

## ORIGINAL ARTICLE

## Evaluation of malaria treatment practice of health extension workers (community health workers): a qualitative study conducted in Damot Gale district, southern Ethiopia

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### Article Cycle

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### Abstract

**Background:** The Ethiopian government introduced the Health Extension Program which is a community-based health care delivery system aimed at accessing essential health services such as malaria diagnosis and treatment through health extension workers (HEWs). Involvement of HEWs in prescribing and dispensing antimalarial drugs improved community access to antimalarial drugs. However, the HEWs compliance to malaria treatment guidelines was not evaluated. **Aims and Objectives:** This study was conducted to evaluate the HEWs malaria treatment practice based on malaria treatment guidelines. **Material and Methods:** In-depth interview to 20 HEWs, seven focus discussion with malaria treated patients, and 400 malaria patients medical records review were conducted. **Results:** The majority of HEWs correctly responded how to diagnose malaria patients using signs and symptoms, and rapid diagnostic test (RDT). Most of malaria-treated patients indicated that they prefer HEWs to other health workers for malaria treatment. Patient record data from patient registration books indicated that about 92% (368) of patients received appropriate drugs in appropriate dose and duration. But some patients (8%, 32) were prescribed with drugs not in line with the guideline. The two main reasons indicated by the HEWs for inappropriate prescription are: the shortage of chloroquine, and patient pressure to take coartem. About 8% (32) and 11% (44) of patients do not know the consequences of not completing antimalarial drugs and what to do after vomiting respectively. **Conclusion:** The most of HEWs adequately treat malaria patients and the communication with patients is adequate. Improving resource availability, patient education and in-service training are needed to improve malaria treatment practice of the HEWs.

### Key Words

Malaria; Health Extension Workers; Antimalarial drugs; Community health workers; Community support; Health Extension Program; Guidelines; Ethiopia

## Introduction

One of the factors that aggravated the problem of controlling malaria in Africa is inadequate health structures. (1) In Ethiopia an estimated 60-80 percent of health problems are due to communicable diseases (including malaria) and nutritional deficiencies. But health service coverage and the ratio of health personnel to population remain low. The health system is also under-developed and able to provide healthcare to only about half of the population, and much of the rural population has no access to modern forms of healthcare. (2,3)

To increase the accessibility of modern health care to the community, the Health Extension Program (HEP) in Ethiopia was initiated in 2003 with the main objectives of prevention and control of communicable diseases such as malaria. The prevention and control of malaria extension package includes: increasing awareness and knowledge of and skills of the communities in the transmission, prevention, and control of malaria; promoting participation of the communities; and reducing the number of cases and deaths due to malaria. (2,3,4)

The HEP is implemented at health post/community level/ which is the lowest level of the Ethiopian health tier system. The HEP is an innovative community-based strategy in place to deliver preventive and promotive health services and selected high-impact curative interventions such as uncomplicated malaria treatment with ACTs and chloroquine, at community level. It brings about community participation through the creation of awareness, behavioral change, and community organization and mobilization. It also improves the utilization of health services by bridging the gap between the community and health facilities, through the deployment of the health extension workers (HEWs). The HEWs are community health workers who are trained for one year at undergraduate level. In this program, two female HEWs are assigned to a health post in each Kebele (village). The main objective is to improve access to essential health services provided at the village and household levels. (3,4,5)

Involvement of the HEWs in prescribing and dispensing antimalarial drugs to malaria patients improved community access to antimalarial drugs. (6) However, the HEWs compliance to malaria treatment guidelines during malaria diagnosis,

prescribing antimalarial drugs and patient counseling was not evaluated.

## Aims & Objectives

The main purpose of this research was to evaluate the HEWs practice in malaria diagnosis, treatment and patient counselling.

## Material and Methods

**Study area and population:** Damot Gale district is located 362km south of Addis Ababa, capital city of Ethiopia. It has 31 kebele (village) and a population of about 146,429. Damot Gale district has 6 health centres, 31 health posts. Damot Gale district is one of highest malaria incidence areas in the in Southern Ethiopia. (7)

**Data collection:** Data were obtained through multiple data sources, which included individual interviews, focus group discussions (FGDs), patient record analysis and field notes. In-depth individual interviews were conducted with HEWs, whilst FGDs were held with treated malaria patients. In addition to both in-depth individual interviews and FGDs, the quality of treatment in each selected health post the quantitative data was collected from patient registration books.

During in-depth individual interviews HEWs were requested to describe how they treat malaria patients. For this purpose, the researcher asked the following open-ended question to each and every HEW who participated in the study: "Please tell me how you diagnose and treat malaria patients?" This open-ended question allowed HEWs to relay the way in which they diagnose malaria patients, prescribe antimalarial drugs and describe the counselling process during antimalarial drug dispensing. Each in-depth individual interview lasted between 1 and 1:30 minutes. In this study, the researcher had a sample of 20 HEWs from 20 health posts. Data were collected until there was a redundancy of information in the form of data saturation.

In addition to in-depth individual interviews, the researcher conducted seven (7) FGDs, which consisted of four (4) male and (3) female groups. The number of FGDs was determined through data saturation. All of the FGD participants were patients who had been treated with antimalarial drugs by HEWs and completed the duration of treatment. Each FGD consisted of 8-10 participants, who actively participated in the discussion. The duration of each FGD was about an hour. The quantitative data of 400

patients was collected from malaria patient record book to evaluate the quality of prescription.

**Data analysis:** The qualitative data analysis process followed Tesch's (1990) steps, as cited in Creswell (8). The steps of data analysis as described by Tesch included reading and understanding the transcripts, writing down the emerging ideas, creating codes, regrouping codes, creating categories, and themes. Therefore, the researchers read and re-read transcripts and listed the emerging ideas, and created codes, categories and sub-categories from the listed ideas. (9) Themes were generated from these categories. After data reduction into themes, categories and sub-categories, the discussion of each theme and category was done and supported with appropriate literature. The quantitative data were analysed as proportion.

**Ethical approval:** The ethical clearance was obtained from university of South Africa. The supporting letter was obtained from the Southern Ethiopia Regional Health Bureau, Wolaita Zone Health Department, and Damot Gale district health office. The HEWs and malaria patients signed consent form after the researcher explained the purpose and the procedures of the study

## Results

Twenty {20} HEWs working in 20 health posts in Damot Gale District participated in this study for in-depth interview and the patient data of 400 patients used from patient registration book. In FGD, 59 treated malaria patients participated.

All of the HEWs in the study area as well as in all health posts in the country are females. The average age of HEWs who participated in the study is 24 years, with the ages ranging from 23 to 27. The majority (75%) of HEWs who participated in the study were unmarried. Another majority (95%) of HEWs are at education level of one year training after completing 10th grade (10+1), while only one (5%) HEW reported an education level of one year training after completing 12th grade (12+1). The average age of the focus group discussants in the study was 39 years with the ranges from eighteen to sixty two. Among 400 malaria treated patients 43% are females and the average age of participants was 36.

### THEMES REVEALED BY THE ANALYSIS OF DATA:

This study dealt with the identifying the HEW's practice of malaria diagnoses and the treatment of malaria patients in relation to national malaria

treatment guidelines. Therefore, the malaria diagnosis, antimalarial drug prescribing and patient counseling practice by HEWs was explored by interviewing HEWs, conducting FGD with malaria-treated patients and reviewing the malaria patients' medical record. The three themes identified in this study are: (1) the HEWs compliance to malaria diagnosis; (2) the HEWs compliance to prescribing antimalarial drugs; and (3) patient counseling during antimalarial drug dispensing.

### Theme 1: HEWs compliance to malaria diagnosis

The HEWs use both parasitological confirmation method (RDT) and clinical signs and symptoms-based diagnosis in order to identify malaria in patients. During the in-depth individual interviews with HEWs and the FGD with the malaria-treated patients, three categories emerged, namely: (1) diagnosis based on clinical sign and symptoms; (2) diagnosis based on parasitological confirmation (RDT); and (3) patient participation in diagnosis. These categories are presented in sub-headings below.

#### Category 1.1: Diagnosis based on clinical sign and symptoms

- A majority of HEWs understand and adequately diagnose malaria using signs and symptoms indicated in malaria treatment guidelines. All the HEWs use fever as major indication of malaria. The following statement is mentioned by one of the HEWs:

"Fever is a major symptom which I use to confirm the presence of malaria when I don't have RDT. But I also check for joint pain, bitter taste in mouth, nausea or vomiting, shivering, stomach problem/pain and diarrhoea before I give the antimalarial drugs to the patient" (HEW at health post 6).

#### Category 1.2: Diagnosis of malaria using rapid diagnostic test (RDT)

- All the HEW's indicated that they prefer using RDT to diagnose malaria. The majority of HEWs mentioned the fact that they use RDT for diagnosing malaria without any problem. However, some of the HEWs indicated problems with using RDT. The two problems indicated by HEWs regarding RDT are (1) sometimes the result takes a longer time than expected and (2) sometimes the sample bloods do not pass through the taste area. Two HEWs explained the diagnosis procedures as follows:

"We take blood samples from the patients' finger and put it to RDT. The RDT identifies all types of malaria so that we don't have any problem to diagnose malaria when we have RDT."

“Sometimes the duration of the result is more than 20mts but the guideline indicates that the RDT identifies malaria parasite in 15-20mts. Sometimes it takes 30mts. Sometimes after we send patients telling him/her that he/she doesn’t have malaria the result becomes positive. The reason is not clear for me.”

**Category 1.3: Patient participation in the diagnosis process** - Apart from the type of malaria diagnosed, the majority of HEWs reported that they fully involve patients during malaria diagnosis. The HEWs also mentioned that they educate patients on signs and symptoms of malaria to increase patient awareness about malaria. The HEWs indicated that one of the big problems during malaria diagnosis is convincing the malaria-negative patient after diagnosis about their negative result. Therefore, to solve this problem, they started involving patients in the diagnosis process and in reading and understanding the result. The following are direct verbatim statements of HEWs:

“Patients do not want to hear about negative results. They want positive results because they always want to take antimalarial drugs (Coartem)” (HEW at health post 8).

“We explain to them (patients) that the malaria parasite can be checked by RDT and the result will indicate to us whether he/she (patient) has malaria or not” (HEW at health post 6).

“I first explain to them the types of malaria and how it will be checked by using the RDT. Then I take blood from the patients’ finger and I put in to the RDT in front of patient” (HEW at health post 11).

### **Theme 2: HEWs compliance to antimalarial drug prescribing**

All HEWs interviews indicated that they use age group for prescribing antimalarial drugs. In all of the health posts, malaria treatment guidelines are available to the HEWs. The guidelines are either posted on the wall or placed in front of HEWs on a table, and these guidelines indicate the dose in terms of age category. In this theme, two categories were identified namely: (1) prescribing the appropriate drug based on malaria types; and (2) administering the first dose to the patient in the health post. These sub-categories are discussed below.

**Category 2.1: Prescribing appropriate drug based on malaria types** - All HEWs interviewed indicated that they prescribe antimalarial drugs based on malaria treatment guideline and that such guidelines are clear to them. The following statement is mentioned by one of the HEWs during interview:

“After confirming the presence of [the] malaria parasite in patients’ blood we give antimalarial drugs based on

their age group. We have malaria treatment guideline and it is clear to us and we refer to it before we dispense antimalarial drugs.”

All the HEWs participated in the study knew very well about the frequency of the drug per day and the duration of treatment. But some of the HEWs could not mention the appropriate dose based on the age group indicated in the national malaria treatment guideline. Patient record data from patient registration books also indicated that about 92% (368) of patients received appropriate drugs in appropriate dose and duration. But some patients (8%; 32) were prescribed with drugs not in line with the guideline regarding dosage, based on the age of the patient and the types of malaria. The two main reasons indicated by HEWs for inappropriate prescription are: (1) the shortage of chloroquine, and (2) patient pressure to take coartem.

**Category 2.2: Administration of first dose** - Administration of the first dose of antimalarial drugs under the supervision of health workers is strongly recommended in the malaria treatment guidelines. [2, 9] However, some of the HEWs do not administer the first dose, due to a shortage of clean water. One of the HEWs mentioned the following:

“We know the importance of first dose administration to treat malaria as soon as possible and also we are informed that all patients should be administered the first dose in the health post but sometimes we don’t have clean water.”

### **Theme 3: Patient counseling and communication**

After prescribing antimalarial drugs, the patients should be adequately advised and educated on how to use antimalarial drugs in order to increase patient adherence [2]. In this regard, all of the HEWs reported that they educate and counsel their patients about the drug regimen and how to take drugs. One of the HEWs mentioned the following:

“We tell the patients clearly how to take antimalarial drugs. We explain the dose, the frequency and how to keep the drugs at home. We also strongly advise the patients to complete the prescribed doses because the main problem of inappropriate use here is not completing the dose after relief of sign and symptoms of malaria. We approach our patients with warm greetings and friendly”

After explaining the drug use to the patients, the HEWs also checks a patient understands of the dose regimen, by asking the patient to repeat what they (HEWs) explained to them. One of the HEWs in the district explained:

“To check the understanding of patients about the treatment we ask the patients to tell us back all information that we told them before they leave the

health post. If the patients don't tell exactly what we told them we explain again to make them understand exactly how to take the dispensed drugs. Most times very old people do not give us adequate feedback. In this case we dispense antimalarial drugs for family members who can understand and administer appropriately."

The information provided by the HEWs was supported by the majority of patients. The malaria-treated patients indicated that HEWs adequately counsel them on how to take antimalarial drugs. The malaria treated patients participated in the study also indicated that the HEWs are better than other health workers in counselling and friendly approach during malaria diagnosis and dispensing antimalarial drugs

## Discussion

This study identified the malaria treatment practice (diagnosis, prescribing and patient communication) of HEWs. The HEWs diagnose malaria using both sign and symptoms and RDT. According to the national malaria treatment guideline, the signs and symptoms which indicate malaria are: nausea, vomiting, abdominal pain, diarrhoea, thirst and poor appetite (2). Most of the HEWs indicated that they check for these signs and symptoms adequately before prescribing antimalarial drugs to the patient when there is shortage of RDT. However, the WHO (10) malaria treatment guideline indicates that using parasitological confirmation is the most preferred method of malaria diagnosis.

The WHO (11) also indicated that using RDT is useful to minimize the amount of unnecessary prescribed antimalarial drugs and the cost of treatment of malaria. The national malaria treatment guideline also indicates that in the areas where the parasitological confirmation is not available, signs and symptoms are an alternative method of malaria diagnosis (2). The study conducted in Tigray (Ethiopia) found that using RDT in malaria diagnosis minimizes the treatment cost (12).

Patient record data from patient registration book indicated that some patients (8%; 32) were prescribed with drugs not in line with the guideline regarding dosage and types of antimalarial drugs due to shortage of chloroquine and patient pressure to take coartem. However, this is the best result compared to the study done in Uganda, which reported that only 34% of the prescribed dose followed the malaria treatment guideline (13). A

study conducted in Tanzania also found that about 80.7% of adults treated with appropriate dose of antimalarial drugs (14). Igboeli *et al.* (15) found that the compliance of health workers at tertiary and secondary hospitals is about 38.5% and 66.7%, respectively. Pfeiffer *et al.* (16) reported that only 34% of malaria diagnosed patients prescribed with appropriate dose and duration of chloroquine. The study done in five hospitals of Southern Ethiopia region also indicated that only 60% of antibiotics prescriptions were in line with the national standard treatment guideline (17).

This study also revealed that the most of patients do not received the first dose in the health post due to shortage of clean water. But both the national malaria treatment guidelines and the malaria prevention and control health extension package strongly indicate that the first dose administration is very important to reducing the malaria parasite load and to improving the patient drug use/adherence (2, 3). The study done in Tanzania reported that 98.9% of patients received the first dose under supervision of health workers in the health facility, which is a better performance when compared with the results of this study (18).

The best performance identified in this study is the HEWs communication with the malaria patients. The friendly approach of the HEWs to their patient and participating patients during diagnosis helped them to communicate easily and increased patient satisfaction. However, some of the HEWs do not adequately advice about the consequences of not completing antimalarial drugs. Street and Epstein (19) found that patient participation in consultation including decision-making is a predisposing factor for motivation and an enabling factor for knowledge of treatment. Ley and Liewelyn (1995), as cited in Souares *et al.* (20) found that patient understanding of the drug regimen is very important to completing the prescribed drug regimen.

## Conclusion

This study revealed that most of the HEWs adequately treat malaria patients and the communication with patients during diagnosis is adequate. Patient involvement during diagnosis and patient counseling improved the patients' knowledge about antimalarial drug use and increased patient satisfaction. But most of the HEWs do not administer first dose in the health post which

is strongly recommended in the guideline due to lack of clean water. And some of the HEWs do not adequately advise about the consequences of not completing antimalarial drugs.

### Recommendation

The following recommendations are forwarded by researchers to improve malaria treatment practice of the HEWs:

- Improve the availability of essential resources (RDT and antimalarial drugs) in the health post
- Improve availability of clean water to facilitate the first dose administration

### Relevance of the study

This study will contribute to improve the quality of malaria treatment by the HEWs in the district and in the country.

### Authors Contribution

KDG: conceived of the study, participated in its design and coordination, carried out fieldwork, data analysis and drafted the manuscript. TRM: contributed to development of data collection tools, data analysis and write-up of the manuscript.

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