1.05(0.64, 1.72)
Male	63	187	1
<b>Religion</b>			
Christian	86	246	1.15(0.58, 2.31)
Muslim	14	46	1
<b>Educational status</b>			
Illiterate	33	119	0.75(0.45, 1.24)
Literate	66	173	1
<b>Cause of illness</b>			
<i>P. falciparum</i>	59	147	1.42(0.87, 2.32)
<i>P. vivax</i>	41	145	1

**Discussion**

This study has demonstrated that 86.7% of self-reported malaria patients confirmed by a positive blood film and received treatment with SP or CQ at MCLs came directly to these laboratories without seeking treatment from any other sources. MCLs at Adama, Bushoftu and Zeway have been established since the inception of malaria eradication service in Ethiopia and the people in these areas have a very good knowledge about the use of these laboratory services. It is known that in most malarious areas where the people are familiar with the clinical manifestations and treatment of malaria, it is common that most malaria patients self-report to MCLs or to the nearest health facilities for diagnosis and treatment.

1992 E.C (1999/2000) annual report of East Shewa Zone Health Department, for example, indicated that there were over 17,808 malaria patients diagnosed and treated at Adama MCL alone compared to the total 702 malaria patients diagnosed and treated at Adama hospital and Adama health center outpatient departments during the year. A good quality of free laboratory services for malaria, short waiting time for laboratory results and availability of proper antimalarial drugs free of charge for adequate treatment based on identification of malaria species are the main reasons that can be mentioned for the large number of malaria patients to attend MCLs. However, it is difficult to generalize that the free antimalarial drugs and laboratory services at MCLs can guarantee an attractive option if people have to spend money on travel or other fares in case when the accessibility is difficult.

The majority of malaria patients in the current study sites mainly prefer to visit MCLs. The

On the other hand, it was only 13.3% (n=52) of malaria patients who took medications from other sources such as pharmacies and drug shops (40.4%) and private clinics (25%) before seeking treatment at MCLs. This is in agreement with a study done in central Ethiopia that reported drug shops (42.3%) as the usual source of antimalarial drugs for mothers (6). The higher use of drug shops or rural drug vendors could be due to the ease in the accessibility of these sources. Buying and using antimalarial drugs prior to the visit of MCLs or other health facilities may enhance the promptness of antimalarial treatment although the dosage regimens remains uncertain. The main disadvantage of seeking treatment at MCLs after taking medications somewhere else is favoring the chance of false negatives, as the parasites can be inactive or scanty in the peripheral blood (7). This can also potentially result in missed early diagnosis and delays in appropriate treatment that can further promote drug resistant *Plasmodium* strains (7).

The results of the current study show that among the study subjects only 25.5% visited MCLs for diagnosis and treatment within two days after the onset of malaria illness with the majority of them being after three or more days. The main reasons cited for the delay in the visit of MCLs were mild illness, high workload, financial problems, thought of other diseases and inaccessible health facilities. The findings of this study agree with the results of other study carried out in Butajira District (4). The study indicated that 65% of the people with febrile illness most probably due to malaria visited health facilities after three or more days following the onset of illness. In a study conducted in Sri Lanka, about 67% of patients began to seek treatment after two days of the onset of malaria (8). The delay in the treatment seeking may lead to the progress of severe and fatal malaria.

The satisfaction level of malaria patients attending MCLs was extremely high (99.2%) in the current study compared to the poor satisfaction of outpatients attending other health facilities (9). This poor satisfaction among patients attending the general health services, unlike MCLs, might be particularly attributed to failure to get appropriate drugs, long waiting time, failure to locate proper rooms in the health facilities and ill responses or negligence from the health professionals. Patient satisfaction towards the services and quality of care provided can substantially enhance the frequent utilization of health services as well as compliance with drug regimens and health workers advice. The reasons cited for dissatisfactions among few malaria patients in the present study deserve special emphasis. Proper handling of antimalarial drugs and the use of gloves particularly during the current widespread transmission of HIV/AIDS are basic issues that should be improved.

The findings from this study also indicated that both *P. falciparum* and *P. vivax* were responsible for the causes of 52.6% and 47.4% of overall malaria illnesses among the study subjects, respectively. Generally, high proportions of *P. falciparum* cases are expected in Ethiopia during the peak malaria transmission particularly in October. The proportions of vivax malaria have been low during epidemics and peak malaria transmission seasons compared to *P. falciparum*, as observed from the previous data in the country (10, 11). The national figure of about 40% of malaria cases in Ethiopia being due to *P. vivax* has been cited for several years (5,10,11), although it varies from season to season or across regions and localities. The 1993 E.C (2000/01) October report of East Shewa Zone Health Department demonstrated 49% *P. vivax* and 51% *P. falciparum* based on MCLs located in the Administrative Zone and 53% *P. vivax* and 47% *P. falciparum* for urban

areas. Therefore, the burden of vivax malaria is very high relative to its rarity in many sub-Saharan African countries (12). This urges proper monitoring of *P. vivax* resistance to chloroquine which is currently being the first-line drug for the treatment of vivax malaria in Ethiopia (5). Although the difference was not statistically significant, it was also found that malaria patients diagnosed with *P. falciparum* showed a tendency to seek treatment earlier than those with vivax malaria mainly due to the severity of the illness (7).

In conclusion, the primary goal of the general health services including the single purpose MCLs for malaria treatment is to reduce morbidity and mortality from malaria through early diagnosis and prompt treatment. Unfortunately, a large proportion of malaria cases seek treatment at MCLs three or more days after the onset of malaria illness without taking medications from other sources indicating an extreme delay in early diagnosis and treatment mainly due to financial problems, work overload and lack of access. Accordingly, more emphasis should be given on identifying innovative ways of securing antimalarial drugs particularly for people in rural malarious areas. The current integration of MCLs into the general health services should be executed with proper arrangement as a majority of malaria patients in malarious areas still seek treatment from these laboratories. Resistance of *P. falciparum* to SP should be monitored and evaluated. In addition, a large proportion of malaria cases are due to *P. vivax* and studies on chloroquine efficacy against its treatment should be initiated and strengthened to enable the early detection of resistance.

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