SELF-MEDICATION WITH ANTI-MALARIAL DRUGS: A CASE STUDY OF URBAN DISTRICT IN ZANZIBAR

By
Abubakar Khamis Hamadi

A Dissertation Submitted to the School of Public Administration and Management in Partial Fulfillment of the Requirements for Degree of Master of Health Systems Management (MHSN) of Mzumbe University

2015
CERTIFICATION

We, the undersigned, certify that we have read and hereby recommended for acceptance by the Mzumbe University, a dissertation entitled **Self-medication with Anti-malarial Drugs: A Case Study of Urban District in Zanzibar**, in partial fulfillment of the requirements for award of the degree of Master of Health systems Management of Mzumbe University.

__________________________  __________________________
Major Supervisor                      Date____________________

__________________________  __________________________
Internal Examiner                     Date____________________

Accepted for the Board of the School of Public Administration and Management

__________________________
DEAN
DECLARATION

AND

COPYRIGHT

I, Abubakar Khamis Hamadi declare that this thesis is my own original work and that it has not been presented and will not be presented to any other university for similar or other degree award.

Signature……………………..

Date…………………………..

© Abubakar Khamis Hamadi, 2015

This dissertation is a copyright material protected under the Berne Convention, the copyright Act 1999 and other international and national enactments in that behalf, on intellectually property. It may not be reproduced by any means in full or part, except short extracts in fair dealings, for research or private study, critical scholarly review or discourse with an acknowledgement, without the written permission of Mzumbe University, on behalf of the author.
ACKNOWLEDGEMENTS

First and for most, I humbly thank ALLAH (S.W) for the care and protection. He has granted to me in the course of my studies and life in general. The production of this work is the result of many efforts and contributions made by various individual and institutions through materials and moral support they gave me. I would like to express my appreciation to everyone who one way or another paid his/her attention to this thesis. It is not possible to mention all who contributed to the development of this work.

I acknowledge the contribution of Mr. Godfrey Kacholi- a core supervisor, for his valuable inputs in this study. His contribution will always be placed in front of this work.

I would like to extent my special gratitude to my beloved mother Mrs.Kazij aMasheko and to my wonderful wife Mrs.Aife Abdalla for their encouragement and moral support, and their tolerance for my absence during my academic trips. In addition I cannot forget my handsome sons Abdulsalami and Nassir together with my beautiful daughter Khalilah.

Further I would like to provide my sincere thanks to my fellow colleges and MHSM lectures for their golden contribution to this work.

My sincere thanks should go to the Second Deputy Vice President Office of Revolutionary Government of Zanzibar and Zanzibar Urban District Office to granted permission to conduct this study.

Lastly, but not for important, I wish to extent my sensitive thanks to my research assistants and all respondents for their valuable support. I believe their support will not be forgotten because they have written their words in the rock which will never omitted.
DEDICATION

This work is dedicated to my wonderful wife Mrs. Afife Abdalla Ali. She was tolerant during my absence at the time when she was pregnant and at the time of giving birth to my son Nassir Abubakar whose love and support encouraged me to accomplish this task.
# LIST OF ABBREVIATION

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>Artemisinin Based Combination Therapy.</td>
</tr>
<tr>
<td>CQ</td>
<td>Chloroquine.</td>
</tr>
<tr>
<td>DRPs</td>
<td>Drug Related Problems.</td>
</tr>
<tr>
<td>FGD</td>
<td>Focused Group Discussion</td>
</tr>
<tr>
<td>IPTp</td>
<td>Intermittent Preventive Treatment in Pregnant</td>
</tr>
<tr>
<td>ITN</td>
<td>Insecticide Treated Net</td>
</tr>
<tr>
<td>MDGs</td>
<td>Millennium Development Goals.</td>
</tr>
<tr>
<td>MHSM</td>
<td>Master of Health Systems Management.</td>
</tr>
<tr>
<td>OTCs</td>
<td>Over the Counter medicines.</td>
</tr>
<tr>
<td>RDT</td>
<td>Rapid Diagnostic Test.</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
</tbody>
</table>
ABSTRACT
Over the past decade, the practice of self-medication with anti-malarial drugs is becoming a major health concern specifically in the developing countries. A study has shown critical attention is needed to address this challenge since self-medication with anti-malarial drugs has been associated with increased morbidity and mortality due to malaria epidemic.

This study aimed at exploring the factors influencing Urban district residents toward self-medication practice for anti-malarial drugs in Zanzibar. However, it was guided by the following specific objectives namely; (i) to explore the availability of anti-malarial drugs, (ii) to assess the level of knowledge on the consequences associated with self-medication (iii) to assess the economic influences on the practice of self-medication and (V) to assess the level of accessibility of anti-malarial drugs.

A cross sectional descriptive study design was preferred. Both qualitative and quantitative approaches were used to collect data. The study was conducted in Urban district in Zanzibar. A total sample of 384 respondents was enrolled in the study. Purposive, convenient and simple random sampling techniques were used to select study participants. The data were collected by using questionnaire interviews, focus group discussions and documentary review. Quantitative data were analyzed by using Microsoft excel whereas qualitative data were analyzed manually.

The studies found that, majority (75%) of the respondents were knowledgeable about the malaria in terms of sign, symptoms and treatment. The anti-malarial drugs were reported to be more in the government owned health facilities. Majority (58%) of the respondents indicated to be aware on the adverse effects associated with the practice of self-medication. Affordability of anti-malarial drugs was reported by the majority of the respondents and anti-malarial drugs were reported to be easily accessible.

The study concluded that, the practice of self-medication with anti-malarial drugs is very common among the residence of Urban district. However, even though self-medication is common, majority of the population sought tested their blood sample before treating themselves.
The study recommends that, health education on the consequences of self-medication should be emphasized. The supportive supervisions should be carried out to ensure that unauthorized drugs are abandoned.
TABLE OF CONTENTS
CERTIFICATION .................................................................................................................. i
DECLARATION AND COPYRIGHT ..................................................................................... ii
ACKNOWLEDGEMENTS ........................................................................................................ iii
DEDICATION ........................................................................................................................ iv
LIST OF ABBREVIATIONS ................................................................................................... v
ABSTRACT ............................................................................................................................ vi
LIST OF TABLES ..................................................................................................................... vii
LIST OF FIGURES ................................................................................................................ viii

CHAPTER ONE .................................................................................................................... 1
Introduction ........................................................................................................................... 1
1.1 Background to the problem ............................................................................................ 1
1.1.1 Malaria epidemiology globally ................................................................................ 1
1.1.2 Malaria epidemiology in Africa ................................................................................. 2
1.1.3 Malaria epidemiology in Tanzania ........................................................................... 4
1.1.4 Malaria epidemiology in Zanzibar ........................................................................... 5
1.1.5 Self-medication trend with anti-malarial drugs globally ............................................ 6
1.1.6 Self-medication trend with anti-malarial drugs in Africa .......................................... 6
1.1.7 Self-medication trend with anti-malarial drugs in Tanzania ....................................... 6
1.1.8 Self-medication trends with anti-malarial drugs in Zanzibar .................................... 7
1.2 Problem statement ......................................................................................................... 7
1.3 Study objective .............................................................................................................. 8
1.3.1 Overall objective ..................................................................................................... 8
1.3.2 Specific objectives .................................................................................................... 8
1.4 Research questions ....................................................................................................... 8
1.5 Hypotheses .................................................................................................................. 9
1.6 Conceptual framework ................................................................................................. 9
1.7 Significance of the study ............................................................................................. 11

CHAPTER TWO ................................................................................................................... 12
LITERATUREREVIEW .......................................................................................................... 12
2.1 Introduction .................................................................................................................. 12
2.2 Theoretical part .......................................................................................................... 12
2.2.1 Malaria transmission ............................................................................................. 12
2.2.2 Causes of malaria .................................................................................................. 12
2.2.3 Malaria morbidity and mortality rate .................................................................... 13
2.2.4 Malaria trends ....................................................................................................... 13
2.2.5 Self-medication trends ......................................................................................... 14
2.2.5.1 Self-medication practice ................................................................................. 14
2.2.5.2 Vulnerable group for self-medication by sex and age ...................................... 15
2.2.5.3 Factors influencing self-medication with anti-malarial drugs .......................... 16
2.2.5.4 Consequences of self-medication .................................................................. 16
2.3 Empirical literature review ...................................................................................... 18
2.3.1 Preventive measure for malaria .......................................................................... 18
2.3.2 Diagnostic test for malaria .................................................................................. 18
2.4 Self-medication trend .............................................................................................. 19

CHAPTER THREE ........................................................................................................... 20
METHODOLOGY ............................................................................................................ 20
3.1 Introduction .............................................................................................................. 20
3.2 Study design ............................................................................................................ 20
3.3 Questionnaires’ distribution .................................................................................... 20
3.4 Study area ................................................................................................................ 21
3.5 Sample and sampling technique ............................................................................ 23
3.5.1 Study population .............................................................................................. 23
3.5.2 Sample size ....................................................................................................... 23
3.4.3 Sampling technique .......................................................................................... 24
3.6 Data collection method .......................................................................................... 24
3.6.1 Questionnaire .................................................................................................. 24
3.6.2 Focused group discussion .................................................................................. 24
3.7 Pretesting of data ................................................................................................... 25
3.8 Data processing and analysis .................................................................................. 25
3.9 Ethical consideration ............................................................................................. 25
3.10 Limitation of the study ........................................................................................ 26
3.11 Strength of the study ............................................................................................ 26

CHAPTER FOUR ............................................................................................................ 27
RESEARCH FINDINGS AND ANALYSIS ......................................................................... 27
4.0 Introduction .............................................................................................................. 27
4.1 Characteristics of respondents .............................................................................. 27
4.1.1 Respondents by age .......................................................................................... 28
4.1.2 Respondents marital status .............................................................................. 29
4.1.3 Respondents by education level ....................................................................... 30
4.1.4 Respondents by Occupation .......................................................................... 31
4.1.5 General knowledge on malaria ....................................................................... 32
4.2 Availability of anti-malarial drugs ......................................................................... 33
4.3 Examination of knowledge on consequences of self-medication for anti-malarial drugs .............................................................................................................. 33
4.3.1 Examination on the knowledge of malaria treatment ...................................... 35
4.3.2 Examination on the knowledge of the consequences of self-medication ........ 36
4.2.8.3 Examination on experience of harmful on malaria drugs ............................ 37
LIST OF TABLES

Table 4.1: Show the total of health facilities participate in survey ......................... 28
Table 4.2: Criteria to used by respondents to use anti-malaria drugs ....................... 33
Table 4.3: Assessment on the availability for anti-malarial drugs .............................. 33
Table 4.4: Respondents’ understanding on malaria treatment .................................. 35
Table 4.5: Examination on understanding proper method for malaria treatment ...... 38
Table 4.6: Respondents opinion on the cost of anti-malarial drugs in health facilities ........................................................................................................................................................................ 38
Table 4.7: Shows the accessibility of antimalarial drugs ............................................ 40
LIST OF FIGURES

Figure 1.1 Conceptual framework models .......................................................... 10
Figure 3.1: Shehia used in Sample Survey ......................................................... 21
Figure 3.1 Photograph shows the location of Urban District .............................. 22
Figure 4.1: Shows the Respondents’ Sex ....................................................... 28
Figure 4.2: The Respondents’ Age ................................................................. 29
Figure 4.3: The Respondents’ Marital status .................................................. 30
Figure 4.4: The Respondents’ Education Level ............................................. 31
Figure 4.5: The Respondents’ Occupation Categories ..................................... 32
Figure 4.6: Respondents’ ranking on the availability of anti-malarial drugs in
government health facilities ............................................................................. 34
Figure 4.7: Respondents’ perception toward self-medication and harmful .......... 36
Figure 4.8: The Respondents’ Experience on consequences of anti-malarial drugs .. 37
Figure 4.10: The respondents’ views on poverty contribution toward self-medication
....................................................................................................................... 40
Figure 4.11: Respondents’ practice on seeking malaria treatment ....................... 41
CHAPTER ONE

Introduction

This chapter comprises six sub parts that includes the background of the problem, problem statement, the study objectives, research questions and hypotheses, conceptual frame work and significance of the study.

1.1 Background to the problem

1.1.1 Malaria epidemiology globally

Although there are greater efforts made by several stakeholders in fighting against malaria, it is still remain as the one of the most severe public health problems worldwide (World Malaria Report, 2013). According to this report, malaria is leading cause of death and disease in many developing countries, where young children and pregnant women are the most affected groups.

In 2012, WHO estimated that there were 207 million malaria cases worldwide, and received reports of 30 million confirmed cases from endemic countries (World Malaria Report, 2013). Malaria still remain fatal disease as it was reported that, globally, 670 million fewer cases and 4.3 malaria deaths occurred between 2001 and 2013 than would have occurred had incidence and mortality rates remain unchanged since 2000 (World Malaria Report 2014).

However, based on the assessment of the trends in reported malaria cases, a total of 64 out of 106 countries with ongoing transmission in 2000 are meeting the MDG target of reversing the incidence of malaria (World Malaria Report, 2014). Furthermore, it has been reported that an increasing number of countries are moving toward elimination of malaria. Among countries with malaria transmission in 2000, two reported zero indigenous cases for the first time (Azerbaijan and Sri Lanka in 2013), and ten others succeeded in maintaining zero cases, (Argentina, Armenia, Iraq, Georgia, Kyrgyzstan, Morocco, Oman, Paraguay, Turkmenistan, and Uzbekistan) (World Malaria Report, 2014).
1.1.2 Malaria epidemiology in Africa

According to Renata (2013) stated that, in 2012 malaria caused estimated 207million clinical episodes and 627,000 deaths where an estimated 91% of deaths in 2010 were in African region. Sub-Saharan countries are the most affected region in the world due to the combination factors such as presence of very efficient mosquitos (Anopheles gambiae complex) which are responsible for high transmission, the dominant parasite species of plasmodium falciparum that is most likely to cause severe malaria and death, scarce resources and socio economic instability also hindering the efficient control activities in these countries (Renata, 2013).
During 2013, an estimated 125 million people were infected with P. falciparum in Sub-Saharan Africa. In total 18 countries account for 90% of infections in Sub-Saharan Africa; 37 million infections (29%) arose in Nigeria and 14 million (11%) in the Democratic Republic of the Congo, the two countries with the highest of infections (World Malaria Report, 2014).

However, there is good indicator since it has been reported that, eight Sub-Saharan countries are estimated to have achieved decline of >75% and 14 countries achieved decline of >50% between 2000-2013 (WorldMalaria Report, 2014).

1.1.3 Malaria epidemiology in Tanzania

Tanzania is among the most affected countries at Sub-Saharan countries with the huge burden of malaria cases (Renata 2013). According to National Malaria Control Program report (2013), argues Tanzania reported malaria cases are 10-12 million per year which is leading cause of outpatient, inpatient and hospital deaths in under five children which is 30-40% of health facility attendance. The estimated deaths due to malaria are about 60-80,000 which is mainly in children.

The spatial distribution of plasmodium falciparum basic reproductive number in 2010 in Tanzania

Source: A new world malaria map.
1.1.4 Malaria epidemiology in Zanzibar

Zanzibar is union part of Republic of Tanzania, it is believed that; Zanzibar is among the most successful country in fighting against malaria in Sub Saharan countries due to recently studies and findings.

As it has narrated that clear evidence of malaria declines in the country has been documented through various studies and survey. Health facility sentinel sites finding as well as information from health facilities implementing Malaria Early Epidemic Detection documented significant malaria reduction on both islands. In recent years, Zanzibar has brought malaria burden to very low levels, prevalence of less than 1% on this regard malaria transmission has changed from high low level.(Zanzibar Malaria Performance Report, 2011: p, 2).

The spatial distribution of malaria cases in Zanzibar in 2010

Source: Zanzibar Malaria Program Review Report 2011
1.1.5 Self-medication trend with anti-malarial drugs globally

Self-medication is the use of drugs to treat self-recognized disorders or symptoms or the intermittent or continued use of prescribed drugs for chronic or recurrent disease or symptoms without the advice of a physician (Chipwaza et al, 2014: p:1) The practice of self-medication is also increasingly becoming a major health concern. Research findings shows that many illnesses including malaria are treated without consultation from health professionals (Watsierah et al 2010). In addition Halima (2003) argues that, “self-medication may account for over half all anti-malaria consumed worldwide”. Studies show that self-medication practice for anti-malarial drugs requires special attention as the trend increasing over the world.

1.1.6 Self-medication trend with anti-malarial drugs in Africa

The studies show that, the practice of self-medication for anti-malarial drugs in Africa is very critical especially in Sub Saharan countries where malaria prevalence is very high Watsierah et al, 2010 state that “the lack of proper drug use has been promoted largely over the years by the self-administration of the most common anti-malarial drugs. The self-medication practice in Africa has been increasing because some of countries apply the practice as acceptable way in preventing and treating malaria. As it has been narrated that, “self-medication is a commonly employed practice with an attempt to normalize the perceived illness (Solomon et al, 2014: p: 670).

1.1.7 Self-medication trend with anti-malarial drugs in Tanzania

Tanzania is among the Sub Saharan countries with a huge burden of malaria diseases which have contributed to self-medication with anti-malarial drugs. In the study conducted by Chipwaza et al, (2014), the results show that self-medication was common practice among participants. The common reported reasons for self-medication were shortage of drugs at health facilities, long waiting time at health facilities, inability to pay for health care charges and the freedom the preferred drugs.
1.1.8 Self-medication trends with anti-malarial drugs in Zanzibar

Generally the self-medication practices for anti-malaria drugs in Zanzibar persist to a large extent. However there are little or no studies conducted to evidence the findings. Indeed self-medication has a lot of consequences at both individual and National level. For instance, unwanted effects and toxicity effects may lead to renal failure and other complications. In addition, drug resistance to anti-malarial drugs will be very important risk to consider as it will not only lead to reemerging of high burden of morbidity and mortality due to malaria cases but also socio economic status will be poor since much financial effort will be needed to combat malaria infection. There-fore this study is quite important as it intend to answer the question “why people living in Urban District are practice self -medication for anti-malaria?”

1.2 Problem statement

Self-medication is quite often associated with emergence and spread of drug resistance (Omole&Onademuren, 2010). The practice of self-medication with anti-malarial drugs may lead to pattern such as over use, under use and irregular use of these drugs. The situation may be worse as it may cause drug resistance to the population which might increase the prevalence of malaria cases. In addition self-medication may cause severe complication especially renal failure and liver disease due to toxicity and sometime may cause even death in case of overdose (Lembit, 2000). Furthermore, self-medication drugs are known to interact with many prescription drugs, alcohol and foods. How can interactions be avoided in the event of self-medication?

However, self-medication can facilitate access to medicines and reduce health care costs. But more specific studies are needed to evaluate the impact and role of self-medication in the diversity of settings of different health care sectors (Omole&Onademuren, 2010).

Instead of Government effort takes to fight against malaria in Zanzibar, but still the self-medication practice not much takes into consideration by looking at consequences and advantages. Many of patients and care giver mothers decide to use
anti-malaria drugs to themselves and under five children without medical consultation unless the condition persists to worse. Perhaps due to their negative perception toward accepting laboratory results (-ve) when malaria syndrome presented.

The self-medication practice for anti-malaria drugs in Zanzibar is critical challenge in reducing the malaria, hence some areas have already reported with high level of pyrethroid resistance (permethrin and lambda-cyhalothrine) which challenges the effort of fighting against malaria. According to Jidawi et al.(2010)argues that, high level of pyrethroid resistances (permethrin and lambda-cyhalothrine) on Pemba Island is 60%. Therefore due to these findings the researcher proposes to conduct a study on the assessment of self-medication with anti-malarial drugs at Urban District in Zanzibar. The researcher will investigate the factors contributing to self-medication based on socio-cultural factors, economic factors, environmental factors and availability of anti-malarial drugs.

1.3 Study objective
1.3.1 Overall objective
To explore the factors influencing the urban district inhabitants toward self-medication practice for anti-malarial drugs at in Zanzibar.

1.3.2 Specific objectives
1. To explores the availability of anti-malarial drugs.
2. To assess the level of knowledge on the consequences of self-medication for anti-malarial drugs among the inhabitants of urban.
3. To assess the economic influences on self-medication with anti-malarial drugs to urban.
4. To explore the level of accessibility of anti-malarial drugs within the community of urban.

1.4 Research questions
This study was guided by the following research questions:-
1. To what extent the availability of anti-malarial drugs influence self-medication?
2. To what extent the community is knowledgeable about the consequences of self-medication for anti-malarial drugs?
3. To what extent economic influences on self-medication for anti-malarial drugs to urban?
4. To what extent are the anti-malarial drugs accessible within the community of urban?

1.5 Hypotheses
   a) $H_0$: Lack of the drug choices for anti-malarial at government health facilities does not contribute to self-medication with anti-malarial drugs.
   $H_1$: Lack of the drug choices for anti-malarial drugs at government health facilities contributes to self-medication with anti-malarial drugs.

1.6 Conceptual framework
The study assumes that the social cultural aspects (customs, attitude towards delivery services in health facilities, social interaction, peer group, drug storage habit,), economic factors(purchasing power, price of medicine, general economic status), environment of health facility (waiting time, availability of drugs, availability of equipment, building capacity, availability of trained personnel, availability of health worker), and free market for hospital services and medicine (over the counter (OTC), pharmacies and dispensaries), as independent variables are important in influencing self-medication practice with anti-malarial drugs.
Figure 1.1 Conceptual framework models

Social cultural factors:
- Customs.
- Social interaction.
- Peer groups.
- Attitude towards delivery services in health facilities.
- Drug storage habit.

Environmental factors:
- Waiting times.
- Availability of drugs.
- Availability of equipment.
- Availability of trained personnel.

Economic factors:
- Purchasing power.
- Price of medicine.
- General economic status.

Self-medication with anti-malarial drugs.

Availability of medicine
- OTC.
- Pharmacy.
- Dispensary.

Source: researcher’s own formation
1.7 Significance of the study

- The study will generate further knowledge and creation of awareness on the consequences of self-medication with anti-malarial drugs to health stakeholders.
- The study will help to establish more realistic intervention to achieve the goal of Zanzibar malaria free.
- The study will provide areas needed for further studies to researchers.
- Hopeful the results of the study will reduce the miss use of anti-malarial drugs.
- Finally but not least, the major significance is that, the study is for partial fulfillment of the requirements for the degree of Master of Health Systems Management (MHSH) of Mzumbe University.
CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction
This chapter includes theoretical part and empirical part of literature review.

2.2 Theoretical part

2.2.1 Malaria transmission
Malaria transmission occurs in all six WHO regions. Globally, an estimated 3.3 billion people in 97 countries and territories are at risk of being infected with malaria (World Malaria Report, 2014). According to World malaria report (2014), 1.2 billion are at high risk (>1 in 1000 chance of getting malaria in a year).

Malaria exacts a heavy burden on the poorest and vulnerable communities; it primarily affects low and lower-middle income countries. Within endemic countries, the poorest and most marginalized communities are the most severely affected, having the highest risks associated with malaria, and the least access to effective services for prevention, diagnosis, and treatment (World Malaria Report, 2014). Thus malaria control and ultimately its elimination are inextricably linked with health system strengthening, infrastructure development and poverty reduction.

2.2.2 Causes of malaria
Malaria caused by five species of the parasite belonging to genus plasmodium, four of these. *P. falciparum, P. vivax, P. malariae* and *P. ovale* are human malaria species, which are spread from one person to another by female mosquitoes of the genus *Anopheles* (World Malaria Report, 2014). According to World Malaria Report (2014), in recent years human causes of malaria have also been recorded due to *P. knowlesi* a species that causes malaria among monkeys, and occurs in certain protested area of South-East Asia.

*P. falciparum* and *P. vivax* malaria pose the greatest public health challenges, where *P. falciparum* is the most prevalent on the African continents and is responsible for most deaths from malaria, *P. vivax* has a wider geographic distribution because it can
develop in the anopheles mosquito vector at lower temperatures, and can survive at higher altitudes and in cooler climate.

2.2.3 Malaria morbidity and mortality rate

Most of these cases (82%) were in the WHO African Region, followed by the WHO South East Region (12%) and the WHO Eastern Mediterranean region (5%). About 8% of estimated cases globally are due to *P. vivax*, although outside the African continent the proportion increases to 47%.

In 2013, there were an estimated 584,000 malaria deaths worldwide (Malaria world Report, 2014). According to that report, it is estimated that, most (90%) of these deaths were in the WHO African region, followed by the WHO Eastern Mediterranean Region (2%). About 453000 malaria deaths were estimated to occur in children aged 5 years. An estimated 437000 of deaths occurred in children aged under five years in the WHO African Region (Malaria World Report, 2014).

2.2.4 Malaria trends

Of the estimated 4.3 million deaths averted between 2001 and 2013, 3.9 million (92%) were in children aged under 5 years in Sub-Saharan Africa (World Malaria Report, 2014). These 3.9 million deaths accounted for 20% of the 20 million fewer deaths that would have occurred in Sub-Saharan Africa between 2001 and 2013. The reduction in malaria deaths have contributed substantially to progress toward achieving the target for MDG4 in Sub-Saharan Africa which is to reduce the under-five mortality rate by two thirds between 1990 and 2015.

That achievements has not come from air space, instead it is a result of great effort which costing a lots of money as it has been stated that, annually funding for malaria control and elimination totaled US$ 2.7 billion in 2013, almost three times the amount spent in 2005. (World Malaria Report, 2014). Report shows that International investments represented 82% of total malaria funding in 2013 totaling US$ 2.18 billion.
However, there are challenges facing the malaria reduction program around the world. Most of these challenges as it has been reported in World malaria Report (2014) are;

Shortage of insecticide treated net (ITN) and intermittent preventive treatment in pregnant (IPTp); it can be estimated that in Sub-Sahara Africa in 2013, some 278 million of the 840 million people at risk of malaria lived in households without ITN, 15 million of the 35 million pregnant women at risk did not receive IPTp and between 56 and 69 million of the 75 million children with malaria did not receive an ACT.

Resistance of \textit{P. falciparum} to multiple anti-malarial medicines; resistance in \textit{P. falciparum} to most currently available anti-malarial medicine has been detected in areas at the border of Cambodia and Thailand, complicating the choice of effective treatment for medical practitioners.

\subsection*{2.2.5 Self-medication trends}

\subsubsection*{2.2.5.1 Self-medication practice}

Self-medication is the use of drugs with therapeutic intent but without professional advice or prescription. It has also been defined as the use of non-prescription medicine by people by their own initiative (Osemene and Laminkara, 2012; P.684).

Self-medication with anti-malaria drugs practice has been practiced around the world in the region where by malaria cases are endemic especially in developing countries which are found in Sub Saharan African countries. As it has been stated by Chipwaza, Mugasa, Manyumana, Amuri, Makungu and Gwakisa (2014) that, self-medication has been widely practiced worldwide particularly in developing countries. In Sub Saharan African countries high incidence of malaria cases have contributed to self-medication with anti-malarial drugs.

The study done by Chipwaza et al at Kilosa district in Tanzania revealed that, self-medication practice was common practice among focus group discussion participants, where by anti-malarial drugs including sulphadoxine –
Pyramethamine and quinine were frequently used by the participants for treatment of fever (Chipwaza et al, 2014). In addition Roger, Philip, Richard, and Amir (2008) in their study conducted to the six countries found that, a range of anti-malarial drugs were procured from private pharmacies in urban and peri-urban areas in the major cities of six African countries, situated in the part of the continent and the world that is most highly endemic for malaria. The above mentioned studies indicate that, self-medicating practice for anti-malaria is very common, especially in the area where malaria is endemic which support the researcher ideas about the complexity of the practice in proposed study area.

Self-medication practice can be applied as among the means for prevention or in curing malaria disease, as it was stated by Solomon Abrha et al (2014), in their study done at Kolladiba town in North West in Ethiopia on the assessment of the overall practice of self-medication stated that, self-medication practice is becoming an important component of health care in both developed and developing countries and it is affected by socio-economic, and socio-demographic factors (Solomon et al, 2014; P: 670). However, this practice need special attention as well as observation since it has been greatly associated with consequences such as adverse reaction, drug resistance, and drug misuse and cost to National expenditure as it was elaborated by many study findings.

### 2.2.5.2 Vulnerable group for self-medication by sex and age

It is estimated that women are more prone to self-medication practice compared men as it has been commented by Osemene and Laminkara (2012) that, the prevalence of the practice of self-medication was high among the age group of 25-44 years but lower in the 15-24 and ≥ 45 age group and females exhibited higher prevalence of self-medication than males. Also in the study done by Solomom, Fantahum, and Wondim (2014), conducted at Kolladiba Town, North West in Ethiopia the results revealed that, 164 (62.8%) of respondents were self-medicated using modern drugs and herbs. Females (70.1%) were found to practice self-medication more than men (29.1%).
2.2.5.3 Factors influencing self-medication with anti-malarial drugs

According to results of many studies conducted at different countries on self-medication practice with anti-malarial drugs revealed that, the most predisposing factors which contributing to self-medication practice are in adequacies of health care facilities, delivery services including accessibility of the health care facilities, cost, waiting time, lack of drugs and social distance of health workers. For instance in the study done by Jombo et al, (2010) at Makurdi in Nigeria the result revealed that, there was strong correlation between low economic statuses, low education, and un employment and self-medication for malaria.

According to Gutema et al, (2011) in their study conducted at Makelle University found that, most students used self-medication because they had prior experience of treating a similar illness, they had minor illness and did to avoid long waiting time for medical services. Also Verma, Mohan and Pandey (2010), in their study conducted in North India among professional students report that, majority of professional students had a poor knowledge about appropriate self-medication while the knowledge of the benefits and risks was not adequate.

In addition, in the study done by Chipwaza et al, (2014) at Kilosa district in Tanzania the study results revealed that, self-medication practice was precipitated by the shortage of drugs at health facilities, long distance to health facilities, inability to pay health care charges and the freedom to choose preferred drugs. Both study results show that self-medication practice is greatly influenced by adequacy of health care facilities, hospital delivery services and accessibility of health care facilities. However, the researcher believe that, still there are other reasons which influence the practice in Zanzibar such as economic status, knowledge, socio-cultural factors, and lack of choice for anti-malarial drugs that might influence the practice thus why increases the necessity to conduct such study.

2.2.5.4 Consequences of self-medication

Since the introduction of artemisinin-based combination therapy (ACT) in many countries, reports have shown that while public sector malaria treatment has largely
conformed to policy recommendations, the private sector is significantly characterized by in appropriate use of anti-malarial drugs, where the use of mono therapy, inadequate use of ACT, fake and adulterated drugs is widely reported, increasing the risk of treatment failure and development of drug resistance (Ezenduka, Ogbanna, Ekwunife, Okonta, and Esinone, 2014; P:2).

According to Rohit, Lalit and Manisha (2010), in their study on evaluation of self-medication among professional students in India state that, major problems related to self-medication is wastage of resources, increased resistance of pathogens, and generally entails serious health hazard such as adverse reaction and prolong suffering. In addition Bente, Tina, Nina, Hanne, and Charlo (2012) in their study on the prevalence of drug-related problems in self-medication in Danish community pharmacies state that, approximately, 75% of the customers requested a specific OTC medicine. In these cases the majority of drug related problems (DRPs) was identified (80%), while the most DRP were in appropriate self-medication, in appropriate requested drug, too long duration of drug use (including abuse) and wrong dosage.

Afolabi, in his study on self-medication, drug dependency and self-managed health care, which has been conducted in Nigeria reports that, insufficient curative treatment with chloroquine (CQ) for individual who treat themselves for suspected malaria fever could result in resistance to plasmodium falciparum. Chronic CQ toxicity was important in the causation of heart block in Africa, CQ retinopathy and abnormal opthalmogical findings, cardiac arrythmiasis, Steven-Johnson following self-medication with fansider has been reported.

Frankly speaking, self-medication practice has many consequences than advantages, unless otherwise special attention, with efficiency and proper knowledge should be carefully monitored to reduce the unwanted effects to clients or patient. However, the practice still needs to be in a researchable area in order to weigh up its merits and dis merits and mostly important to provide knowledge based on the reasons, consequences, and area for improvement as it has been concluded by different researchers.
Even though self-medication is useful tool to treat minor ailments, improper self-medication practice or medication abuse may lead to serious adverse reactions and possibly fatal consequences. Therefore, there is a need to know the prevalence, determinants and risk factors associated with self-medication practices among the various segments of the community to devise appropriate educational, regulatory and administrative measures utilized in alleviating the public health risks arising from improper practices of self-medication (Gutema, et al; 2011: P: 183-189)

2.3 Empirical literature review

2.3.1 Preventive measure for malaria

By using preventive measure therapy a median of 43% of pregnant women received two doses of IPTp among 31 reporting countries, and 17% of pregnant women received three/more doses of IPTp among nine countries. (World Malaria Report, 2014). According to that report the large difference between the proportions of women attending ANC clinics at once at least once and the proportion receiving the first dose of IPTp suggest a number of missed opportunities for delivery of IPTp at ANC clinic.

According to World Malaria Report (2014), reported that, the reduction of severe malaria incidence in vaccine recipients was 46% among children and 27% among infants who received all planed doses of RTS/AS01. And improvement in access to ITNs and their use vary considerably between different geographical areas. In 2005, the proportion of the population sleeping under an ITN was generally low, with only six countries achieving coverage levels greater than 20%. In particular in large countries with a high burden of malaria by 2010, substantially progress had been made, although few areas had been made, although few areas had more than half of the population protected by ITNs.

2.3.2 Diagnostic test for malaria

The proportion of suspected malaria cases receiving a malaria diagnostic test has increased markedly since 2010, especially in Africa. (World malaria Report, 2014).WHO recommends that, all persons in all epidemiological settings with
suspected malaria cases should be examined for evidence of infection with malaria parasite by either microscopy or RTD.

2.4 Self-medication trend

It has been found that, overall 616 (>97%) of the study households acted to manage malaria, including the use of anti-malarial drugs at home (112, 17.8%), visiting health services after taking medication at home (294, 46.7%) and taking malaria patients to health care facilities without home treatment (210, 33.3%) (Wakgari et al, 2003). In addition, Wakgari et al found that, although 406 (64.5%) of the households initiated treatment at home, the use of modern drugs was higher (579, 91%) than the traditional medicine.

Tanzania is among the Sub Saharan countries with a huge burden of malaria diseases which have contributed to self-medication with anti-malarial drugs. In the study conducted by Chipwaza et al, (2014), the results show that self-medication was common practice among participants. The common reported reasons for self-medication were shortage of drugs at health facilities, long waiting time at health facilities, inability to pay for health care charges and the freedom the preferred drugs.
CHAPTER THREE
METHODOLOGY

3.1 Introduction
The chapter comprises the following sub titles, research design, study area, sample and sampling technique with its subtitle of target population, sample size, and sampling technique, source of both primary and secondary data, data collection methods, pre-testing of data, data processing and analysis, ethical consideration, limitation of the study and strength of the study.

3.2 Study design
The researcher used cross sectional descriptive method following the mixed scan approaches (quantitative and qualitative) research design. In this two hundred (200) questionnaires were randomly distributed to community residence and fifty (50) questionnaires were randomly distributed to different health care facilities for health workers. Both community members and health workers questionnaires have the same contents. However, the community members’ questionnaires were translated into Kiswahili language. Furthermore, three (3) groups of fifteen (15) participants were randomly selected from three shehias namely Miembeni, Kikwajuni and Kilimani within a study area. Three (3) research assistants were selected to make follow up for questionnaire to both private and Government health institutions in Urban district from January to March, 2015. The choice of the study design considered the cost effectiveness, valuable for health planners and hence, among the specific objective of the study was to measure the distribution and the burden of the self-medication practice.

3.3 Questionnaires’ distribution
200 questionnaires were distributed to five shehias of Urban district namely Kikwajuni juu shehia, Kikwajuni bondeni shehia, Miembeni shehia, Mlandege shehia and Mpendae shehia. Respondents were randomly selected from each shehia, 198 questionnaires returned to researcher from five (5) research assistants. 169 (84.5%) questionnaires were full filled, 27 (13.5%) were not full filled and 2 (1%) were not returned. While50 questionnaires were distributed to different health
facilities where by 46 questionnaires were returned to researcher. 3 (6.25%) questionnaires out of 46 questionnaire were not full filled and 43 (93.47%) were full filled. Therefore, the study involved 212 respondents for questionnaires thus were used for analysis.

Figure 3.1: Shehia\textsuperscript{1} used in Sample Survey

Source: Field data, March, 2015.

3.4 Study area
The study was conducted at Urban district in Unguja Island of Zanzibar. This is among the two (2) districts of Urban/ west region. The district is well connected with other districts such as in northern; the district connected to north “B” district which lies in North region, southern; the district connected with Central district which lies in South region, at the west the district connected with its partnership West district which both Urban and West districts are found in Urban/West region and at the east the district connected with large area of Indian ocean which serve the sea rout to Pemba Island and Dar-es-laam city of Tanzania mainland. Administrative the district is divided into forty shehias (wards).The district holds the large and old city of Zanzibar (Stone Town city) which is very famous for tourism activities around the world.

\footnote{Shehia is mainly used in Zanzibar to mean Ward in Tanzania Mainland}
The district had the population of 254,363 (National population census 2012) whereby 124,540 males and 129,828 females, under five year’s children were 86,557. The major economic activities in Urban District are Government employment, private sector employment, commercial, tourism, fishing and other self-employment such as carpentry, civil engineering, mechanical engineering and other small business. However the majority of populations are medium economic class. The study area was chosen on the bases of research assistants, and simple to collect valid data since the researcher is familiar with many health institutions and the complexity (uncertainty) to the problem.
3.5 Sample and sampling technique

3.5.1 Study population

The study target population was household members (inhabitants) of Urban district, both females and males, adults with the age range from 18-64 years old. The study participants were selected purposely since they were likely potential to self-medication practice and to reduce information and personnel bias. The study excluded people above 64 years old and below 18 years old since their decisions might be influenced by their care givers.

3.5.2 Sample size

The following formula was used to calculate the sample size required in this study.

\[ N = \frac{P (100\% - P)}{(SE)^2} \]

Where:

N = sample size.
P = the estimated percentage of population.
SE = standard error.

Since a researcher used 95% confidence interval, therefore standard error was +/- 5% divided by 1.96 which was equal to 2.55 therefore the standard error was equal to 2.55

Since the estimated proportion was not known in hence there was no previous study conducted then the estimated population assuming was equal to 50%.

Therefore solution from the above formula

\[ N = \frac{50 (100 - 50)}{(2.55)^2} \]
\[ = \frac{50 (50)}{6.5025} \]
\[ = 2,500 \]
\[ = 384 \]

N = 384 therefore the sample size in this study was 384 inhabitants.
3.4.3 Sampling technique

Purposive, convenient and simple random sampling techniques were used where by five shehias were selected by simple random sample out of forty shehias with in district namely Mpendae shehia, Miembroi shehia, Mlandege shehia, Kikwajuni juu shehia and Kikwajuni bondeni shehia. Then each member from the Shehia was by 169 residents participated in filling the questionnaires. And twelve (12) health facilities in district were randomly selected to participate in filling questionnaire for health workers. Finally, three (3) groups of fifteen (15) participants from three (3) shehias were used in the study to focus group discussion (FGD). FGD interview was conducted after collection of questionnaires to complete the data collection process to total 257 respondents.

3.6 Data collection method

3.6.1 Questionnaire

In data collection process a researcher used questionnaires to collect quantitative data. Questionnaires were given to both community residence and health workers so as to reduce bias of the interviewer and to provide enough time to respondents to give well thought out answers. Questionnaires were distributed by a researcher and research assistants where by five (5) research assistants were asked to distribute within the study area. The filled questionnaires collected by research assistants.

The questionnaires compromised five (5) parts that solicited information about personal data of the respondents, the availability of anti-malarial drugs, the level of knowledge on the consequences on self-medication with anti-malarial drugs, the influence economic status on self-medication, and part E the accessibility of anti-malarial drugs within district. However, questionnaire for the community residence were translated into Kiswahili version to ease the understanding of the respondents.

3.6.2 Focused group discussion

Focused group discussion was one of the methods used to collect data from qualitative data so as to reasoning and to grasp detail information concerning self-medication from the proceeded quantitative data collected form questionnaires. The
discussion was conducted to community residence only where three (3) groups of fifteen participants per each group were randomly selected from three shehias namely Miembeni, Kikwajuni and Kilimani. A digital voice recorder was used to record discussion (EETPAD) and then the information was stored in computer system. The key information which was discussed during interview including general knowledge on malaria disease, information about treatment seeking trends and participants comments on toward self-medication practice.

3.7 Pretesting of data
Ten (10) samples of questionnaires were distributed to five community residents out from the study population and five were given to Mnazi Mmoja hospital health workers to countenance some corrections so as to increase the efficiency in collecting data from the study sample size. Respondents were asked to fill the questionnaire and also were asked to correct spelling error. Some corrections were made to improve the efficiency of questionnaires.

3.8 Data processing and analysis
In order to perform and maintain quality data control, all information was proper collected and recorded from the field and then stored in computer system. Information from group discussion interview was recorded by using digital voice recorder and then stored in the computer systems before the response been written to papers and lastly were interpreted. EpiData software was used for data entry process for questionnaire and then analysis was computerized by using Microsoft excel. The data was interpreted by using tabulation with the detail explanation. A researcher found computer technician from Ministry of health Zanzibar to assist in running Epidata program so as to provide clear and effective information and tabulation.

3.9 Ethical consideration
Prior to study ethical approval was requested to the Directorate of Post graduate studies and Research Publication during proposal submission. Also the District authorities under the second Vice President office was consulted, then district
commission, Government statistician and local Government leaders (village and street leaders) to ask for permission. Study participants were voluntary included in the study after informing them the aim and objective of the study. Participants were not asked to mention their names during interview even in the questionnaire to ensure confidentiality. And verbal consent was considered from the participants before interviewing.

3.10 Limitation of the study
The study was not able to accumulate the respondents according to the calculated sample size. 127 respondents were missed, this is due to rain season during data collection it was very difficult to reach other study area; this might decrease the study reliability. However, a researcher was able include total of 257 respondents from the study population. And finally but not least, the main challenge in this study was financial constraints.

3.11 Strength of the study
The sample size was big enough to draw conclusion from the study population. And a researcher used multiple methods of data that increases the validity and reliability of the study findings.
CHAPTER FOUR
RESEARCH FINDINGS AND ANALYSIS

4.0 Introduction
This chapter represents findings and analysis of empirical data. The findings were analyzed in response to research objectives and research questions. The objectives of this study were to answer four questions; exploration on the availability of anti-malarial drugs, assessment of the level of knowledge on the consequences of self-medication, assessment of the economic influences of self-medication for anti-malarial drugs and exploration on the level of accessibility of anti-malarial drugs. The data of these findings were gathered by using questionnaires and focused group discussion, where by questionnaires were distributed to both health workers and community inhabitants, while the focused group discussion conducted to community only.

4.1 Characteristics of respondents
Total respondents were 257, whereby female respondents were 158 (61.47%) and male respondents were 99 (38.52%). Out of 257 respondents, 43 (16.73%) respondents were health workers from different health facilities such as Government hospitals, private hospitals, dispensaries, pharmacies and OTCs while 45 (17.50%) were community residents who participated in FGD and 169 (65.75%) were community residents who participated by filling questionnaire.
Figure 4.1: Shows the Respondents’ Sex

<table>
<thead>
<tr>
<th>Value</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dispensaries</td>
<td>2</td>
<td>16.66%</td>
</tr>
<tr>
<td>Pharmacies</td>
<td>3</td>
<td>25%</td>
</tr>
<tr>
<td>Government hospitals</td>
<td>4</td>
<td>33.33%</td>
</tr>
<tr>
<td>Private hospitals</td>
<td>3</td>
<td>25%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>12</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Field data, March, 2015.

4.1.1 Respondents by age

To improve participation in the FGD the sensitive issue were tried to avoid for the sake of conformability, therefore the participants were not asked to mention their age in the discussion. However, the study the respondents’ age were observed based from questionnaire respondents, whereby out of 212 respondents 65 (31%) were at the age group of 25-30yrs, 50 (24%) of respondents were at the age group of 31-40yrs, 43 (20%) of respondents were at the age group of 18-24years and 31 (15%) respondents were at the age group of 41-50yrs, these age groups were the major groups in the study while the rest age group were less dominant as shown in the figure 4.2. Data
indicates that the majority of respondents were range from 18-50yrs respondents who are the most interest age group the study.

**Figure 4.2: The Respondents’ Age**

![Figure 4.2: The Respondents’ Age](image)

**Source**: Field data, March, 2015.

4.1.2 Respondents marital status

There was no exclusion criterion by marital status in the study therefore; the study involved all respondents of different marital status to reduce the chance of bias. With the exception of FGD participants who were not asked to mention their marital status. 107 (50%) respondents were married while 76 (36%) respondents were single and 29 (14%) were divorced as shown in the figure 4.3.
4.1.3 Respondents by education level

Out of 212 total respondents, 6 (2%) were primary school leavers, 77 (36%) were secondary school leavers, 33 (16%) were certificate graduate, 67 (32%) were diploma graduate, 25 (12%) were undergraduate, and 4 (2%) were postgraduate as shown in the figure 4.4. Data indicates that, many of respondents were range from certificate education level to masters level which is equal to 129 (60.84) respondents if they were sum up. However, the dominant group were secondary leavers who were 77 (36%) of respondents.

Source: Field Data March 2015
4.1.4 Respondents by Occupation

96 (45%) of respondents were Government workers, 46 (22%) of respondents were employed in private institutions, 36 (17%) of respondents were business men, 3 (1%) of respondents were farmers, while 3 (1%) of respondents were veterans and 28 (13%) as shown in figure 4.5 below. Data indicate that most of respondent were workers of both government and private institution, while another business men were the third majority group from respondents. However, 28 (13%) of respondents were non employed form any of the above institution and the minority groups of respondents in this study were farmers and veterans whereby, they were 3 (1%) and 3 (1%) respectively.
4.1.5 General knowledge on malaria

This study intended to determine the level of understanding about the general knowledge and awareness of respondents. Respondents were asked to explain their understanding on malaria disease. The majority of respondents 159 (75%) out of 212 were able to associate it with mosquitoes and malaria parasite. On another hand, when they were asked on eligible criteria to use anti-malarial drugs (80%) were able associate it with positive laboratory results for malaria parasite, 32 (15%) said the right time to use anti-malarial drugs is when they feel signs and symptoms and 10 (5%) when they have fever as shown in Table 4.2.

Furthermore, FGD participants were also knowledgeable on causes and mode of transmission of malaria disease. The FGD participants were able to associate malaria with malaria parasite and mosquitoes. One among the FGD participants defined malaria as;

“*Malaria is a disease caused by plasmodium and is transmitted through infected anopheles mosquitoes*” [PT, 28, Kilimani, 2015].

However, another FGD participant defined malaria as

“*a disease caused by malaria mosquitoes*”. [PT, 07, Miembeni, 2015].
On another hand most of FGD participants were aware on the criteria to use anti-malarial drugs as one of the participants stated that,

“I prefer to go to the hospital for blood testing so as to confirm as really I suffered from malaria” [PT, 03, Miemberi, 2015].

Table 4.2: Criteria to used by respondents to use anti-malaria drugs.

<table>
<thead>
<tr>
<th>Variable: Which condition is eligible to take anti-malaria drugs</th>
<th>Code</th>
<th>Value</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td></td>
<td>If you feel fever.</td>
<td>10</td>
<td>5%</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>If you feel signs and symptoms of malaria.</td>
<td>32</td>
<td>15%</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>If laboratory results reveal malaria positive.</td>
<td>170</td>
<td>80%</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td><strong>212</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Source: Field data, March 2015.

4.2. Availability of anti-malaria drugs

Assessing the availability of anti-malarial drugs was one of the objectives of this study. The first question of interest of this study was at what extent the availability of anti-malarial drugs influence self-medication. One of the indicators was to examine the availability of anti-malarial drugs in sufficient quantity among the health facilities of Urban district. More than half of respondents 118 (56%) reported that, anti-malarial drugs are sufficiently available specifically in government hospitals, while 56 (26%) at pharmacies and 38 (18%) at private hospitals as shown in Table 4.3.

Table 4.3: Assessment on the availability for anti-malarial drugs

<table>
<thead>
<tr>
<th>Q12: Where malaria drugs are available in sufficient quantity?</th>
<th>Feasibility</th>
<th>Government Hospital</th>
<th>Private hospital</th>
<th>Pharmacy</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>118</td>
<td>38</td>
<td>56</td>
<td>212</td>
<td></td>
</tr>
<tr>
<td>Percent</td>
<td>56%</td>
<td>18%</td>
<td>26%</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

Source: Field Data March 2015

Parallel to that to that respondents when asked to rank on the availability of malarial drugs in sufficient quantity in Government health facilities, 81 (38%) of respondents agreed, 27 (13%) respondents strongly agree, while 45 (20%) of respondents strongly disagree, 40 (19%) of respondents disagree and 21 (10%) of respondents were unable to decide as shown in figure 4.6 below.
Figure 4.6: Respondents’ ranking on the availability of anti-malarial drugs in government health facilities

Source: Field data, March 2015.

From both tables 4.3 and figure 4.6, data shows that the respondents have awareness on the availability of anti-malarial drugs in government health facilities.

During FGD, it was also revealed by respondents that, anti-malarial drugs almost are available in all health facilities where in public health facilities most of participants appreciate good availability. However, participants were still treated themselves with anti-malarial drugs instead of the drug availability based on their own wishes as one of participants stated that;

“It is true that anti-malaria drugs are available in public health facilities but it is only ‘mseto’ (tabartesunate and tab amodiquine) which have a lot of consequences, thus why we prefer to go to the pharmacies or dispensaries where we can buy the suitable drugs” [PT, 39, Kikwajuni 2015]. In addition, another participant stated that; “I prefer to go the pharmacy because I leave nearby it and there is no congestion” [PT, 20, Kilimani 2015].
4.3 Examination of knowledge on consequences of self-medication for anti-malarial drugs

The second interest question of this study was to what extent the community is knowledgeable on the consequences of self-medication for anti-malarial drugs where by three variable indicators were used for this question.

4.3.1 Examination on the knowledge of malaria treatment

133 (63%) of respondents said yes they understand the malaria treatment and 79 (37%) of respondents said they do not understand the treatment as shown in table 4.4 below. However, the respondents who said “yes” they understand malaria treatment were asked to explain on the malaria treatment where by 106 (79.69%) out of 133 who said “yes’ were able to mention and associate it with drugs used to treat malaria disease.

Table 4.4: Respondents’ understanding on malaria treatment

<table>
<thead>
<tr>
<th>Value</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>133</td>
<td>63%</td>
</tr>
<tr>
<td>No</td>
<td>79</td>
<td>37%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>212</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Field data, March 2015.

Parallel to that, (86%) of FGD participants also were able to associate it with drugs used to treat malaria disease such as quinine, fansidar, duo-cotexin as one participant stated that, “anti-malarial drugs are drugs used to treat malaria disease such as mseto”[PT, 17, Kilimani 2015]. However, some of participants were not able to differentiate between malaria treatment and malaria prevention methods. As one FGD participants stated that;

“We can treat malaria disease by eliminating stagnated water, cutting long grasses, clean our environment and by using insecticide nets during sleeping.”[PT, 42, Kikwajuni 2015].

---

3Mseto means combination therapy of anti-malaria drugs (tab artisunate& tab amodiaquine).
4.3.2 Examination on the knowledge of the consequences of self-medication

122 (58%) of respondents agree as self-medication for anti-malarial drugs is harmful and 90 (42%) of respondents they disagree as self-medication is harmful as shown in figure 4.7. However the interested issue observed during the FGD, on perception of harmful toward self-medication majority of FGD participants believed there was harmful effects toward self-medication practice. One participant stated that;

“There was harmful because the drugs may cause itching, blurred vision, burning of the skin, vomiting and body weakness” [PT, 22, Kilimani, 2015].

Whereby they were able to associate it with Steven Johnson syndromes while the other group (opposes) believed there was no harmful effects as one among the participants stated that;

’I don’t believe as there is problem on it, because many people use anti-malaria drugs without medical consultation and they recover without any complication.’[PT, 23, Kilimani, 2015].

The data indicates that, respondents were knowledgeable on consequences of self-medication even though there were (42%) respondents who had no knowledge on the consequences of self-medication with anti-malarial drugs.

Figure 4.7: Respondents’ perception toward self-medication and harmful

Source: Field data, March, 2015.
4.2.8.3 Examination on experience of harmful on malaria drugs
124 (58%) of respondents had no experience on the harmful of the malarial drugs either by themselves or by seen the clients or patient while 88 (42%) had experience on harmfulness as shown in figure 4.9 below. And all 88 respondents who had experience on side effects of anti-malarial drugs were able to associate it with the signs and symptoms of Steven Johnson Syndrome.

**Figure 4.8: The Respondents’ Experience on consequences of anti-malarial drugs.**

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Percent</strong></td>
<td>42%</td>
<td>58%</td>
</tr>
<tr>
<td><strong>Frequency</strong></td>
<td>88</td>
<td>124</td>
</tr>
</tbody>
</table>

**Source:** Field data, March, 2015.

4.2.8.4 Examination on proper method for seeking malaria treatment
142 (67%) of respondents argue that the proper method for treatment of malaria is to seek medical consultation from Government health facilities and 53 (25%) respondents preferred to seek medical consultation in private hospital while 11 (5%) respondents were prefer to buy anti-malaria drugs in the pharmacy, 2(1%) were prefer to use anti-malarial drugs which has been stored at home and 4 (2%) were prefer to use herbal medicine as shown in table 4.5 below. Data shows that respondents are aware on the appropriate method for malaria treatment.
Table 4.5: Examination on understanding proper method for malaria treatment

<table>
<thead>
<tr>
<th>Value</th>
<th>Frequency</th>
<th>Percent</th>
<th>Frequency</th>
<th>Percent</th>
<th>Frequency</th>
<th>Percent</th>
<th>Frequency</th>
<th>Percent</th>
<th>Frequency</th>
<th>Percent</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>To seek medical consultation from government health facilities</td>
<td>142</td>
<td>67%</td>
<td>53</td>
<td>25%</td>
<td>11</td>
<td>5%</td>
<td>2</td>
<td>1%</td>
<td>4</td>
<td>2%</td>
<td>212</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Field data, March, 2015.

4.2.9 Determination of the economic influence on self-medication

The fourth interest objective of this study was to assess the economic status can lead to self-medication for anti-malarial drugs. To assess these four indicators, the first one the respondents were asked to provide their comments on the cost of anti-malarial drugs in health facilities. 113 (53%) respondents said the cost was moderate, 39 (18%) respondents said the cost was cheap, 30 (14%) respondents said the cost was very cheap while 15 (7%) respondents said the cost was very expensive and 15 (7%) respondents said the cost was expensive as shown in table 4.6. The data shows that most of respondents afford to pay the cost of anti-malarial drugs.

Table 4.6: Respondents opinion on the cost of anti-malarial drugs in health facilities

<table>
<thead>
<tr>
<th>Value</th>
<th>Very expensive</th>
<th>Expensive</th>
<th>Moderate</th>
<th>Cheap</th>
<th>Very cheap</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>15</td>
<td>15</td>
<td>113</td>
<td>39</td>
<td>30</td>
<td>212</td>
</tr>
<tr>
<td>Percent</td>
<td>7%</td>
<td>7%</td>
<td>53%</td>
<td>18%</td>
<td>14%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Field Data March 2015

On top of that, FGD participants were also asked to provide their comments on the cost of anti-malarial drugs in health facilities, majority of FGD participants said the cost was very cheap, and few of FGD participants said the cost were expensive as one participants stated that,

“actually, the cost of anti-malarial drugs is not expensive, provided that these drugs are offered free in public health facilities so even in dispensaries and pharmacies almost the cost is affordable” [PT, 08, Miembeni, 2015].
The study findings indicate that, the cost of anti-malarial drugs is affordable to most respondents. Therefore the cost of anti-malarial drugs not influences self-medication practice due to expensiveness; however the cost was influence self-medication practice due to its cheapness in pharmacies, OTCs and dispensaries.

4.2.9.1 Assessment of poverty toward self-medication
74 (35%) of respondents agreed as poverty influence self-medication with anti-malarial drugs, 27 (13%) respondents strongly agree, while 51 (24%) respondents were disagree as poverty influence self-medication with anti-malaria drugs, 31 (15%) respondents were strongly disagree as poverty influence self-medication with anti-malarial drugs and 29 (14%) respondents were un able to decide as shown in figure 4.10. Data indicate that, poverty influence on self-medication practice for anti-malarial drugs.

Further, respondents were asked to reason out their responses, whereby both who agreed and strongly agreed as poverty influence self-medication with anti-malarial drugs their main reason was due to lack of affordability to pay other health services cost, such as fees for medical consultation, fees for laboratory charges. As one among respondents stated that;

“Most of Zanzibar citizens are poor so they can’t pay the cost of health services, thus why they decide to buy anti-malarial drugs from any OTCs or pharmacies” [Respondent, 34, Kikwajuni, 2015].

While those who disagree and strongly disagree as poverty influence on self-medication with anti-malarial drugs their main reason was due to availability and free offered of anti-malarial drugs in public health facilities. As one respondent stated that;

“Anti-malaria drugs are offered free and there are enough because government is in the process of eradicating malaria disease in Zanzibar”[Respondent, 43, Mpendae, 2015].
4.2.10 Examination on the accessibility of anti-malaria drugs in health facilities

The last interest objective of this study was to assess on the accessibility of anti-malarial drug influence on self-medication. Two indicators were used to answer the question. The first one, the respondents were asked to select the health facility by which anti-malarial drug was very easy to access. Where by 119 (56%) of respondents selected public hospitals as there was easy accessibility of anti-malarial drugs, 58 (27%) respondents selected pharmacies as were easy to access anti-malarial drugs and 35 (17%) respondents selected private hospitals as shown in table 4.7.

<table>
<thead>
<tr>
<th>Value</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacies</td>
<td>58</td>
<td>27%</td>
</tr>
<tr>
<td>Private</td>
<td>35</td>
<td>17%</td>
</tr>
<tr>
<td>Public hospitals</td>
<td>119</td>
<td>56%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>212</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Field Data March 2015
However, during FGD participants were also asked to provide their opinion on which health facilities anti-malarial drugs were easy accessible. Majority of FGD participants said anti-malarial drugs were easily accessible at both pharmacies and dispensaries. As one respondent stated that,

“Anti-malaria drugs are easily accessible in pharmacies because there is no waiting time just I pay and take my pills” [PT, 14, Miembeni, 2015].

While the rest said the drugs were easily accessible at public health facilities. As one respondent stated that;

“Anti-malaria drugs are easily accessible at public health facilities because there is no cost for drugs” [PT, 44, Kikwajuni, 2015].

4.2.10.2 Determination of practical

Finally, both FGD participants and questionnaires respondents were asked to mention their usually practice when they feel fever. Out of 257 total respondents, 125 (49%) of respondents were preferred to use government health facilities, while 75 (29%) were preferred to private hospitals and 57 (22%) were preferred to buy anti-malarial drugs at pharmacies as shown in figure 4.11. Data indicate that, majority of respondents were use public health facilities, however there are still large number who were use anti-malarial drugs without medical consultation.

**Figure 4.11: Respondents’ practice on seeking malaria treatment**

![Graph showing practice on seeking malaria treatment](source: Field Data March 2015)
CHAPTER FIVE
DISCUSSION

5.0 Introduction
Self-medication is a very common practice in the world in both developing and developed countries. Concerning on anti-malarial drugs the practice has become familiar particularly in Sub- Saharan countries where malaria disease still remain the number one in top ten disease in most of these countries. Various recent studies indicate that self-medication is practiced significantly worldwide even though its type, extent and reasons may vary (Gutema et al, 2011). In this chapter, study findings will draw factors identified that are responsible for self-medication practice to the residence of urban district in Zanzibar.

5.1 General knowledge on malaria
This study indicates that, most of residences are knowledgeable on the causes, and treatment of malaria disease. Majority of the respondents showed an understanding on the causative agent for malaria. More appealing, they were able to associate it with malaria parasite and female mosquitoes. In addition, the study found that majority of the study participants was able to associate the criteria for malaria treatment with laboratory results positive for malaria parasite. These finding concurred with the study conducted in Bolgatanga municipality in Northern Ghana where the study findings indicate that, majority of survey respondents 96.9% knew the symptoms of malaria. 75% knew the cause of malaria and 93.1% were aware on the mode of malaria transmission (Aborah, et al, 2013).

5.2 Assessment on the availability of anti-malaria drugs
Generally, the study revealed that, anti-malarial drugs were available in public health facilities, in pharmacies, and in private health facilities. These data indicate that, anti-malarial drugs are available in sufficient quantity at all health facilities of Urban district. Therefore self-medication was not influenced due to lack of availability of anti-malarial drugs in public health facilities. These results are consistent with the
study conducted at malaria holoendemic region of western Kenya (Watsierah, et al, 2010).

However, self-medication was influenced due to lack of drug of choices for anti-malarial drugs. (37%) of total respondents were associate self-medication with lacking of drugs of choices, as the same finding was reported in qualitative data. Similarly in the study done at Kilosa district in Tanzania, the findings had shown that the participants preferred self-medication practice due to freedom of choosing drugs of their choice. “Some participants said that if they go to pharmacies/drug shops they were able to make decision on which drug to use”. (Chipwaza et al, 2014).

5.3 Respondents’ awareness on consequences of self-medication

Concerning the awareness of respondents on consequences of self-medication 58% of respondents were aware and agreed as self-medication with anti-malarial drugs cause harmful where they were able to associate it with Steven Johnson syndromes. While 42% of respondents were not aware about the consequences of self-medication with anti-malaria drugs. Data indicate that, most of respondents are aware on the consequences pertaining self-medication for anti-malarial drugs, however still there are large number of respondents who are not aware. Lack of awareness on harmful associated with self-medication influence respondents to use anti-malarial drugs without medical consultation. This result is slight low compared to the finding of the study done at Makelle University where by 84.40% of respondents had knowledge about possible adverse effects of drugs (Gutema et al, 2011).

Parallel to that, respondents were asked on their experience on adverse reaction of anti-malarial drugs either by themselves or by seen others. 58% had no experience of adverse reaction toward anti-malarial drugs and 42% had experience of adverse reaction toward anti-malarial drugs. This study finding is inconsistent to the study done at Kolladiba Town, North West Ethiopia which the study findings revealed that, the majority of respondents 75.3% had good knowledge about the side effects of the drugs (Abrha et al, 2014).
5.4 Respondents’ awareness on appropriate method for malaria treatment

67% of respondents were aware on proper method for malaria treatment as they preferred to seek medical consultation from public hospital and 53 25% also were aware on proper method as they preferred to seek medical consultation to private health institutions, while 5% preferred to buy anti-malaria drugs at pharmacies, 2% respondents preferred to use herbal medicine and 1% of respondents preferred to use the drugs which has been stored at their homes. This findings indicate that majority of respondents were aware that a proper method to treat malaria is to seek medical consultation before use drugs. However, they were respondents, who prefer to use anti-malarial drugs or other form of medicine without medical consultation. This findings is consistent to the study findings done at kabale district in Uganda which revealed that, most of respondents 80.9% thought malaria was best treated at government health facilities, 16.7% respondents preferred clinics and only 1.0% cited home or a traditional healers (Tumwazingire and Watson, 2002).

5.5.1 Determination of economic influence on self-medication

Respondents were asked to provide their comments on the cost of anti-malarial drugs in health facilities, 53% of respondents said the cost was moderate, 18% of respondents said the cost was cheap, 14% respondents said the cost was very cheap, while 7% and 7% of respondents said the cost was expensive and very expensive respectively. The data indicate that, the cost of anti-malarial drugs was affordable to most respondents. Study findings show the affordability of respondents is high compared to the study done at Urban Dwellers in Abeukuta in Nigeria which findings revealed that, 36.86% preferred choice of anti-malarial drugs because they could afford the price (Omole and Onademuren, 2010).

In addition, both questionnaire respondents and FGD participants were asked to associate the cost of anti-malarial as influence to self-medication. Majority of FGD participant said no, the cost of anti-malarial drugs does not influence on self-medication practice, while 26% of respondents said yes, the cost of anti-malarial drugs influences on self-medication and 3% were unable to decide. However, during
FGD interview was noted that, the cost was influence due to its cheapness and not expensiveness as same findings was reported in qualitative data.

**5.5.2 Assessment of poverty toward self-medication**

74 (35%) of respondents agreed as poverty influence on self-medication practice, 27 (13%) respondents strongly agreed as poverty influence on self-medication while 51 (24%) respondents disagree, 31 (15%) strongly disagree as poverty influence on self-medication practice and 24 (14%) were un able to decide. These findings indicate there is positive association between poverty and self-medication practice as total of 48% of respondents agreed that poverty influence self-medication practice while total of 39% of respondents disagreed. This finding is consistent to the study done at Nigerian city where the study findings revealed that, there was strong correlation between hospital/clinic visitation and higher economic status (Jombo et al, 2010).

**5.6 Accessibility of anti-malaria drugs and self-medication**

The study finding shows that most of respondents believed on public health facilities as there were easy accessibility of anti-malarial drugs (56%). However, there were 58 (27%) of respondents who believed at pharmacies there were easy accessibility and 35 (17%) of respondents believed at dispensaries there were easy accessibility of anti-malarial drugs. Data indicates that, even though majority of respondents were rely on public hospitals to seek anti-malarial drugs but still there were number of respondents (27%) who rely on pharmacies to seek anti-malarial drugs. This finding is similar to the study done at Urban Dwellers in Abeukuta which the findings revealed that, place if purchase could also interfered with behavioral pattern of respondents to anti-malaria drugs use. Drugs purchased from hawkers or market places could be detrimental to health. A total of 32.29% respondents purchased their drugs from chemist and friends. Also it has been observed that in Africa unregistered shops like patient medicine shops, drug hawkers are the main source of anti-malarial drugs (Omole&Onademuren, 2010).

---

3 Dispensaries are private health clinics/centers in Tanzania Zanzibar.
5.7 Respondents’ self-medication practice
The last interested question in this study is to observe at what extent the respondents were practice self-medication with anti-malarial drugs. Fortunately, self-medication with anti-malaria practice was not much practiced by respondents (22%) compared by respondents who preferred to seek medical consultation who were 49% respondents preferred to public health facilities and 29% preferred to seek medical consultation private health facilities. This study finding indicate that, the use of non-prescribed drugs is little high compared to the study conducted at in the Bolgatanga municipality in Northern Ghana where the study finding revealed that 16.8% among respondents were use non prescribed anti-malarial drugs (Aborah et al, 2013). However, the current study findings on self-medication (22%) is inconsistent with the study findings done at rural coastal community of Tanzania, which the study findings revealed the prevalence of self-medication was found to be high at 44.2% (Kigodi and Komanya, 2006).

5.8 General study findings
Generally, the study findings show that, most of urban district residents prefer to seek medical consultation before taking medication. However, self-medication was practiced to large extent. According this study finding the main reasons which influence self-medication practice were; lack of drug choice for anti-malarial at public health facilities, long waiting time for health services, presence of many pharmacies and OTCs which dispensing the drugs without prescription, cost affordability for anti-malarial drugs in pharmacies/OTCs and payment on the cost of other charges of health services.

Based on current study findings, a researcher reject null hypothesis and accept alternate hypothesis.

\[ H_1 = \text{lack of drug choices for anti-malarial drugs at public health facilities contributes to self-medication practice for anti-malarial drugs.} \]
CHAPTER SIX
SUMMARY CONCLUSION AND RECOMMENDATION

6.1 Summary
This study examined factors influencing self-medication practice with anti-malarial drugs and its frequency at Urban District in Zanzibar. Specifically, the study examined the availability of anti-malarial drugs from health care facilities including both public and private hospitals, pharmacies, and OTCs within district, assessed the respondents’ level of knowledge on the consequences of self-medication practice, also assessed economic influences on self-medication with anti-malarial drugs and lastly, examined the accessibility of anti-malaria drugs within the community.

With regard factors influencing self-medication, lack of drug choices for anti-malarial drugs at public health facilities, availability of many pharmacies, OTCs, dispensing anti-malarial drugs without prescription from pharmacies, OTCs, and dispensaries, payment cost of health services and other charges at both public and private hospitals, long waiting for health services within public health facilities, miss trust of public health facilities on the current malaria status and poverty.

22% of respondents were practiced self-medication. Surprisingly, out of those 22% respondents most of respondent were recovery soon after taking the drugs without serious adverse reaction. However, the adverse reactions not necessary observed soon after taking medication it can take several days to develop some of the adverse reaction which might be the respondents are potential to are drug resistance, renal failure and liver failure.

6.2 Conclusion
Based on the findings, it can be concluded that, with the exception of the community knowledge about the consequences of self-medication, all other variables i.e. availability of anti-malaria drugs, economic and accessibility of anti-malaria drugs influenced self-medication practice. Knowledge on the consequences were not influenced self-medication because the majority of respondents were aware with
consequences associated with the practice, however they were not much experienced the adverse reaction of anti-malaria drugs.

6.3 Recommendation

This study recommends the followings:

1. Health education should be promoted and provided with regards to the adverse effects of practicing self-medication.

2. The government should introduced/implement policies that will aim at restricting health care providers to dispense anti-malarial drugs without medical doctors’ prescription.

3. Ministry of health should strength supportive supervision to private dispensaries, pharmacies, OTCs and patient drug shops so as to ensure those health facilities are strictly follow the rule of dispensing medicine.

4. Ministry of health and its collaborators departments, institutions and hospitals should improve the quality of health care services in public health care facilities, to increase customer satisfaction.

5. The government should promote awareness to the community about the current trends of malaria disease including the National success and challenges in fighting against malaria disease.

6. The government through Ministry of health must ensure that, the private health sectors should adopt with the National malaria treatment guide lines approved by ministry of health.
REFERENCES


APPENDICIES

Appendix 1: Letter to the respondents

INTRODUCTION

Dear respondents,

My name is Abubakar Khamis Hamadi. I am students pursuing Master of Health Systems Management at Mzumbe University. I am conducting study titled “Self-medication of anti-malarial Drugs in Zanzibar. A Case study of Urban District. The research study is one of the requirements for the fulfillment for the award of Master of Health Systems management of Mzumbe University.

You are kindly requested to fill this questionnaire. This study is for academic purpose. You are chosen to participate in this study because of your valuable knowledge and information that are needed to answer the main research Question. “What factors influence self-medication for anti-malaria drugs? The information will be treated with highest level of confidentiality.
Appendix 2: Questionnaire for health workers

Part A: Personal information

1) Region …………………………………
2) District …………………………………
3) Sex:    Male  Female
4) Age: 18-24years  □  25-30years  □  31-40years  □  41-50years  □  51-60years  □  61 and above years  □
5) Marital status: Married □  Single □  Divorced □
6) Level of education: Primary □  Secondary □  Certificate □  Diploma □  Degree □  Others ……………………………
7) Profession: Pharmacist □  Nurse □  Medical officer □
8) Clinical officer □  other (specify) ……………………………
9) Type of institution you work: Government hospital □  Private hospital □  Dispensary □  Pharmacy □  over the Counter medicine (OTC) □

Part B: Information about the availability of anti-malarial drugs.

1) Are malaria drugs are available in your health facility?  YES □  NO □
2) If No, mention the possible reasons for unavailability of anti-malarial drugs
   …………………………………………………………………………………………………………………………………………………………………
   …………………………………………………………………………………………………………………………………………………………………
   …………………………………………………………………………………………………………………………………………………………………
   …………………………………………………………………………………………………………………………………………………………………
   If the anti-malarial drugs are available, please list at least four brands available in your health facility.
   …………………………………………………………………………………………………………………………………………………………………
   …………………………………………………………………………………………………………………………………………………………………
   …………………………………………………………………………………………………………………………………………………………………

3) Where do you get anti-malarial drugs for your health facility? (You may choose more than one option).
   Central Medical Store (CMS) □
   Medical Store Department (MSD □
   Private pharmacy. □
4) From the sources you have mentioned above, which one is reliable?

…………………………………………………………………………………………

5) Do you think the drugs are supplied according to the quantity requested?

6) YES ☐ NO ☐

If No, mention the possible obstacles?

…………………………………………………………………………………………
…………………………………………………………………………………………
…………………………………………………………………………………………

Where do you think the anti-malarial drugs are available in sufficient quantity?

- Public health facilities ☐
- Private health facilities ☐
- Private Owned-Pharmacies ☐

7) Why do you think anti-malarial drugs are available in sufficient quantity in the organization chosen above?

…………………………………………………………………………………………
…………………………………………………………………………………………
…………………………………………………………………………………………

8) In which condition the patient is eligible to take anti-malarial drugs for treatment in your working area?

- If the patient wants to buy anti-malaria drugs. ☐
- If the patient shows the signs and symptoms of disease like malaria ☐
- If the patient’s Laboratory result reveals malaria parasite is positive. ☐

Part C: information concerning the level of knowledge on the consequences of self-medication for anti-malarial drugs.

10) Have you ever heard about anti-malarial drugs? YES ☐ NO ☐

11) If Yes what is anti-malarial drugs?

…………………………………………………………………………………………
…………………………………………………………………………………………
…………………………………………………………………………………………
12) Do you use ant-malarial whenever you feel malaria symptoms?

Very Frequently □  Frequently □ Occasionally □  Rarely □
Very Rarely □  Never □

13) Do you use anti-malarial drugs without medical doctor’s prescription?

Always □ Very Often □ Sometimes □ Rarely □
Never □

14) The use of anti-malarial drugs without medical doctor’s prescription can cause harm

Strongly Agree □  Agree □  Undecided □  Disagree □  Strongly □
Disagree □

15) If you strongly agree and agree, list the possible negative effects of self-medication

……………………………………………………………………………………
……………………………………………………………………………………
……………………………………………………………………………………

16) Have you met any client/patient suffering from adverse reaction after taking anti-malaria drugs? YES □ NO □

17) If yes, what was the health effect?

……………………………………………………………………………………
……………………………………………………………………………………
……………………………………………………………………………………

18) Which way do you think can be an appropriate method for treating malaria?

Seek medical consultation from health professionals □
To buy anti-malaria drugs at nearby pharmacies/OTCs. □
To use anti-malaria drugs which have been stored at home? □
Part D: To assess the economic influences on self-medication for anti-malaria drugs to urban.

19) What is your opinion of cost of health services in public health facilities?
Very expensive ☐ Expensive ☐ Moderate ☐ Cheap ☐ Very cheap ☐

20) In which facility do you think most of urban district inhabitant can afford to pay the cost of health services?
- Public health facilities ☐
- Private health facilities ☐
- Pharmacies ☐
- Over the counter medicine (OTC) ☐
- Herbal dispensaries ☐

21) The cost of anti-malarial drugs increase the possibilities for self medication
- Strongly Agree ☐ Agree ☐ Undecided ☐ Disagree ☐ Strongly Disagree ☐

22) Poverty in many of the households influences the choice of self-medication without seeking medical advice in the health facilities
- Strongly agree ☐ Agree ☐ Undecided ☐ Disagree ☐ strongly disagree ☐

Part E: Information about the accessibility of anti-malaria drugs within the community of urban.

23) Where do malaria medicines are easily accessible in the following health care facility?
- At government health facilities ☐
- Dispensaries ☐
- Pharmacies ☐
- OTC ☐

24) In your answer above (14), explain why?
...........................................................................................................................................
...........................................................................................................................................
...........................................................................................................................................
25) What should be done to reduce the practice of self-medication for malaria drugs in Zanzibar?

(Thank you)
Appendix 3: Questionnaire for inhabitants

Part A: Personal information

1) Region ………………………………………
2) District ………………………………………
3) Shehia ………………………………………
4) Street ………………………………………
5) Sex: Male □ Female □
6) Age: 18-24 years □ 25-30 years □ 31-40 years □ 41-50 years □ 51-60 years □ 61 and above years □
7) Marital status: Single □ Married □ Divorced □ Widow □
8) Level of education: Primary □ Secondary □ Advance □ Diploma □ Certificate □ Diploma □ Degree □ Others □
9) Occupation: Government employee □ Private employee □ Business □ Farmer □ Fisherman □ Non-employee □ others □

Part B: Information about the availability of anti-malarial drugs.

1) What do you understand about malaria?
   ………………………………………………………………………………………………………………………………………
   ………………………………………………………………………………………………………………………………………
   ………………………………………………………………………………………………………………………………………
   ………

2) In which condition you are eligible to use anti-malarial drugs for treatment?
   When you feel fever □
   When you show signs and symptoms like malaria disease. □
   When Laboratory result reveals malaria parasite is positive. □

3) Do malaria drugs are available in your living area? YES □ NO □

4) There are choice options of anti malarial drugs in public health facilities.
   Strongly disagree □ Disagree □ Cannot decide □ Agree □
   Strongly agree □
Part C: information concerning the level of knowledge on the consequences of self-medication for anti-malarial drugs.

5) Do you understand the treatment for malaria?  YES  □  NO  □
6) If Yes mention;

........................................................................................................................................
........................................................................................................................................
........................................................................................................................................
7) Is there any consequence would someone get after using anti-malaria drugs?  YES  □  NO  □
8) If Yes mention;

........................................................................................................................................
........................................................................................................................................
........................................................................................................................................
9) Have you encounter any client suffering from adverse reaction after taking anti-malaria drugs?  YES  □  NO  □
10) If Yes, how she/ he looked like?

........................................................................................................................................
........................................................................................................................................
........................................................................................................................................

11) Which way do you know as appropriate method for treating malaria?
Seek medical consultation in public health facilities.  □
Seek medical consultation in private health facilities.  □
To buy anti-malaria drugs at nearby pharmacies/OTCs.  □
To use anti-malaria drugs which have been stored at home?  □
To use herbal medicines for the treatment of malaria disease.  □

Part D: To assess the economic influences on self-medication for anti-malaria drugs to urban.

12) Where do you prefer to seek for malaria treatment?
At hospital  □  At dispensary  □  At pharmacy  □  OTC □
13) Why do you prefer to go to the above mentioned health facility?

…………………………………………………………………………………………

…………………………………………………………………………………………

…………………………………………………………………………………………

…………………………………………………………………………………………

14) What is your opinion of cost of health services in public health facilities?

Very expensive ☐  Expensive ☐  Moderate ☐  Cheap ☐  Very ☐  cheap ☐

15) Is there any nearby health facilities in your living area? YES ☐  NO ☐

16) If Yes, what among these you frequent visit for treatment?

Public health facilities ☐

Private health facilities ☐

Pharmacies ☐

OTCs ☐

Herbal dispensaries ☐

17) What transport do you use to travel to health facility for medical consultation?

Walk. ☐

Private transport. ☐

Public transport. ☐

Others, (mention) ...........................

Part E: Information about the accessibility of anti-malaria drugs within the community of urban.

18) Where do malaria medicines are easily accessible in your village?

At government health facilities ☐

Dispensaries ☐

Pharmacies ☐

OTC ☐

Others (mention) .......... .............................

(Rank it from 1-5 in the above boxes provided where by 1 is very easily accessible, 2 is easily accessible, 3 is neutral, 4 is difficult and 5 is very difficult).
19) In your answer above (17), in your preferable ranking number 1; mention the reasons for selecting this as number 1

.................................................................................................................................
.................................................................................................................................
.................................................................................................................................
.................................................................................................................................

20) Give your comments concerning self-medication practice for malaria disease.

.................................................................................................................................
.................................................................................................................................
.................................................................................................................................
.................................................................................................................................

(Thank you)
Appendix 4: Questionnaire translated into Kiswahili language.

*Kwa kutumia dodoso hili fupi, majibu yako yatakwa na msaada mkubwa wa kuondosha maradhi ya malaria Zanzibar. Majibu yako yatatumika kwa ajili ya utafiti huu tu na si vyenginevyo na yatakwa ni siri. Weka alama ya ndio (√) panapohusika.*

Sehemu ya kwanza: Taarifa binafsi

1) Mkoa: …………………………………
2) Wilaya: …………………………………
3) Shehia: …………………………………
4) Mtaa: …………………………………
5) Jinsi: M’m e M’ke □□
6) Umri: Miaka 18-24 □□ Miaka 25-30 □□ Miaka 31-40 □□ Miaka 41-50 □□ Miaka 51-60 □□ Miaka 61 na kuendelea □□
7) Ndoa: Nimeowa/Nimeolewa □□ Sijaowa/Sijaolewa □□ Mjane □□
8) Kiwango cha elimu: Elimu ya msingi □□ Elimu ya sekondari □□ Cheti □□
   Stashada □□ Shahada □□ Nyengineyo ainisha ……………
9) Kazi: Muajiriwa Serikalini □□ Muajiriwa taasis ibinafsi □□
    Mfanya biashara □□ Mkulima □□ Mfugaj □□ Nyengineyo ainisha

Sehemu ya pili: Taarifa zinazohusu uwepo wa dawa za kutibu malaria.

10) Unafahamu nini kuhusiana na ugonjwa wa malaria?
    …………………………………………………………………………………
    …………………………………………………………………………………
    …………………………………………………………………………………

Je ukiwa na hali gani kati ya zifuatazo itakupasa kutumia dawa za kutibu malaria?
Unapohisi unahoma □□
Unapohisi ishara na dalili zinazofana na naugonjwa wa malaria □□
Matokeo ya maabara yanapoonesha kuwa damu yako inavimelea vinavyosababisha malaria □□

11) Je ni wapi dawa za malaria zinapatikana kwa wingi zaidi katika vituko vya afya vifuatavyo ndani ya mtaa unaoishi?
Hospitali za Serikali □  Hospitali binafsi □  Dispensary □  Maduka ya dawa □

12) Dawa za kutibu malaria zinapatikana kwa wingi kwenye vituo vya afya vya Serikali.
   Sikubali sana □  Sikubali □  Sijui □  Nakubali □  Nakubalisana □

Sehemu ya tatu: Taarifa inayohusiana na kiwango cha elimu juu ya madhara yanayopatikana kutokana na utumiaji wa dawa za malaria bila ya ushauri wa daktari.

14) Je unafahamu matibabu ya ugonjwa wa malaria?  NDIO □  HAPANA □
15) Kama ndio, eleza kwa ufupi
       ..................................................................................................................
       ..................................................................................................................
       ..................................................................................................................

16) Je kuna madhara yoyote ambayo mtu anaweza kuathirika nayo kwa kutumia dawa za malaria?  NDIO □  HAPANA □
17) Kama ndio, ainisha.
       ..................................................................................................................
       ..................................................................................................................
       ..................................................................................................................

18) Je ulishawahi kumuona mtu aliepata madhara ya dawa za kutibu ugonjwa wa malaria?
   NDIO □  HAPANA □
19) Kama ndio, elezea dalili na ishara alizokuwa nazo.
       ..................................................................................................................
       ..................................................................................................................
       ..................................................................................................................

20) Je unadhani ni njia gani ni sahihi zaidi ya kufanya kwa kujitibu maradhi ya malaria?
    Kutafuta ushauri wa daktari katika vituo vya afya vya serikali. □
Kutafuta ushauri wa daktari katika vituo vya afya binafsi.  
Kununua dawa za malaria kwenye maduka ya dawa uliyokaribu nayo  
Kutumia dawa za malaria zilizohifadhiwa ndani ya nyumba unayoishi  
Kutumia dawa za asili au za kisunna kama vile za miti shamba

Sehemu ya nne: Taarifa za kiuchumi zinazohusiana na tiba binafsi.

21) Je unakwenda wapi zaidi kwa ajili ya kutafuta tiba ya maradhi ya malaria?
   Hospitali za Serikali  
   Hospitali binafsi  
   Dispensary  
   Maduka ya dawa

22) Kwa nini unapendelea zaidi katika sehemu hiyo uliyochagua hapo juu?
   …………………………………………………………………………………………………………
   …………………………………………………………………………………………………………
   …………………………………………………………………………………………………………
   …
23) Je ni yepi maoni yako juu ya gharama za huduma ya afya kwenye vituo vya serikali?
Ghali sana □ Ghali □ Wastani □ Rahisi □ Rahisisana □

24) Je unadhani kutokana na gharama ya dawa za malaria inaweza kumshawishi mtu juu ya matumizi ya dawa hizo bila ya ushauri wa Daktari?  NDIO □ HAPANA □

25) Kama jibu lako ni NDIO elezea kwa nini?
.................................................................................................................................................................................................
.................................................................................................................................................................................................
.................................................................................................................................................................................................
...........

26) Umaskini unachangia kwa kiasi kikubwa kwa watu majumbani kutumia dawa za malaria bila ya ushauri wa daktari.
Sikubalisana □ sikubali □ sijui □ nakubali □ nakubalisana □
Sehemu ya tano : Taarifa kuhusiana na upatikanaji wa dawa za malaria

26) Ni kituo kipi rahisi zaidi kupatikana dawa za malaria?
   Vituo vya afya vya serikali □
   Vituo vya afya binafsi □
   Maduka ya dawa □

27) Katika jawabu lako hapo juu, (26), unadhani kwa nini ni rahisi?
.................................................................................................................................................................................................
.................................................................................................................................................................................................
...........

28) Toa maoni yako juu ya nini kifanyike kwa ajili ya kupunguza utumiaji wa dawa za malaria bila ya kupata ushauri wa daktari.
.................................................................................................................................................................................................
.................................................................................................................................................................................................
## Appendix 5: Research budget

### RESEARCH BUDGET

<table>
<thead>
<tr>
<th>ITEM/ACTIVITY</th>
<th>PRICE</th>
<th>QUANTITY</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stationeries &amp; printing</td>
<td>300Tsh</td>
<td>4Pgsx200Resp=800pgs</td>
<td>240,000</td>
</tr>
<tr>
<td>Research assistance</td>
<td>10,000Tsh/day</td>
<td>5Daysx5(RA)</td>
<td>250,000</td>
</tr>
<tr>
<td>Research participants for FGD</td>
<td>5,000Tsh/participant</td>
<td>183Participants</td>
<td>915,000</td>
</tr>
<tr>
<td>First draft report printing</td>
<td>300Tsh</td>
<td>50Pgs</td>
<td>15000</td>
</tr>
<tr>
<td>Final draft report printing</td>
<td>300Tsh</td>
<td>50Pgs</td>
<td>15000</td>
</tr>
<tr>
<td><strong>GRAND TOTAL</strong></td>
<td></td>
<td></td>
<td><strong>1,435,000 Tsh</strong></td>
</tr>
</tbody>
</table>
3.11 Researcher work plan

WORK PLAN

<table>
<thead>
<tr>
<th>STEPS IN RESEARCH PLAN</th>
<th>WEEKS FOR COMPLETION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>JANUARY</td>
</tr>
<tr>
<td></td>
<td>1ST</td>
</tr>
<tr>
<td>Submission of the proposal.</td>
<td></td>
</tr>
<tr>
<td>Getting permission to work in study area.</td>
<td></td>
</tr>
<tr>
<td>Pre-test and data collection.</td>
<td></td>
</tr>
<tr>
<td>Data analysis</td>
<td></td>
</tr>
<tr>
<td>Data interpretation</td>
<td></td>
</tr>
<tr>
<td>Report up findings</td>
<td></td>
</tr>
<tr>
<td>Presentation of final research products</td>
<td></td>
</tr>
</tbody>
</table>