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**TITLE: KNOWLEDGE AND ACCEPTABILITY OF C-1  
THE NEW MALARIA TREATMENT POLICY**

**By**

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**A dissertation submitted to the University of Zambia in  
partial fulfillment of the requirements of the degree of  
Master of Public Health**

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**CERTIFICATE OF COMPLETION OF DESSERTATION**

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hereby certify that this dissertation is the product of my own work and, in submitting it for my MPH programme, further attest that it has not been submitted in part or whole to another university.

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having supervised and read this dissertation, am/are satisfied that this is the original work of the author under whose name it is being presented. I/we confirm that the work has been completed satisfactorily and is ready for presentation to the examiners.

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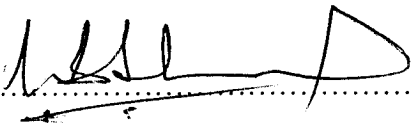
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## ABSTRACT

**Title:** Knowledge and acceptability of the new malaria treatment policy.

**Introduction:** The study was done to find out the communities knowledge and acceptability of the new malaria treatment policy. The World Health Organization recommends among other things that acceptability of the community should be determined before implementing a new malaria treatment policy.

**Statement of the Problem & significance of study:** Although the new treatment policy was introduced, it was not clear if people knew about it. There had been no educational campaign and study of acceptability prior to the implementation of this new measure.

**Objectives of the Study:** To find out people's knowledge on the new malaria treatment policy, to determine their acceptability of the new treatment policy and to find out if knowledge and acceptability of the policy was related to educational attainment sex, age, religion and the area of residence (i.e. urban and rural).

**Research Design:** This was a cross-sectional study, using a semi-structured questionnaire. It was done in Central Province, using Kabwe as the urban area and Chibombo as the rural area. The sample size was 384, with 192 respondents each for urban and rural. The sample was drawn using systematic random sampling technique. The data was analysed using EPI6 software, with chi-square to determine association between socio-demographic factors on one hand and knowledge and acceptability on the other.

**Results and conclusions:** Knowledge of the new treatment policy was 76.4%. Acceptability of drugs in the new malaria treatment policy were also found to be high, 93% for Coartem® and 88% for Sulphadoxine-Pyrimethamine (Fansidar®). A statistically significant relationship was found between education, sex and area of residence with knowledge. Respondents with secondary or tertiary education, females and those living in urban areas had higher knowledge. None of the sociodemographic factors was associated with acceptability.

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## DEFINITIONS

1. **Knowledge:** This refers to familiarity gained by sight, experience or report and acquaintance with facts, truth or principles. In the study, anyone who had heard about the new malaria treatment policy was considered as having knowledge.
2. **Acceptability:** The extent to which the study subjects have received the new treatment policy with approval/ favour.
3. **New Malaria Treatment Policy:** Refers to the latest national regulations on which drugs to use and how to treat malaria.
4. **Barriers:** Anything that obstructed or restrains (or perceived to have) progress and/or access.
5. **Community:** A social group whose members reside in a specific locality, share government and have a common cultural and historic heritage. In this study it doesn't include health workers.
6. **Health workers:** Persons trained and appointed to look after the health of people.
7. **Malaria:** A disease characterized by attacks of chills, fever and sweating, caused by parasitic protozoans of the genus plasmodium.
8. **Clinical Diagnosis:** The process of determining the nature and circumstances of a disease without using laboratory investigations.
9. **Chloroquine:** An anti- malarial drug that was previously used as the first line of treatment but has now been banned due to reduced ability to treat malaria (parasites' resistance) and it is not in the new treatment protocol.
10. **Fansidar (Sulphadoxine-Pyrimethamine):** An anti- malarial drug with less resistance of parasite, used to be second line treatment, but now one of the first line drugs, for children in the new treatment policy.
11. **Coartem®:** Is a new antimalarial, which is used as 1<sup>st</sup> line in the new policy. It is composed of two drugs, Artemether and lumafantrine.
12. **Systematic Sampling:** Probability sampling procedure in which the initial sampling point is selected at random then at regular intervals.
13. **Reliability:** the degree to which data collection method will yield consistent findings, similar observation would be made or conclusions deduced by other researchers on their transparency in how sense was made from the raw data.



## INTRODUCTION

Malaria is a threat to more than forty percent (40%) of the world population and accounts for more than three hundred (300) million of acute cases worldwide and 1.1 to 2.7 million die each year<sup>17</sup>.

About ninety percent (90%) are in sub-Saharan Africa where malaria constitutes 10% of disease burden and nearly twenty-five percent (25%) of childhood mortality<sup>13</sup>. According to UNICEF, malaria's cost to human and social well-being is enormous. It is a major cause of poverty. Moreover, it has slowed economic growth in many African countries by about 1.3% per year. The compounded effects are nearly 32% of the Gross Domestic Product (GDP). In the year 2000, malaria caused 33,748 DALYS in African alone<sup>2</sup>.

The economic losses result from reduced productivity and an increase in health care costs. Losses in production are due to reduced or loss of working time due to illness (disability) and reduced effectiveness (debility). The costs can be divided into direct and indirect. Direct costs include monies spent on medical care, drugs, special foods, and other services that would be necessary to cope with illness and funeral arrangements. Indirect costs include losses from unrealised production, low school attendance due to illness and loss of skilled manpower through deaths. A patient is expected to recover from a bout of malaria in an average duration of five days. This means having five days of reduced or no output from this person.

In some African countries, the direct costs of malaria are more than those of Tuberculosis (TB). In Zambia, a high proportion of the costs are incurred through user fees. Indirect costs of TB are higher than malaria because the former has a much longer duration. The total cost burden for a household is estimated at 10% of the income<sup>28</sup>.

Literature has shown that there is a correlation between malaria and poverty in the world<sup>26</sup>. Where the malaria burden is high, the poverty burden is also high. However, it is not clear which burden precedes the other.

## Malaria in Zambia

During the colonial time, and until about 1984, malaria was not a public health problem in Zambia for two reasons. First there was regular indoor residual spraying with the insecticide DDT that was very effective and second, the use of chloroquine, as a drug of choice was still effective against the parasite. Malaria control was complimented by the mosquito extermination Act of 1944, which took care of breeding sites in all domestic dwellings.

The efficacy of the indoor residual spraying with DDT and the case management of malaria with chloroquine were so phenomenal that health organizations in Zambia were looking forward to implement a malaria eradication programme. Unfortunately, due to falling copper prices on the international market, the government could not sustain the indoor spraying programme. The country's economy dwindled. There was also wide scale resistance of chloroquine in Zambia and neighbouring countries. Resistance was as high as 50% in some areas in Zambia<sup>4</sup>, as shown in appendix 3. Apart from resistance, Chloroquine was sometimes not available in health facilities. This increased the malaria disease burden further and caused further dwindling of the economy. The Ministry of Health could also not quickly find a suitable replacement chloroquine to which the parasite had developed high levels of resistance. Even then, chloroquine was sometimes not available in health facilities.

Chloroquine treatment failure was also detected in Kenya and Malawi. The Centre for Diseases Control (CDC) found that treatment with chloroquine failed to produce either a durable clinical improvement or optimal haematological recovery. Consequently, chloroquine can no longer be considered adequately effective therapy of clinical *P. falciparum* malaria in very young children in these areas of Africa<sup>27</sup>.

Malaria is now endemic in Zambia; no area in the country is free of malaria, as illustrated in appendix 4. It is a major health problem in Zambia causing the largest number of deaths, increased health care & household costs and absenteeism from work and school. Malaria causes fifty thousand (50,000) deaths and three and a half million (3,500,000) cases per year in our country.

In order to deal with the wide scale resistance of chloroquine, the Central Board of Health introduced a new drug policy in October 2002. The elements of the policy was to withdraw chloroquine and replace it with SP as an interim measure, then an Artemisinin-based combination. Currently a combination of Artemether and Lumefantrine known by its trade name as Coartem® is being used. Sulphadoxine-

pyremethamine (SP), known by its trade name as Fansidar®, is being used in children below 5kg and in the last two trimesters of pregnancy. Quinine is being used in severe malaria and the first trimester of pregnancy. Pregnant women take three doses of Fansidar during pregnancy as intermittent presumptive treatment (IPT).

These changes tend to look very constructive and beneficial as far as case management is concerned. There has also been massive training of trainers' programmes along with training of other categories of health workers for the use of Coartem® in case management. This countrywide change in case management has come in a very short period, from late 2002 to late 2004.

People hardly understand the effect of chloroquine and then from 1998, the knowledge, attitude and perceptions about Fansidar have not been confirmed. Just when people are beginning to understand Fansidar, a new drug Coartem® has been introduced. In the midst of such rapid changes in malaria treatment, it is difficult to conclude whether the community does know about the new drug or not.

Coartem® appears to be the best solution to Zambia's problem of chloroquine resistance. This is because the dominant malaria parasite species is *Plasmodium falciparum*, develops resistance quickly to monotherapies and has fatal consequences.

The World health organisation (WHO) recommends that before a new policy is developed, the policy makers should gather information about the new drug on the following; efficacy, acceptability, effectiveness, adverse effects, use in special groups, cost effectiveness, drug quality and the capacity of the health system to implement the policy<sup>23</sup>.

In Zambia, all this information on the new treatment policy has been gathered and disseminated through workshops. The community's knowledge and acceptability of this new malaria treatment has not yet been evaluated.

## STATEMENT OF THE PROBLEM

Zambia was using Chloroquine as the first line drug of choice to treat malaria until the year 2003. As a result, the community has been accustomed to using Chloroquine. Chloroquine was replaced by SP and within a few months SP was replaced by the new policy, which has Coartem® being used as the first line drug for those above 10kg and SP for pregnant women and those below 10kg body weight (appendix 5). The annual cost of the new drug is approximately five million United States dollars (\$5,000,000,000).

The new treatment policy was implemented without any prior community educational campaign to enlighten the people on the changes in treatment and prevention of malaria, or a study to find out if community members shall accept it. Orientation for health workers countrywide was done but not for the community. The new drug, Coartem®, is only readily available in the public sector and not in the private sector such as the mine hospitals where Chloroquine is still being used. In such areas, people still believe that Chloroquine is the best drug for treating malaria. There is need to find out how much the community knows about the new treatment policy. If the community does not know about the new treatment, they are unlikely to use it. People usually like to use what they know or are accustomed to. This may worsen the malaria burden in Zambia.

The community's acceptability of the new treatment policy was not measured prior to implementation of the new treatment policy, as per WHO recommendation. It is important to find out if the people know and accept this new treatment in order to assess the chances of success of its implementation. If the new treatment is not accepted, then it shall be ineffective because the patients shall not comply with treatment guidelines.

Failure of the new treatment policy shall result in wastage of government resources that are being spent to buy the drugs. Further, the malaria burden is likely to rise significantly, therefore, increasing the indirect costs incurred through deaths and absenteeism.

## STUDY JUSTIFICATION

It is important to find how well the new treatment policy has been accepted. Even though the study was being done at a small scale, correct sampling procedures were followed so the results are representative.

If people do not accept the new treatment protocol, they resort to other options such as chloroquine, antibiotics, antipyretics, herbs etc, as it has been shown in previous studies<sup>6</sup>. The absence of acceptability shall render the new treatment protocol ineffective.

Others have already shown negative attitudes towards SP<sup>5</sup>, this might make the protocol unacceptable.

The high cost of Coartem may deter some from using it, if they need to access through the private sector. It may be difficult to completely remove chloroquine from the shelves since it can be used for treatments of other ailments such as Rheumatoid arthritis<sup>11&20</sup>. It is important to find out if these potential barriers are derailing the new policy's implementation. It is likely that the community would have more knowledge on Chloroquine than the new treatment (Coartem & SP), since it was widely used in all age groups and whether one is pregnant or not, for prevention and treatment of malaria. The drugs in the new treatment policy have restrictions. One would also expect acceptability of Coartem to be low because the previous drug, chloroquine, used to provide quicker symptomatic relief since it has both antipyretic and antimalarial properties as compared to Coartem® and SP which are only antimalarial<sup>20</sup>.

## SIGNIFICANCE OF THE STUDY

The study is intended to highlight the potential barriers to the implementation of the new malaria treatment policy. Solutions to the weaknesses and threats to the implementation can then be found, making the new policy a success. It is extremely important that the new treatment policy succeeds, as this shall reduce the malaria burden in Zambia, so that the costs associated with malaria shall be subsequently reduced. Zambia is likely to make economic gains once the malaria burden is reduced as there shall be a reduction in money spent on health care and production losses which are caused through absenteeism and ill-health.

## LITERATURE REVIEW

A similar study was done on health workers but not on the ordinary community members<sup>5</sup>. The study that was done in Lusaka and Chipata was aimed at finding out the perception towards SP among health workers and the community health workers. It also looked at issues and concerns, which may hinder the prescription and acceptance of SP (Fansidar). The study concluded that health workers have a number of negative attitudes towards Fansidar which include the following: Lack of knowledge about when a repeat course of Fansidar can be taken, some believe that Fansidar cannot be taken alongside another drug, they also believe that SP has a lot of adverse side effects which worsen the illness, they said that they do not have official information from the Ministry of Health to effect policy change from using chloroquine as the first line drug. Some lack knowledge on the dosage especially in children. It is clear from this study that most health workers interviewed showed a negative attitude towards Fansidar (which is part of the new treatment protocol). Members of the community look up to these people as far as health issues are concerned, so this attitude can easily be passed on to the community. The negative attitude can result in non-acceptability of the new treatment, which is a barrier to implementation. Some community health workers who were interviewed in the same study said there were rumours in villages and townships that Fansidar/SP cannot be taken by children below the age of five years, pregnant and breastfeeding women and HIV/AIDS/chronically ill patients. Close to half of the respondents said they could buy Fansidar without a prescription<sup>5</sup>. All this can lead to misuse of the drug.

Since the major manifestation of malaria is fever of convulsions (fits), in the 2001-2002 Zambia Demographic Health Survey<sup>1</sup>, mothers were asked whether their children under age five had a fever/convulsion in the two weeks preceding the survey. If fever and convulsion were reported the mother was asked whether treatment was sought at a health facility, whether the child was given any medication.

The responses show that 52% of these children took antimalarial drugs, 10% were given treatment other than drug (e.g. tepid sponging, herbs, traditional healer, etc) and others were given non-antimalarial drugs such as paracetamol and aspirin.

Chloroquine was by far the most common anti-malarial drug that was given (50%) of all cases as treatment for fever. The use of antimalarial drugs increases with the of education. The survey showed that children whose mothers' education level was tertiary were the highest users of antimalarials i.e. (55.1%). Fifty two percent of

mothers who went up to secondary school level were the second highest users, followed by those with mothers who went up to primary school level (46.4%).

This shows that there is a lot of self-medication in the community, a trend that can make people ignore the new treatment then continue with their practices, this is therefore, a potential barrier to successful implementation of the new treatment policy. The people's preference for Chloroquine as found in the study may act as a barrier to introducing new drugs since people still appear to have confidence in this drug of the previous treatment policy. The trend was the same among pregnant women who took antimalarial drugs (SP as prophylaxis), of among those with no education, 27.8% took the drugs, among those with primary education, 34.7% took the drug, then secondary and tertiary had 43% and 47.7% respectively.

Area of residence (urban or rural) does not show significant differences in the use of antimalarial drugs. However, rural areas showed higher use of herbs to treat fever, as compared to urban. Out of the 10% who received treatment other than drugs, 3.5% were given herbs in rural areas and 1.8% received herbs in the urban areas. The national average figure of those who received herbs was 3.1%.

The study also showed that usage of medication is related to some socio-demographic factors

The “Zambia study on care seeking for febrile illness” which took place in Chipata, Kitwe and Lufwanyama<sup>6</sup>, found that mothers had good general knowledge of the signs of malaria, associating it with high or intermittent fever, vomiting “yellow stuff”, chills and sweating.

The most common home responses were:

- Sponging with tepid to cold water to lower fever
- Herbal remedies, which are ingested, inhaled in steam or rubbed on the body.
- Commercial medications, usually antipyretics (e.g. panadol, cafenol, or aspirin) and/or chloroquine that is usually left over from a prior illness.

The vast majority of children brought to the health centre with fever symptoms were given chloroquine (CQ) and panadol/aspirin. Many children who were not taken to the health centre received equivalent treatment. Mothers knew that CQ is the remedy that they will be given at the health centre, so if CQ is available in the home or at the nearby shop, they often administer it themselves. Thus, in the vast majority of cases, whether treated at home or at the health centre, CQ is given for fever<sup>6</sup>.

This showed that mothers could make a clinical diagnosis of malaria and administer their own medication. If they can do this, they are likely to ignore a new treatment policy and continue with these old practices that they are comfortable with.

The joint meeting of Roll Back Malaria and Integrated Management of Childhood Illness (IMCI) that took place in Harare from 25<sup>th</sup> to 28<sup>th</sup> September 2000 justified the existence of “Community-Based Chloroquine Holders”. It was recognized that here are advantages and disadvantages of this programme. This programme was intended for Zimbabwe but recommended for other countries as well. These lay people who were taught to administer and authorized to stock chloroquine could facilitate easy access of the community to the drug <sup>8</sup>.

In Zambia these exist in the form of community health workers. This can encourage self-medication instead of going to health centres where they can access the new treatment. If not closely supervised, this can act as a barrier to implementation of the new policy.

Resistance to the affordable malaria treatments, chloroquine and SP, is seriously impeding malaria control through treatment in East Africa. An open, alternate drug allocation study to assess the efficacy of chlorproguanil-dapsone (Lapdap®) in the treatment of falciparum malaria clinically resistant to SP was done in under five children with non-severe falciparum malaria attending Muheza District Hospital in Tanzania who were treated with the standard regimen of Fansidar and Lapdap® in 2002. Clinical malaria episodes were retreated with either SP or Lapdap®. 61% of those treated with SP still had parasitaemia compared with only 7% of those treated with Lapdap. A total of 360 children were enrolled <sup>9</sup>.

Another study was done in Malawi and Kenya aimed to find out whether Lapdap resulted in a higher retreatment rate for malaria than SP was done in 2002. Despite the rapid elimination of Lapdap, children treated with this drug did not have a higher incidence of malaria episodes than those treated with SP. Treatment failure was more common with SP<sup>10</sup>.

These studies that highlighted resistance to SP may make the community shun the drug. Since SP is one of the drugs in the new treatment policy, the news of resistance can act as a barrier to implementing the new treatment policy. Further, SP has no antipyretic effect like chloroquine, so this may reduce its acceptability.



## **GENERAL OBJECTIVE**

To find out the community's knowledge and acceptability of the new malaria treatment policy.

## **SPECIFIC OBJECTIVES**

1. To find out if the community is aware that there is a new malaria treatment policy to replace the old one.
2. To find out the community's acceptability of the new treatment policy.
3. To determine if educational attainment, age, sex, religion and area of residence are associated with knowledge and acceptability of the new malaria treatment policy.

## **THE RESEARCH QUESTION**

What is the community's knowledge and acceptability of the new malaria treatment policy and is it related to social demographic factors?

## METHODOLOGY

A cross sectional survey was conducted, using a semi-structured questionnaire (attached). The study was done in Central Province, with Kabwe district as urban and Chibombo district as rural. The province was selected because statistics showed a number of potential problems towards malaria control.

These include the following:

- (i) Central Province has the lowest number of household owning bed nets. Only 23.3% of households have at least one net as compared to the national average of 27% <sup>1</sup>.
- (ii) The Province shows the lowest number of pregnant women who took antimalarial prophylaxis. Only 23.4% took prophylaxis, North-western Province led with 56% <sup>1</sup>.
- (iii) The Province shows the highest number of children being treated with unconventional means for febrile illness. 1% of Central Province was treated by traditional healers for fever as compared to the national average of 0.5. 5.6% were treated with herbs in Central Province whilst in the other provinces it ranged from 1 to 4.8% <sup>1</sup>.
- (iv) The province has a high prevalence (75%) of primary school absences due to illness as compared to the national average <sup>7</sup>.

Sample size

The study population was selected using a systematic random sampling technique. The sample size was estimated to be 382. It was estimated using the formula

$$n=Z^2pq /d^2$$

The knowledge level used was that of Fansidar which is one of the drugs in the new policy <sup>5</sup>. However, a total number of 384 people were interviewed.

Where n = the sample size

Z	=	1.96 at 95% confidence level
P	=	54% (prevailing knowledge on Fansidar)
q	=	46% (100-p)
d	=	5 (at 95% confidence level)
n	=	$\frac{Z^2 pq}{d^2}$
n	=	$\frac{(1.96)^2 \times 54 \times 46}{(5)^2}$
n	=	381.7
	$\approx$	382

There were two extra respondents interviewed, so the total sample size came to 384.

Sampling

The sample was obtained by systematic random sampling, a form of probability sampling. Probability sampling enables the researcher to draw inferences from a sample about a population <sup>22</sup>, which is what this study intends to do.

Inclusion & Exclusion criteria

The study subjects were adult community members except health workers. The health workers have better knowledge about drugs, therefore, their responses may not reflect the true results of ordinary community members.

Confidentiality & voluntarism

Recruitment of subjects was voluntary and names have not been written on the questionnaire .The questionnaires used designated numbers, which were used to identify subjects.

### Study Design

It was in form of a Cross-sectional survey. This is because the study is meant to measure the current knowledge and acceptability so it needs to be a 'snapshot' <sup>22</sup>. This makes a cross-sectional study more appropriate as compared to a longitudinal study that measures change. However, after sometime, it would be better to do a longitudinal study to see if the knowledge and attitude are changing.

### About data analysis

After all the data was collected, the frequencies and percentages of those with knowledge and those that accept the new treatment were calculated. Most of the data was analysed using EPI6 software.

Chi-square was used to determine if knowledge & acceptability were associated with socio-demographic factors and to ascertain whether this relationship occurred by chance alone.

**FINDINGS**

A total of 384 people were interviewed. Findings in the sociodemographic factors Table 1 shows that the distribution of respondents according to residence was almost equal (50.5% & 49.5% for urban & rural respectively). The majority of the respondents were in the range 20 to 39years (73.2%). The dominant religious group were the liberal protestants (90.1%). Only a small proportion of the respondents had no education at all (5.5%), the majority (52.3) had secondary school education as their highest attainment. Among all these participants in the study, there were more males (54.9%).

**Table 1.** Frequency of sociodemographic factors for the respondents

SOCIODEMOGRAPHIC FACTOR	FREQUENCY	PERCENT
<b>Area of residence</b>		
Urban	194	50.5
Rural	190	49.5
<b>Age group</b>		
<20	33	8.6
20 to 39	281	73.2
40 to 59	55	14.3
60+	15	3.9
<b>Religious denomination</b>		
Catholics	13	3.4
Liberal protestants	346	90.1
Strict protestants	5	1.3
Jehovah’s witness	11	2.9
Others	9	2.3
<b>Educational attainment</b>		
No education	21	5.5
Primary	118	30.7
Secondary	201	52.3
Tertiary	44	11.5
<b>Sex</b>		
Males	211	54.9
Females	173	45.1

Table 2 shows that most respondents (86.5%) said SP was an effective drug. However a large number (80.1%)also believed it made the consumer feel sicker. About the side effects of Coartem®, less than 2% (7 people) of the respondents gave their opinion. The table further shows that most people (92.7%) preferred to be treated with the new treatment if they had malaria. Among those who did not like Coartem®, the majority (85.1%) said they do not like it because they did not know it.

**Table 2.** Opinions on drugs in the new treatment policy

OPINION	FREQUENCY	PERCENT
<b>Efficacy of SP</b>		
It works	332	86.5
It doesn't work	18	4.7
Don't know	34	8.9
Total	384	100
<b>Perceived side effects of SP</b>		
Nausea	8	3.7
Dizziness	21	9.7
Headache	9	4.2
Makes one more sick	174	80.4
Other	4	1.9
Total	216	100
<b>Perceived side effects of Coartem</b>		
High blood pressure	1	
No power	1	
Rash	2	
Joint pains	2	
Other	1	
Total	7	
<b>Preferences</b>		
Chloroquine	14	3.6
New treatment	356	92.7
Quinine	8	2.1
Traditional	2	0.5
No response	4	1.6
Total	384	100
<b>Reasons for Coartem dislike</b>		
They don't know it	63	85.1
Too many tablets	5	6.8
Bad side effects	5	6.8
It's not effective	1	1.4
Total	74	100

Figure 1 showed that the majority of the respondents (93.2%) accepted Coartem.

**Figure 1.** Showed acceptability of Coartem® among respondents.

# Acceptability of Coartem among respondents

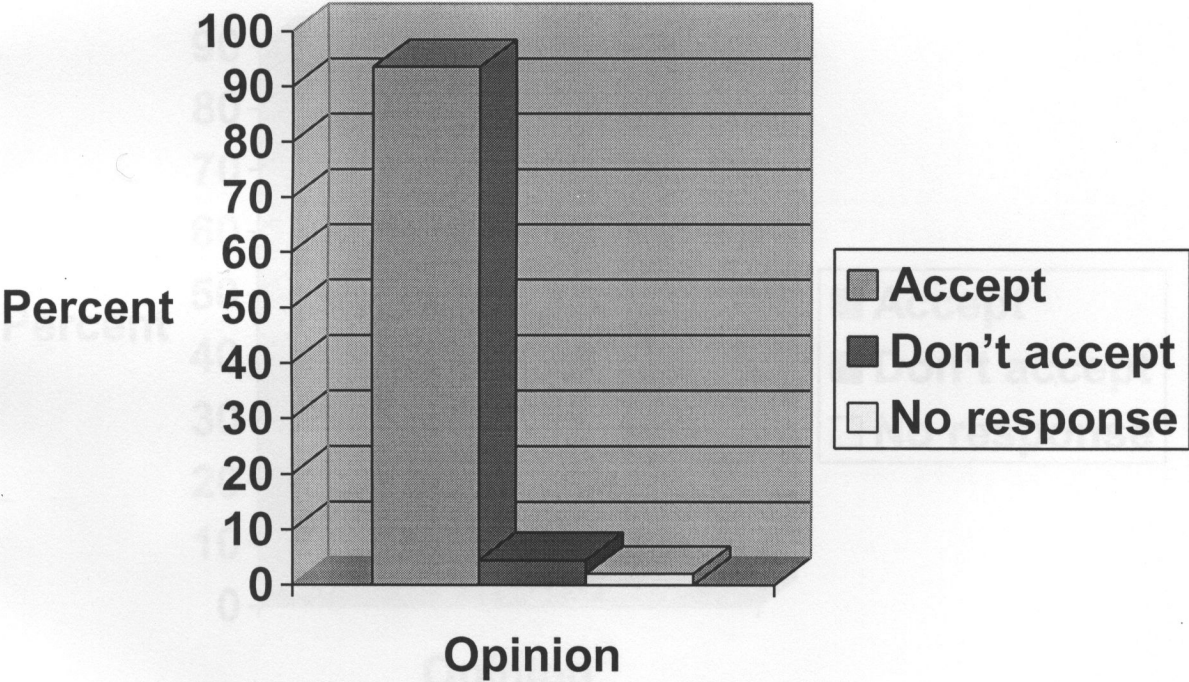


Figure 2 showed that 88% of the respondents accepted to be treated with SP.

**Figure 2.** Showed acceptability of SP among respondents.

## Acceptability of SP among the respondents

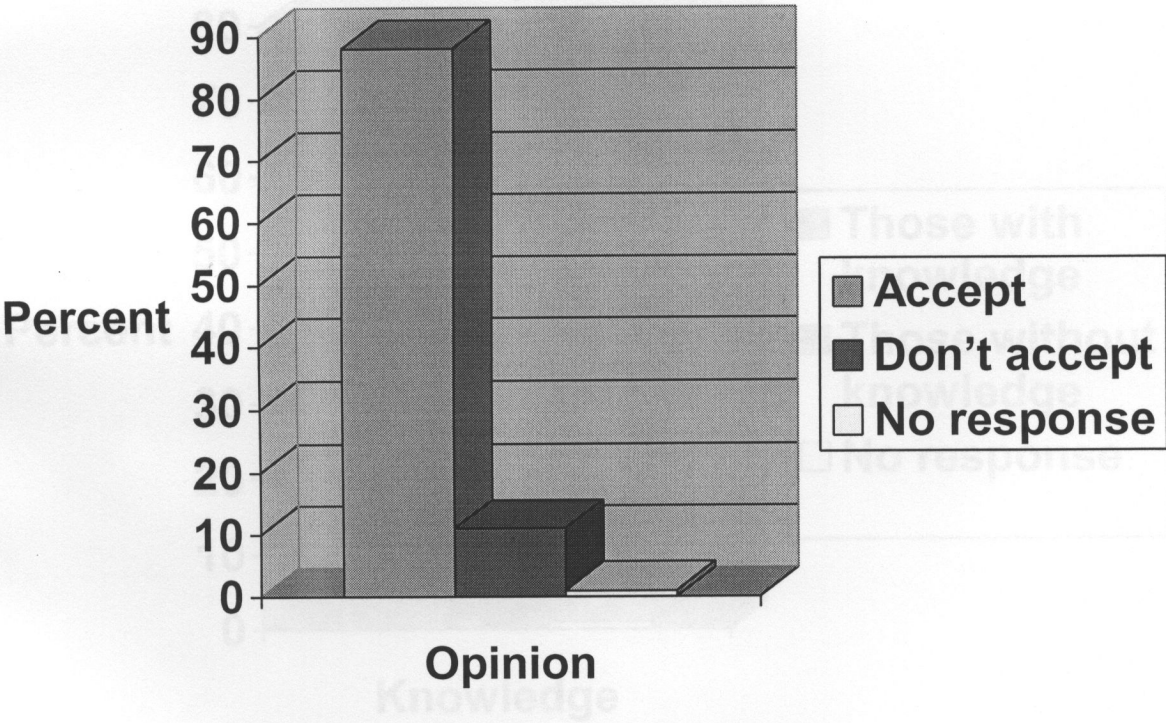
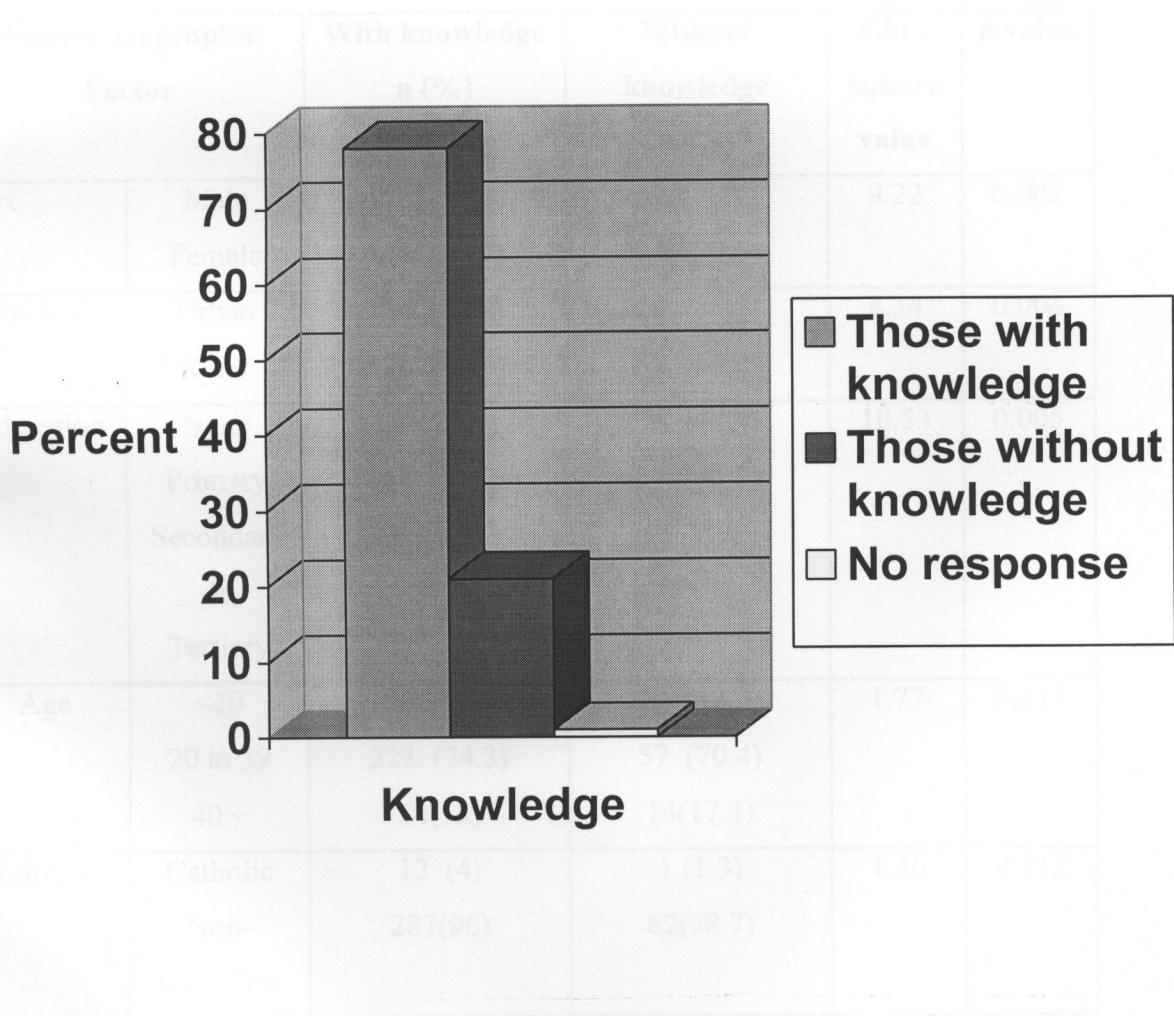




Figure 6 showed that 76.4% of respondents knew that there's a new treatment policy in place.

**Figure 3.** Showed knowledge of the new treatment among respondents.

## Knowledge of new policy among the respondents



**Table 3.** Socio-demographic factors versus knowledge of the new malaria treatment policy.

The table shows that the distribution of knowledge according to sex, area of residence and educational attainment, age and religion. There were no significant differences between age groups ( $p=0.413$ ) and religious denominations ( $p=0.212$ ). However, more female respondents tended to have more knowledge compared to males ( $p=0.002$ ). Those who resided in the urban significantly had more knowledge than those in the rural ( $p=0.004$ ). Furthermore, a larger proportion of respondents who had attained secondary or tertiary education had knowledge compared to persons who had attained primary or no education ( $p=0.005$ ).

Socio-demographic Factor		With knowledge n (%)	Without knowledge n (%)	Chi - square value	p value
Sex	Male	156 (51.3)	57 (70.4)	9.22	0.002
	Female	148 (48.7)	24 (29.6)		
Residence	Urban	164 (54.7)	29 (35.8)	8.34	0.004
	Rural	136 (45.3)	52 (64.2)		
Education	None	80 (26.7)	36 (44.4)	10.53	0.005
	Primary	164 (54.7)	37 (45.7)		
	Secondary	56 (18.6)	8 (9.9)		
	& Tertiary				
Age	<20	23 (7.7)	10 (12.3)	1.77	0.413
	20 to 39	223 (74.3)	57 (70.4)		
	40 +	54(18)	14(17.3)		
Religion	Catholic	12 (4)	1 (1.3)	1.56	0.212
	Non- Catholics	287(96)	82(98.7)		

**Table 4.** Socio-demographic factors versus acceptability of the new malaria treatment policy.

None of the socio-demographic factors (sex, residence, education, age and religion) was associated with acceptability of the new treatment policy.

Socio-demographic Factor		Those accepting n (%)	Those not accepting n (%)	Chi-square value	p value
Sex	Male	196 (54.6)	9 (52.9)	0.01	0.908
	Female	163 (45.4)	8 (47.1)		
Residence	Urban	179 (49.9)	9 (52.9)	0.06	0.804
	Rural	180 (50.1)	8 (47.1)		
Education	No education	111 (30.9)	7 (41.2)	0.79	0.373
	With education	248 (69.1)	10 (58.8)		
Age	<20 to 39	295 (82.2)	12 (70.6)	1.45	0.228
	40 +	64(17.8)	5 (29.4)		
Religion	Catholic	13 (3.6)	0 (0)	0.68	0.411
	Non- Catholics	345 (96.4)	18 (100)		

## **DISCUSSION**

The study was looking at the community's knowledge and acceptability of the new malaria treatment policy and factors that may influence them. A total of 384 respondents who agreed to participate in the study were interviewed in Central province between October and December 2004.

Most of the respondents (60%) were male and the rest females. The higher number of males could be due to the male dominance in the community as reported by the 2001/2 Zambia demographic health survey. For example, when you decide to interview one person in the household, the man would almost always prefer to be the one interviewed. Some women were referring all queries to their husbands. In most cases the men appeared to be the spokespersons and heads of the households. The number of respondents from urban and rural is almost equal because the sampling method used for the two areas was purposive, so it was not difficult to balance them. The Zambia demographic health survey (2003) shows that males in the households influence or solely make decisions concerning health care. This could explain why males represented most households during interviews.

Among the age groups, the majority were those from 20 to 39 years. They were followed by the less than 20 years. This shows that the younger age groups had more participation in the study. One of the reasons could be that dominated because younger persons dominate the Zambian population<sup>13</sup> and this is a more active groups, which makes them likely to come into contact with the interviewers. This is shown in the latest census. The group consisting of those above 60 years had the least number of respondents, despite them having the biggest range among all the groups. This could be due to the low life expectancy in Zambia (37 years)<sup>13</sup>. The group 15 to 19 years, despite having a narrow range, recorded higher respondents than the above 60 group.

The largest religious denomination that responded to the study was the liberal protestants. They are a product of those who have broken away from the other denominations.

Among the different levels of educational attainment, those with secondary school education were the most represented in the sample and those with no education were least. Zambia has high literacy levels, it is therefore, not surprising to find that those with no education made up only 5% of the respondents. The Zambia Analytical report, 2003, states that the national average adult literacy level is 67.2%. In Central province, more than 90% have an educational background and are therefore literate.

It was found that 78% of the respondents knew that there was a new malaria treatment policy in place. The number is quite high, taking into account that there was no prior educational campaign. Being a community with high literacy rates, they are likely to have got this information from the print media. A similar study done by Macwangi *et al* in 2002<sup>5</sup>, on health workers shows that the community had as much knowledge on the new treatment as the health workers. The high levels of knowledge could be due to the high educational attainment levels could be the reason for the high levels of knowledge on the new treatment. The Zambia demographic survey<sup>1</sup> and the study by Mc Combie<sup>25</sup> found that knowledge and practices on malaria increase with the level of education. The high knowledge levels mean that people are unlikely to continue using Chloroquine, and shall move to the new treatment. This shall help to make the new treatment a success and reduce the malaria burden in Zambia. The 22% who did not know are a source of concern.

Another important finding in, was that if the community was given a choice on what treatment to take if they had malaria, most (93%) would take the new treatment. This means that the majority accepted this new treatment. It is encouraging to know that even though most of the respondents have not taken this new treatment before, they are ready to take it when prescribed to them.

Only 0.5% said they would use traditional medicine, this needs to be taken with caution. Traditional medicine is usually associated with secrecy so not all respondents would publicly say that they would use it. The study by McCombie<sup>25</sup> showed that self-medication could be as high as 65% in some areas. This means that people should know the correct treatment to administer if the malaria burden is to be reduced. It is therefore encouraging to know that the majority would prefer taking the new medication when attacked by malaria.

The elements of the new treatment are Coartem and SP, whose acceptability was also studied individually. Eighty-eight and ninety-four percent accepted to take SP and Coartem respectively. Levels of acceptability are high for both drugs. Close to 86% of the respondents said SP is an effective drug. This is a likely reason why acceptability is high. The community's acceptability of the new treatment is higher than that of health workers as shown in the Hazemba<sup>5</sup> study. Acceptability would be expected to be higher in the health workers since they are the caregivers and information providers to the community.

Some people expressed some negative attitudes towards the new malaria treatment as shown in tables 9 and 12. Seventy-four people (19%) said they were not comfortable to take Coartem due to various reasons. But among this group, only seventeen of them rejected Coartem. The study by McCombie<sup>25</sup> showed that preparation or packaging contributes to acceptability, for example syrups are more accepted than tablets. A course of Coartem® consists of many tablets, this could be the reason why this group of people expressed these negative sentiments. Two hundred and sixteen had expressed various negative attitudes towards SP. In the study by Macwangi<sup>5</sup>, health workers also expressed negative attitudes towards SP. Although all these people talked negatively about SP, only forty-three of them rejected it. This shows that even though some people may have reservations about the new treatment, they can still accept to take it when it's prescribed to them. Further, most of the opinions expressed about these drugs are just perceived and have no scientific proof. Even after expressing all these opinions, the number of respondents accepting the treatment is high. All these findings are an indicator that the new policy is likely to succeed.

It was found that females had more knowledge than male respondents but there was no significant difference in acceptability levels between the two. One of the possible reasons why females have more knowledge on the new malaria treatment policy than males would be due to their role in society as care givers. The study by Baume *et al*<sup>6</sup> showed that mothers had a lot of knowledge on signs, symptoms and treatment of malaria. When a family member is ill, it's usually the woman who takes the patient to the hospital and stays on the bedside as opposed to the man who continues with his role of breadwinner in the midst of family illness. By spending time at health facilities, the woman is likely to come across the information. A random survey at National Malaria Control Centre showed that over 90% of the educational materials for the community were targeted at pregnant women and children below the age of five years. These reasons could have led to the higher knowledge on the new policy among women than men. The men have more access to the media, according to the ZDHS 2003. However, they have been found to have less knowledge. This could be so because most of the information about the new policy was disseminated through health centres, and just a small fraction was being mentioned as a news item in the press. There was no prior educational campaign in the media. A study by Zurovic *et al*<sup>26</sup> on Coartem use in Zambia revealed that most

health workers were not prescribing the new drug, this could deny the community access to knowledge and use of this potent drug. The study further stated that acceptability of the new treatment is low, however, the present study has shown that acceptability of Coartem® is very high (90%). The study by Zurovich *et al* was done before Coartem was rolled out to all the 72 districts and before countrywide orientation of health workers and the community was completed.

The respondents from urban areas had more knowledge than those in the rural, however, there was no difference in levels of acceptability. Urban dwellers usually have more access to the media and health facilities where the information is likely to be availed to them. Rural areas are less developed than urban, so even the access to information is less. According to the Zambia 2000 census<sup>12</sup>, literacy levels in the urban areas are almost twice as much as in the rural. The Zambia Demographic health survey also states that urban dwellers had seven times more access to the media than rural dwellers. This puts the urban dwellers at an advantage of having higher knowledge and acceptability than their rural counterparts. The study by McCombie<sup>25</sup>, showed that urban dwellers have higher knowledge on antimalarials drugs and practice more self-medication than their rural counterparts.

Although knowledge and acceptability was high among all religious denominations, it was highest among the Catholics. The Catholics own a number of community radio stations and health facilities countrywide. Catholics are likely to tune in to these radio stations than non-Catholics, thereby, gaining more knowledge than non-Catholics.

Knowledge among those with education as compared to those without. It is could be that the more one is educated, the more likely they are to understand the new treatment, therefore, their knowledge and acceptability is high. The Zambia demographic health survey and McCombie both show that knowledge and practices on malaria treatment increase with levels of education. In this study, it is not known why knowledge reduced in those with tertiary education. This may dispute other studies that say that education is directly proportional to knowledge, attitude and practice on malaria.

Knowledge and acceptability was high in all age groups, but highest in the 20 to 39years range. The study by Baume *et al*<sup>5</sup> showed the younger respondents, especially those below the age of 5 years sought attention from health facilities when sick. This enables them to have more knowledge on treatment guidelines. Therefore,

the younger group in this study (below 39 years) are likely to show more acceptability than the others, hence the results. Most people in this group are likely to be heads of households and would, therefore, be more proactive in seeking this new information.

The dosage regimen from Coartem® is far more complex than the drugs that had been previously used to treat malaria, SP and chloroquine. One would therefore expect poorer compliance to a prescribed course of Coartem®. A study by Chanda *et al* <sup>24</sup> showed full compliance to this new drug to be as high as 65%. Though this study has shown acceptability levels of about 94%, compliance does not match acceptability.



## CONCLUSIONS

In general, levels of knowledge and acceptability were very high among all categories of respondents. There was a statistically significant relationship between knowledge of the new treatment policy with educational attainment sex and area of residence; knowledge was higher in females, those with secondary or tertiary education and those living in urban areas.

The high levels of knowledge and acceptability were an indication that the new treatment policy is likely to succeed. Success of the new treatment policy shall result in reduced malaria morbidity and mortality. Studies done by Foster in Kenya and Philippines found that unfavourable treatment policies can encourage self medication<sup>28</sup>.

This shall greatly reduce household and government healthcare costs. There shall be reduced absenteeism from both work and school .The reduced malaria burden is likely to result in improved productivity and school performance at work and school respectively. Overall, the economy shall improve.

However, high levels of knowledge and acceptability alone do not ensure success of the new policy. There is need to have high availability and access to the drugs in order to ensure success of this new policy. The health facilities need to be stocked with the drugs all the time and health care should be as close to the household as possible. Private health facilities need to stock subsidized Coartem® and should sell it at a price affordable to the majority of our poverty stricken members of the community. Poverty currently stands at 70%.

Though knowledge and acceptability were high, there were a few people who did not know about the new treatment policy and do not accept it. Further, at least seventy respondents harboured negative beliefs about SP and Coartem, most of which have no scientific bases i.e. perceived. Though these people are the minority, they may spread their beliefs to others. Among those who accept, the majority have not taken the Coartem® before so their acceptability may be considered as being provisional. Later on if they discover anything negative about Coartem®, the acceptability levels may fall.

The high levels of knowledge and acceptability are an indication that the new malaria treatment policy may succeed. This shall enable Zambia reduce its malaria burden, which shall in turn lead to economic development and attainment of the Abuja targets and Millennium development goals.

## RECOMMENDATIONS

There is need to carryout an educational campaign to correct the misconceptions detected in some of the respondents about the new treatment because if these false beliefs spread, the acceptance levels may be reduced. The community needs to be reassured that the new treatment for malaria is effective and safe, through information, education and communication (IEC). Radio and television programmes, drama groups, using celebrities and role models to talk about malaria, can do this.

Findings in this study show that if some people had a choice they would take chloroquine to treat malaria. This is likely to increase non-acceptability of the new treatment policy. Some people may also prefer Chloroquine because it has an antipyretic effect unlike Coartem and SP. This extra property of Chloroquine which provides symptomatic relief to a malaria patient, may make some people to reject the new treatment in preference for the old one. Chloroquine is still available in drug stores, arguably because it can be used to treat diseases other than malaria e.g. rheumatoid arthritis. However, these diseases are rare in Zambia and chloroquine should be completely removed from the drug market as it is posing a threat to the new treatment policy.

The positive comments about SP and Coartem made by some respondents need to be publicised, in order to raise the public's confidence in the new treatment and reduce chances of development of wrong perceptions about the treatment.

The community needs to be given a feedback on the performance of the new malaria treatment. As the implementation goes on, it's important to keep the community informed about the successes of this new regime.

As compared to chloroquine, the course of Coartem contains so many tablets of the drug. One or two respondents complained about this high number of tablets. Most respondents did not comment on this probably because only a few have seen the drug before since it is new not only to this country but also worldwide. It would be better if the manufacturers could reconsider the packaging of Coartem, as the current one may reduce acceptability.

Surveys like this one should be carried out at intervals to find if the levels of knowledge and acceptability are changing. The result of this study shall determine the appropriate interventions to take. The possible factors that may contribute to changes include; the high cost of Coartem (private sector), packaging and possible side effects. The study needs to be repeated after about one year.

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**APPENDICES**

**Appendix 1: Consent Form**

**Study on Knowledge and Acceptability of the New Malaria Treatment Protocol**

This it to inform you that the Zambian government through the Central Board of Health (CBoH) has implemented a new malaria treatment policy using Sulphadoxine-Pyrimethamine (Fansidar) and Artemether-Lumafantrine (Coartem®) as first line drugs of choice to replace Chloroquine.

The research is being done to assess the knowledge and attitude towards this new treatment regime. If you choose to participate, we will ask you to tell us your views on Fansidar, Coartem, and Chloroquine in terms of side effects, availability, & effectiveness. The interview will take about 30 minutes. Your answers to the questions will be kept confidential and will only be used for research purposes. If you agree to take part in this study, there will be no immediate benefit to you but the whole nation shall later benefit from the results of the study. However, information collected will be very useful in the implementation of the new malaria treatment policy that eventually shall benefit all citizens.

Your participation in this study is completely voluntary. This will not affect in any way health care benefit, which you otherwise enjoy. You have the right to withdraw at any time you wish to do so. If you have any doubt, or if you feel like seeking clarification concerning any questions or research, please feel free to contact the researcher on the address below:

Dr. Mabvuto Katwizi Kango

P. O. Box 32144

**Lusaka**

**Tel:** 260-1-290590; **Cell:** 096-904243

**Email:** kango@email.com

Name of participant: .....

Signature of Participant & thumbprint.....

Name of witness: .....

Signature & thumbprint of witness.....

## Appendix 2: Questionnaire

Date of Interview: \_\_\_\_\_ Sex/age.....

Area of Residence (urban/rural): \_\_\_\_\_ Religion.....

1. What is your highest level of education attainment?

- (a) Primary
- (b) Secondary
- (c) Tertiary

2. Have you heard of the drug Chloroquine? (If no, skip questions 3 and 4)

- (a) Yes
- (b) No

3. What is it used for? .....

3. Has Chloroquine been used before to treat malaria in Zambia?

- (a) Yes
- (b) No

4. Are you aware that Chloroquine is no longer used for treatment of malaria in Zambia?

- (a) Yes
- (b) No

5. If your answer to (5) was yes, do you know why it was banned?

6. Have you ever heard of the drug Fansidar? (If no, skip questions 6 to 9).

- (a) Yes
- (b) No

7. Have you or anyone of your family ever taken Fansidar as treatment for malaria?

- (a) Yes
- (b) No

8. Did it work?

- (a) Yes
- (b) No

9. If your answer to [8] was yes, how did you know that it worked?

10. Have you or anyone else in your family complained of any problem(s) concerning Fansidar?

(a) Yes

(b) No

11. If answer to (10) is yes, explain the problem(s).

---

12. Would you take Fansidar if you had malaria today? [yes /no]

13. If not, explain why. ....

14. Have you heard of the drug Coartem? (If no, skip questions 15 to 19)

(a) Yes

(b) No

15. Have you or any member of your family taken Coartem before as treatment for malaria?

(a) Yes

(b) No

(c) Don't know

16. Have you or any member of your family complained of any problems concerning Coartem?

(a) Yes

(b) No

17. If Yes, please explain the problems

---

19. Would you take Coartem if you had malaria?

(a) Yes

(b) No

20. If no, explain briefly why?

---

21. Would you recommend someone else to take Fansidar or Coartem? Briefly explain your answer. \_\_\_\_\_



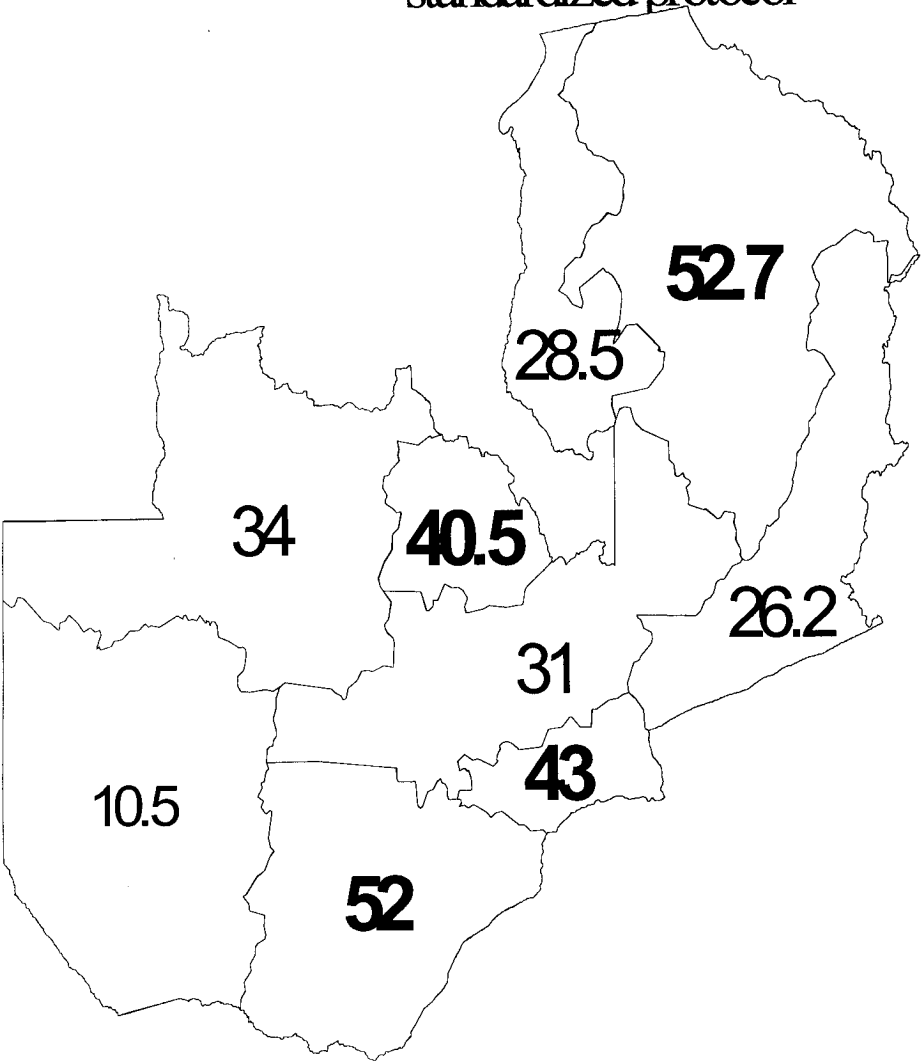
22.If you had malaria (fever/convulsions] today and you had a choice to choose the mode of treatment, which of the following options would you choose?

- (c) Chloroquine
- (d) The new malaria protocol (Fansidar/Coartem)
- (e) Other, specify \_\_\_\_\_



Appendix 4: Results from countrywide Chloroquine efficacy studies

Chloroquine Clinical Treatment Failure: 1995-2000,  
standardized protocol



## **Appendix 5: The new malaria treatment policy**

### The new malaria treatment policy statement is as follows:

#### **Uncomplicated malaria**

##### **1. First line treatment:**

- a). Artemether-Lumafantrine, an Artemisinin- based combination therapy, except for children weighing below 10kg and during pregnancy.
- b). Sulphadoxine-Pyrimethamine for children below 10kg (until more information on the efficacy and safety of Artemether Lumafantrine in this age group becomes available)

##### **2. Second line treatment:**

- a.) Quinine would be used in cases of failure to the first line drug in all age groups

#### **Severe malaria**

Quinine is the drug of choice for the management of severe malaria for all age groups and all categories of patients

#### **Malaria in Pregnancy**

##### **1). Uncomplicated malaria**

###### **a.) First line treatment**

- i) Quinine during the first trimester of pregnancy
- ii). Sulphadoxine-Pyrimethamine (SP) in the second and third trimester of pregnancy

###### **b). Second line treatment**

- i). Quinine would be used in all cases of failure to Sulphadoxine-Pyrimethamine

##### **2). Severe malaria**

Quinine is first line drug for management of severe malaria at all stages of pregnancy

##### **3). Intermittent Presumptive Treatment (IPT)**

Sulphadoxine-Pyrimethamine would be used for IPT during the second and third trimesters of pregnancy. A maximum of three adult doses would be given at least one month apart