

# Prescribing Patterns of Antimalarial Drugs in Urban Health Facilities in Dar-es-Salaam, Tanzania with Special Emphasis on Sulfa-based Drugs

S.E.D. NSIMBA\*<sup>1</sup>, A.Y. MASSELE<sup>1</sup>, M.Y. WARSAME<sup>3</sup> AND G. TOMSON<sup>1</sup>

<sup>1</sup>Muhimbili College of Health Sciences, P.O. Box 65010, Dar-es-Salaam, Tanzania

<sup>2</sup>Division of International Health Care Research (IHCAR), Department of Public Health Sciences, Karolinska Institutet, S-17176, Stockholm, Sweden

**Proper diagnosis of malaria, rational prescribing and use of antimalarial drugs are fundamental to malaria case management, prevention of drug resistance and reduction of side effects.**

**We assessed the prescribing pattern of antimalarial drugs in 2 health centres and 3 district hospitals in the Dar-es-salaam region. A total of 2500 prescriptions issued to outpatients from these facilities were investigated. Furthermore, a questionnaire was administered to those outpatients whose prescriptions contained antimalarial drugs.**

**The majority of the outpatients (78%) reported to have used chloroquine before, while 66% admitted using sulfa-based antimalarial drugs once or more times before. Of the prescriptions issued 60% contained sulfa-based drugs while 40% had chloroquine. Most patients (85%) did not know the difference between the sulfa-based drugs, while 33% did not know how to use them. Private pharmacies were the main sources of these sulfa-based drugs since they were not available at the health facilities.**

**This study shows that most patients are not aware of the type of drugs being prescribed to them or how to use them properly. The high prescription rate of sulfa-based drugs without proper diagnosis of resistant malaria seems irrational. Thus, there is a need for educational programmes targeting prescribers in these facilities. It is also important to assess the dispensing behaviours of drug sellers and the prescribing practices of health care providers in private facilities in Dar-es-salaam and in the country.**

**Key Words:** Antimalarial drugs, sulfa-based drugs, rational prescribing, Health care providers, Prescribers.

## INTRODUCTION

Like in most of Sub-Saharan countries, malaria remains a major public health problem in Tanzania. Chemotherapy is the most important malaria control measure [1,4]. Among the antimalarials, chloroquine is the commonest drug used for treating uncomplicated malaria in the country, despite reports of chloroquine resistant *Plasmodium falciparum* in some endemic areas in the country [1,2,3].

At present different types of antimalarial drugs such as sulfadoxine/pyrimethamine, sulfalene/pyrimethamine, co-trimoxazole and many different preparations of chloroquine are available in Dar-es-salaam [5]. These drugs can be obtained from pharmacies, drug stores and shops without any prescription. Thus, people living in the Dar-es-salaam area are more accessible than rural people to drug advertisements through different media. Most of these advertisements are commercially biased and do not report the side effects of drugs.

In Tanzania there are two types of primary health care system. Facilities which come under the Essential Drug Programme (EDP) and those which do not. Those health facilities which do not come under the EDP have a wide

degree of freedom to prescribe drugs in comparison to those under the EDP which prescribe only drugs included in the essential drugs list. Thus, the prescribing behaviour of drug prescribers in the two areas will most likely be different.

The aim of the study was to investigate the prescribing behaviour of prescribers with special emphasis on sulfa-based antimalarial drugs in health centres not under the EDP and district hospitals in Dar-es-Salaam region in order to assess their freedom to prescribe these drugs. This also gives some clues on the demand from consumers for these particular drugs in this city.

## MATERIALS AND METHODS

### Study area

The study was conducted in Dar-es-Salaam region, Tanzania. In the region there are 3 districts, namely Kinondoni, Ilala and Temeke with a total population of about 3 million people according to 1988 National Census. All the 3 district hospitals and the 2 health centres were in the region and were used for the study.

### Study design

Two medical assistants from each health facility were interviewed using questionnaires (a total of 10 medical assistants out of 5 health facilities). These medical assistants (clinical officers) were randomly selected from each facility and included in the study after getting their consent. They were fully informed about the study aims and procedures and the role they would play.

Similarly, separate questionnaires were developed and administered to 2500 adults outpatients above 18 years of age. When patients came out from the two medical assistants after consultation, we checked their prescriptions and asked them for interviews. A total of 2500 prescriptions were observed in total for all the 5 facilities (i.e 500 prescriptions per health facility/district hospital). Here, an exit interception approach was applied to all outpatients. Acceptance to be interviewed and the possession of a prescription containing a sulfa-based or any other antimalarial drugs were the main inclusion criteria. The questionnaires were translated into the local language (Swahili) during the interview. The number of encounters per facility was decided in accordance with guidelines from WHO/DAP [6].

### Approval and ethical clearance

The study protocol was approved by the Ethics Committee at the Muhimbili University College of Health Sciences (MUCHS). All study subjects gave their consent to participate in the study. Approval to conduct the study was granted by the Commissioner for Health in Dar-es-Salaam.

### Data collection

The present study was carried out by trained research assistants under supervision of one of the authors (SEDN). During March and April, 1997 we visited health facilities and carried out interviews as well as observations to find out whether the prescribed sulfa-based antimalarials were dispensed or available at these urban health facilities. One week training and pretesting the questionnaires was done one week before conducting the study.

### Data analysis

All data processed and calculation of percentages were done manually using a scientific calculator.

## RESULTS

Results are summarised in tables 1, 2, 3, and 4.

### Social demographic profile

There were 10 medical assistants who prescribed the drugs. Their mean age was 28 years and their mean working experience was 6 years. Six of them were males, four were females and all had completed four years of secondary education and had undergone 3 years in training as Medical Assistants (Clinical Officers).

The basic characteristics of 2500 out-patients interviewed and their prescriptions are given in table 1. The diagnosis on the prescription as observed and recorded were mostly malaria (80%). About (20%) of the patients were given Co-trimoxazole due to abdominal pain/discomfort or diarrhoea.

**TABLE 1 : Demographic Characteristics of Patients**

Patient	Frequency	Percentage
<b>Sex</b>		
Male	1360	54.4
Female	1140	45.6
<b>Marital Status</b>		
Single	874	35.0
Married	1460	58.4
Divorced/Widowed	166	6.6
<b>Education</b>		
Primary Education	1340	53.6
Secondary Education	960	38.4
Post secondary education	200	8.0
<b>Occupation</b>		
Unemployed	650	26.0
Employed	1045	41.8
Business	805	32.2

Forty percent of the prescriptions carried chloroquine, while 60% contained sulfa based drugs. All sulfa-based drugs were accompanied with other drugs such as analgesics, vitamin B-complex etc. When patients who received sulfa-based drugs were asked if they requested their doctors these particular drugs, 59% (880/1500) stated "yes", 41.3% (620) stated "no". Moreover, 66.0% (990) claimed to have known drugs and their usage. While 25% (379) correctly stated the drugs to be used against diarrhoea, 8.7% (131) did not know their use.

The types and frequency of sulfa-based drugs and chloroquine prescribed are shown on table 2. Only chloroquine and Cotrimoxazole were available in these health facilities. Majority of outpatients 78.0% (1950/2500) stated that they had used chloroquine before and 22.0% (550) had never and gave reasons that they were either allergic to chloroquine or they disliked the drug because of its bitter taste. Of the patients who were asked if they had used any of the drugs prescribed for them before, 65.5% (982/1500) stated "yes" and gave the details as follows: more than two times 41.2% (405) more than three times 58.8% (577) in that year. Pharmacies were the biggest source mentioned for the sulfa-based drugs with or without prescriptions, followed by private health facilities with prescriptions (table 3).

**TABLE 2 :** Types of Antimalarial Drugs Prescribed

Name of Drugs	No. of Prescriptions	%age
Sulfadoxine/pyrimethamine	660	26.4
Sulfalene/pyrimethamine	500	20.0
Co- trimoxazole	340	13.6
Chloroquine	1000	40.0

**TABLE 3:** Sources of sulfa-based antimalarial drugs for those used more than once

Sources of sulfa-based antimalarials	No. of	%age
Pharmacy without a prescription	409	27.2
Pharmacy with a prescription	706	47.1
Private health facility with prescription	385	25.6
Total	1500	100.0

The preference order for sulfa-based antimalarials stated by patients were as follows: sulfadoxine/pyrimethamine, sulfalene/pyrimethamine and co-trimoxazole (table 4). The reasons why they thought one drug was better than the other were: 31% (470/1500) had heard people talking and recommending the drugs, 34.0% (509) had been told by their doctors or health personnel and 35% (521) had seen or heard advertisements of drugs most of the time in TV's, radios and newspapers. Furthermore, (85%) of the patients who preferred to use sulfa-based drugs did not know the difference between different preparations.

**TABLE 4:** Preferences of Sulfa-based Antimalarial Drugs Stated by Patients

Name of Drugs	No. of Patients (N=1500)	%age
Sulfadoxine/pyrimethamine	812	54.1
Sulfalene/pyrimethamine	465	31.0
Co- trimoxazole	223	14.9

## DISCUSSION

The present study shows high prescription rates of sulfa-based antimalarials like sulfadoxine/pyrimethamine and sulfalene/pyrimethamine drugs. More than half of the patients requested the medical assistants for those

particular drugs, although most of them admitted to have used chloroquine before. This switch of chloroquine to sulfa-based antimalarial drug combinations by patients is a waste of resources and contributes to drug resistance. Most health care providers rely on signs and symptoms like fever, headache and general body weakness which could be due to other diseases common in the country.

Antimalarial drugs are available as over the counter drugs in Tanzania today and anybody can buy them without any prescription [5]. This uncontrolled use of antimalarials by patients is dangerous as it exposes them to unnecessary side effects, contributes to drug resistance [7,8] and costs the patient more money [9]. This can have serious implications on malaria treatment in the country. The over-prescribing and use of sulfa-based antimalarial alone or in combination with other antimalarials without proper indications is an irrational practice [10]. Their use is recommended only for chloroquine resistant parasites [11]. Proper malaria management and particularly correct malaria diagnosis complimented if possible by laboratory blood slide results in most urban health facilities could be important in preventing overuse of antimalarials.

All drugs in public health facilities are either imported or manufactured locally under generic names [12]. Medical assistants often use trade names. The reasons for this discrepancy is not fully known, but it is likely to be due to the commercial names which are usually shorter and easier to remember, and the fact that all advertisements (i.e through the radio, newspapers and TV) use commercial names. The majority of people in this study reported to have used chloroquine before, but for some yet unknown reasons they decided to abandon the drug without evidence of chloroquine therapeutic failure. The only possible explanation could be the aggressive advertisements and influence from certain peer groups.

If this trend of irrational prescribing and use of sulfa-based drugs is not stopped, in urban areas, there is a great risk of appearance of resistant parasites to these drugs and especially to pyrimethamine/sulfadoxine [8]. We have documented examples from Muheza district-Tanga region in Tanzania where sulfadoxine/pyrimethamine (Fansidar) is no longer effective in about 79% of patients because of wide spread resistance [8]. Chloroquine is still effective and the National Malarial Policy recommends that chloroquine should be used as a first line drug choice [1], and that other sulfa-based antimalarials should be reserved as second line drugs in complicated cases where malaria is endemic. In order to gain insight into the widespread misuse of sulfa-based drugs, further studies must be conducted particularly targeting senior medical staff such as Medical Officers in districts, regions and referral hospitals. Furthermore, the private sector is an important area where most prescriptions of sulfa-based drugs are issued and should be considered for inclusions in any investigation.

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