

**AN ASSESSMENT OF WILLINGNESS TO PAY FOR MALARIA TREATMENT
IN URBAN PUBLIC HOSPITALS: THE CASE OF LILONGWE**

MASTER OF ARTS (ECONOMICS) THESIS

By

AMOS MISOMALI
BBA – University of Malawi

Thesis submitted to the Economics Department, Faculty of Social Science in partial
fulfillment of the requirements for the Master of Arts degree in Economics

UNIVERSITY OF MALAWI
CHANCELLOR COLLEGE

FEBRUARY, 2016

DECLARATION

I, Amos Misomali, hereby declare that this thesis titled: **“An Assessment of Willingness to Pay for Malaria Treatment in Urban Public Hospitals: The Case of Lilongwe”** is entirely a product of my work except where clear acknowledgement has been made for citations of other peoples’ work. I also declare that this work has not been submitted to any other university or college before.

AMOS MISOMALI

Full Legal Name

Signature

Date

CERTIFICATE OF APPROVAL

The undersigned certify that they have read and recommend to the Postgraduate Studies and Research Committee and the Senate for acceptance of this thesis entitled “**An Assessment of Willingness to pay for Malaria Treatment in Urban Public Hospitals: The Case of Lilongwe**” submitted by Amos Misomali in partial fulfillment of the requirements for the degree of Master of Arts in Economics.

SPY MUNTHALI, PhD (Senior Lecturer)
MAIN SUPERVISOR

Date

PATRICK KAMBEWA, PhD (Associate Professor)
HEAD OF DEPARTMENT

Date

DEDICATION

This thesis is dedicated to Rev. Fr. Rosanelli Renato and Ms. Vittoria Tomasoni.

ACKNOWLEDGEMENTS

I wish to express my great appreciation to Dr. Spy Munthali for his guidance as my supervisor at every step of the thesis process. I also wish to sincerely appreciate the great contribution that the staff in the Economics Department have made through their constructive critique and valuable guidance and support from the initial topic presentation stage to thesis completion.

Special thanks to the DHO for Lilongwe and his team, including Health Centre In-Charges for Bwaila Hospital, Area 25 Health Centre and Kawale Health Centre for granting me access and support to collect data for the thesis from their facilities. And to all my class mates for their wonderful support throughout the programme. Special mention is made of Innocent Makuta for his support in the course of this programme.

Finally, I thank God for granting me His grace to do this demanding programme. The family has been very understanding and supportive in putting up patiently with my frequent absences when the programme demands required me to make huge time sacrifices.

ABSTRACT

The Malawi health sector faces numerous challenges in delivering quality health care, including chronic under-funding. In light of direct donor budgetary support freeze, sustainability of the universal access model has been questioned and introduction of user fees proposed to mitigate financing gaps. This study aimed at generating demand side evidence to contribute towards informing policy direction around consumer WTP, key determinants influencing WTP, and probability of excluding the poor at different price levels. The study targeted 360 consumers of public healthcare at Bwaila Hospital, Kawale Health Centre, and Area25 Health Centre in Lilongwe urban. The contingency valuation method was used to collect data, using the stated preference approach. STATA12 was used to analyze the data, using tobit regression and marginal effects at mean analyses. Findings indicate that 81% of respondents are willing to pay user fees. Respondent age, prior awareness about user fees, gross income, spouse gross income, household attainment of minimum wealth status, and expectations about future service quality improvement were found to influence WTP. In addition, respondents exhibited characteristics of urban poverty: low per capita income (US\$0.25); low asset ownership (8%); and lack of alternative viable care options other than government facilities. Thus, despite a high reported consumer WTP at 81%, the researcher recommends that Government should not introduce mandatory user fees in the face of current high urban poverty to avoid worsening access and further impoverishing the urban poor.

TABLE OF CONTENTS

ABSTRACT.....	vi
TABLE OF CONTENTS.....	vii
LIST OF FIGURES	x
LIST OF TABLES.....	xi
LIST OF APPENDICES.....	xii
LIST OF ABBREVIATIONS AND ACRONYMS	xiii
CHAPTER 1	1
INTRODUCTION	1
1.1 Background.....	1
1.2 Problem Statement	5
1.3 Main Objective of the Study	6
1.3.1 Specific study objectives:	6
1.4 Study Hypotheses.....	7
1.5 Relevance and Significance of the Study.....	7
1.6 Summary and Thesis Outline.....	9
CHAPTER 2	10
AN OVERVIEW OF MALAWI ECONOMY AND THE MALAWI HEALTH	
ECONOMY	10
2.1 Introduction.....	10
2.2 Structure and Performance of Malawi Economy.....	10

2.3 Education, Poverty, and Development situation at a glance:.....	13
2.4 Overview of the Malawi Health Economy	16
2.4.1 Health Vision, Mission Policy, and Instruments	16
2.4.2 The Burden of Diseases for Malawi.....	19
2.4.3 Size of the Malawi Health Economy (Expenditure) and Financing Sources	21
2.4.4 Household Direct Out of Pocket (OOP) Expenditure Overview.....	27
CHAPTER 3	30
LITERATURE REVIEW	30
3.1 Introduction.....	30
3.2 Health Policy and User Fees in Malawi.....	31
3.3 Theoretical Foundations.....	37
3.3.1 The Concept of WTP, Demand Curve, and Consumer Surplus Linkages	39
3.3.2 WTP and Health Policy Implications.....	41
3.4 Empirical Evidence	42
CHAPTER 4	45
RESEARCH METHODOLOGY.....	45
4.1 Introduction.....	45
4.2 Review of Methods for Measuring Willingness to Pay	45
4.3 Study Area and Rationale for Choice of Lilongwe Urban and malaria condition.....	47
4.4 Sampling strategy and design	48
4.5 Questionnaire Design and Ethical Approval.....	49
4.6 Sample Size Determination and Respondent Sampling.....	50
4.7 Data Collection	53

4.8 Determinants of WTP	54
4.9 Model Selection and Specification	58
4.10 Data Preparation and Analysis Approach	60
4.11 Diagnostic Tests	61
4.12 Conclusion	61
CHAPTER 5	62
RESULTS AND INTERPRETATION	62
5.1 Introduction.....	62
5.2 Descriptive Analysis	62
5.3 Tobit Regression Analysis Results	65
5.4 Findings from ‘Marginal Effects at Mean’ Analysis	70
5.5 Probability of Excluding Legitimate Careseekers at different price levels	73
5.6 Consistency with postulations of economic theory and empirical evidence	77
5.7 Departures from postulations of economic theory and empirical evidence.....	77
5.8 Conclusion	79
CHAPTER 6	81
CONCLUSIONS AND POLICY RECOMMENDATIONS.....	81
6.1 Conclusions.....	81
6.2 Policy Recommendations.....	83
6.3 Limitations of the Study.....	85
REFERENCES	86

LIST OF FIGURES

Figure 2.1: Structure of Malawi Economy	11
Figure 2.2: GDP Performances, 2003 – 2015	13
Figure 2.3: Highest Qualifications by Sex.....	14
Figure 2.4: Proportion of Poor and Ultra Poor.....	15
Figure 2.5: Poverty Incidence by Geographical Area.....	16
Figure 2.6: Malawi top 5 Disease Conditions.....	21
Figure 2.7: Malawi THE and Per Capita Trends.....	23
Figure 2.8: Malawi THE and GDP.....	25
Figure 2.9: Trends in Malawi Health Financing.....	27
Figure 2.10: Changes in real and nominal OOPs Over Time.....	28
Figure 3.1: Illustration of Consumer Surplus and WTP.....	40
Figure 4.1: WTP Measurement.....	46
Figure 4.2: Facility Selection.....	49
Figure 5.1: Probability of Patient Exclusion.....	74

LIST OF TABLES

Table 2.1: Burden of Disease Ranking.....	20
Table 4.1: Sample Size Determination and Distribution.....	51
Table 4.2: Definition of Explanatory Variables.....	55
Table 5.1: WTP by Facility by Gender.....	63
Table 5.2: Tobit Regression output.....	66
Table 5.3: ‘Marginal Effects at Mean’ Analysis.....	72
Table 5.4: Patient Alternative Care Options.....	76

LIST OF APPENDICES

Appendix 1: Summary of General NHA Findings on Health Expenditure.....	92
Appendix 2: THE by Financing Source.....	94
Appendix 3: Health Expenditure by SADC Country.....	95
Appendix 4: Household Direct OOP Spending By Health Provider.....	96
Appendix 5: Respondent Distribution by Education & Occupation.....	97
Appendix 6: Data Collection Tool.....	98

LIST OF ABBREVIATIONS AND ACRONYMS

BLM	Banja La Mtsogolo
CHAM	Christian Health Association of Malawi
EHP	Essential Health Package
EP&D	Economic Planning & Development
FISP	Farm Input Subsidy Program
GDP	Gross Domestic Product
HDI	Human Development Index
HSSP	Health Sector Strategic Plan
JCE	Junior Certificate of Education
MOH	Ministry of Health
NHA	National Health Accounts
NSO	National Statistics Office
OOP	Out-of-Pocket Payments
PSLC	Primary School leaving Certificate
SLA	Service Level agreement
SWAp	Sector Wide Approach
THE	Total Health Expenditure
WHO	World Health Organization
WTP	Willingness to pay
WTPMAX	Maximum willingness to pay

CHAPTER 1

INTRODUCTION

1.1 Background

Foreit and Foreit (2004) has argued in his publication that balancing sustainable quality healthcare services on one hand and achieving equity on the other has always been a challenge for most developing economies. Malawi is no exception in terms of this dilemma. In Malawi, the provision of healthcare constitutes a complementary mixture between free services provided by the government to all care seekers on one hand, and the paying services provided by profit making non-governmental organizations such as Banja La Mtsogolo (BLM), non-profit making Christian Health Association of Malawi (CHAM) facilities, and the pure-for-profit private sector such as Mwaiwathu and Daeyoung Hospitals, on the other hand. According to MOH (2014), the Ministry of Health covers 60% of all health facilities; CHAM covers 37%, and the remaining 3% is shared among private hospitals, Ministry of Local Government, and other service providers. In some cases, some healthcare services are considered so essential to the achievement of certain critical healthcare outcomes such as maternal mortality reduction that they are subsidized by the MOH in the paying CHAM hospitals through Service Level Agreements (SLAs) arrangements to guarantee access even by those who simply cannot afford them economically (Manthalu, 2014).

The Government of Malawi has been implementing the universal access policy to healthcare since independence in 1964. The Ministry of Health, through the Malawi Health Sector Strategic Plan (MOH, 2012) reaffirmed government commitment to the long standing universal access to healthcare provision. One of the key assumptions at the core of the Malawi HSSP successful implementation was that there would be adequate financial and human resources during the implementation of the plan. Nevertheless, the HSSP also recognized two key implementation risks to quality healthcare delivery at the time: inadequate and unpredictable funding for the health sector, and shortage of essential medicines and supplies, among other risks. In terms of risk mitigation, the government identified expansion of user fee implementation (among other options) to generate additional resources to finance health service delivery (MOH, 2012).

The 2012 Health Sector Strategic Plan (HSSP) is premised on several key assumptions, including that donors would continue to constitute a major source of health financing over the period of implementation. However, reality has been very different on the ground. Donor pull out from the pooled funding arrangement under the Health Sector Wide Approach (SWAp) and growing population pressure against reduced allocations to the health sector have challenged successful implementation of the plan. This is true, in spite of the fact that some of this donor support has still continued through non-governmental organizations (NGOs), which limits government control and flexibility over prioritization of such support to areas facing critical need. This has led to a debate among policy makers and practitioners in the health sector on the need to explore additional complementary financing options in order to improve and sustain the

deteriorating service quality. These additional healthcare financing options have included, among others, a call to expand coverage of user fees in all central and district hospitals in order to finance improved service quality delivery. By definition, user fees refer to out-of-pocket (OOP) payments that clients make at the point of accessing healthcare services (Lagarde and Palmer, 2011).

The issue of introducing user fees remains contentious but relevant among policy makers and stakeholders. Earlier in 2015, the Ministry of Health put a team of experts to explore this further for purposes of partly informing the ongoing Malawi Health Financing Strategy which is still in draft form. While some quarters have supported the idea, others such as development partners and rights groups have raised objections, citing risk of excluding the poor from accessing essential healthcare services if user fees are introduced.

Much as the debate has drawn lessons and experiences from many studies in other developing countries, it does not seem to be supported and guided by comprehensive research specifically on Malawi in terms of willingness to pay by consumers of these free public health care services. Neither has there been a comprehensive research to understand the ability and capacity of consumers of the free public healthcare services to afford user fees if introduced. The closest willingness-to-pay study that has been conducted in recent years specifically on Malawi is that by Phiri and Masanjala (2009). While the study unearthed important insights into willingness to pay for micro-health insurance among members of savings and credit unions and its key determinants, its

findings cannot be used to guide current debate on user fees in public health facilities due to differences in target populations. Thus, there is still a gap in the body of knowledge that needs to be filled to support a more informed position on the debate. Recognition is made of substantial progress in trying to come to a conclusion on the matter, as evidenced by the recent consultative meetings among health experts which ended in a resolution to park the issue of user fee introduction. However, even with this progress, the process still lacked compelling evidence on Malawi specifically from the demand side regarding whether the users were willing to pay user fees in the first place and whether consumers' socio-economic characteristics suggested ability to pay the proposed user fees or not. This gap still exists and will need to be addressed to conclude the matter to the satisfaction of both proponents of user fee introduction and those against it.

This study was therefore motivated by the need to contribute towards bridging that gap through generation and provision of evidence from demand side to guide appropriate policy direction. For practicality and resource reasons, the scope of the study focused only on respondents in urban facilities in Lilongwe City and particularly on malaria condition. Malaria condition was chosen as a well-known disease where the majority (if not all) of respondents were considered adequately well informed to provide responses regarding their valuation of its treatment service in public hospitals than would be possible with other less familiar conditions such as diabetes. Malaria, therefore, generally represented that treatment-based basket of free healthcare services for valuation purposes in this study.

1.2 Problem Statement

The Malawi government is committed to improving quality of care and universal access to healthcare by all. However, quality improvement in the health sector in Malawi is hindered by poor facilities, lack of equipment, lack of qualified human resources, and weak management (MOH, 2012). Most of these constraints are grounded in the fundamental problem of inadequate resources. For example, data from the National Health Accounts (2014) indicates that Malawi's financing of the health sector remains far below minimum requirements as estimated for the Essential Health Care Package (EHP) for 2012.

The EHP is the minimum cost-effective healthcare package that Malawi implements through the HSSP to achieve national health goals. The minimum EHP per capita for 2012 was estimated at US\$44.4. Government spending on health has averaged US\$7.6 per capita per annum between the 2009/10 and 2011/12 financial years, which is far below the recommended minimum WHO 'floor' per capita for Malawi EHP. Thus, as summarized in the National Health Accounts (2014) report, the Malawi health system continues to be challenged by inadequate financial resources. At SADC regional level where actual minimum per capita averaged US\$147 for 2012, Malawi's level of healthcare spending is second lowest in the region.

In light of this financing challenge, the introduction of user fees in all public health facilities in Malawi, therefore, has been proposed by some quarters and debated as one of the options to address funding challenges and improve healthcare service quality.

However, there has not been a comprehensive scientific inquiry to assess the willingness to pay such user fees by the users of healthcare services in these public facilities. Neither has there been any substantive study to identify the main determinants of willingness to pay for the currently free healthcare services in public facilities in Malawi. This study aims at generating evidence that will partly contribute towards filling this gap regarding care seekers' willingness to pay user fees, main determinants of willingness to pay, as well as possible exclusion risks associated with user fee introduction.

1.3 Main Objective of the Study

The main objective of this study is to estimate care seekers' willingness to pay (WTP) for malaria treatment in urban public hospitals in Lilongwe, and key determinants of such willingness to pay. The outcome from this study will contribute evidence to partly address policy makers' information needs that is necessary in answering the outstanding question on whether or not to introduce user fees in public health facilities.

1.3.1 Specific study objectives:

The specific objectives of this study are given below:

- To establish the mean amount of money that care seekers are willing to pay for malaria treatment at point of service in urban public hospitals;
- To identify key determinants of willingness-to-pay for malaria treatment in public hospitals;
- To estimate probability of exclusion at different price levels of user fees

1.4 Study Hypotheses

The study tested the following hypotheses in order to answer the three research objectives outlined above:

- 1 Care seekers are not willing to pay user fees in Lilongwe urban public health facilities to access malaria treatment.
- 2 Household socio-economic factors do not influence willingness to pay for malaria treatment in urban public health facilities in Lilongwe.
- 3 Probability of consumer /care seeker exclusion at any user fee level is zero

1.5 Relevance and Significance of the Study

The relevance of this study lies in the fact that it directly contributes towards providing part of the evidence that policy makers need to make a more informed decision on the long standing, yet unresolved, question of user fee introduction by bringing on board additional evidence from demand side – views from actual consumers of the currently free healthcare services. Meaningful resolution of current debate around user fees introduction requires a sufficient understanding of peoples’ willingness to pay, and key determinants influencing such willingness. In addition, it also requires a good understanding of the social economic characteristics of the target population that will be affected by user fees if introduced, particularly as to whether their socio-economic characteristics suggest economic ability (or inability) to pay user fees.

Policy makers may use findings from this study to augment other available evidence before taking the final decision on the matter, or to replicate a similar study in other cities such as Blantyre and Mzuzu to develop a more national level perspective from consumers of the current free health care services. This would help develop a more informed position before any major decisions are taken on introducing or abandoning the introduction of the proposed user fees in public health facilities.

On the academic front, findings from this study will contribute to the body of knowledge on this particular topic about consumers of the free healthcare services, which has not been researched in a very direct and purposeful manner in Malawi in recent years. In addition, such findings will reinforce the usefulness and applicability of the contingency valuation method in answering health policy questions, apart from questions in the environmental economics field where the model has mostly been applied. In terms of significance, balancing provision of sustainable quality healthcare services and achieving equity have always been a key government dilemma in many resource-constrained economies, including Malawi. Thus, findings from this study will contribute towards providing a strong ground regarding whether user fees could possibly be a viable and acceptable complementary financing option in Malawi among the type of consumers who currently access the free public healthcare services.

1.6 Summary and Thesis Outline

This introduction chapter has attempted to give a general appreciation of the key knowledge gap that motivated this study, within the general context of Malawi government's dilemma of balancing quality health service sustainability and the imperatives of achieving equity. The problem statement has been outlined clearly, with clear aim to help resolve the debate on possible introduction of user fee debate through presenting the demand side perspectives around consumers' willingness to pay hypothetical user fee introduction. Thereafter, the main objectives have been spelt out, including hypotheses to be tested. The relevance of the study has also been presented, tying in policy needs with information to help in making decisions around such policy question.

The rest of this thesis paper progresses into 5 chapters as outlined below. Chapter 2 gives a detailed discussion of relevant literature review, bringing out what is already known about the topic from previous empirical research work and identifying the space and gap where current work fits and makes its contribution. This is followed by Chapter 3, which discusses methodology to be employed in undertaking this study and justification for choice of this methodology. Chapter 4 presents findings from the analysis work by research objective, including relevant supporting tables. Chapter 5 is a discussion of the findings within the context of study objectives, followed by conclusions and policy implications in Chapter 6. The paper concludes with an appreciation of limitations of the study and suggests areas for future research on the topic.

CHAPTER 2

AN OVERVIEW OF MALAWI ECONOMY AND THE MALAWI HEALTH ECONOMY

2.1 Introduction

Malawi is a landlocked country located in southeastern Africa, with a population estimated at 16.3 million in 2015 (NSO, 2008). The country is bounded by Zambia in the west, Mozambique in the east, south and southwest, and Tanzania in the north. Malawi has an area of 118,484 km² of which 94,276 km² is landlocked. The country is divided into three administrative regions, namely the northern, central and southern regions. Malawi has 28 districts, which are further divided into traditional authorities (TAs) ruled by chiefs (MOH, 2014).

2.2 Structure and Performance of Malawi Economy

The Malawi economy is largely agro-based, with agriculture accounting for 36% contribution to the total Gross Domestic Product (GDP). Nearly 85 percent of the country's estimated 16.3 million people population live in rural areas and rely to a large extent on subsistence farming as the main economic activity (OECD, 2008; World Bank, 2010, cited by the MOH, 2014). The agriculture sector also employs nearly 84.5 percent of the labour force and produce more than 80 percent of the country's exports, hence

contributing nearly 83% of foreign exchange earnings. Main export crops include tobacco, tea, sugar, and coffee. As it depends on rain-fed agriculture, the sector remains highly vulnerable to shocks in weather conditions that have in recent years been worsened by climate change effects. In addition, the agriculture sector is also vulnerable to poor terms of trade in international markets of its cash crops, as they are sold raw (cited in Phiri and Masanjala, 2009). Figure 2.1 below presents the Malawi economic structure in terms of sectoral contribution to GDP as of 2010 (Source: Reproduced by author from AfDB Statistics Department).

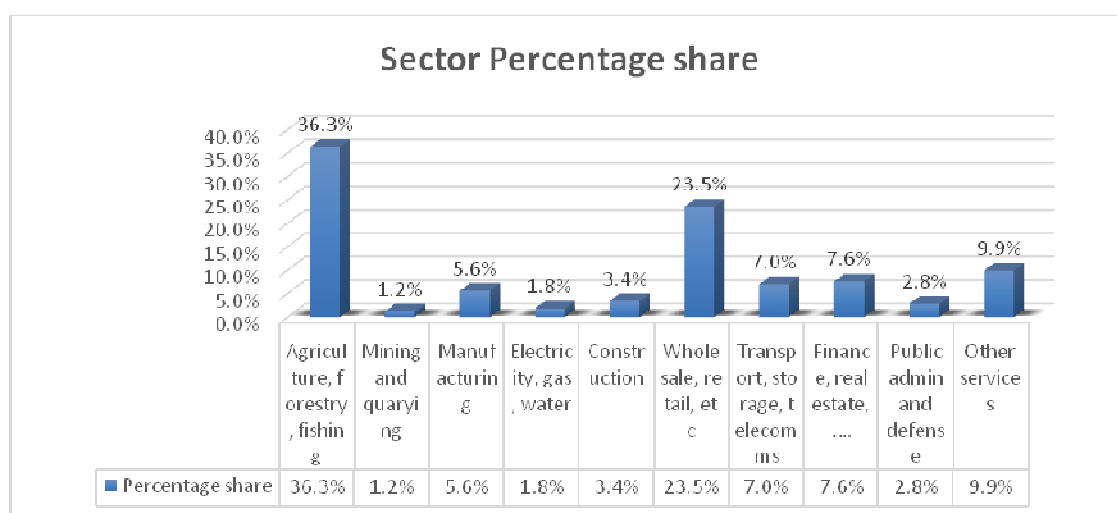


Figure 2.1 Structure of Malawi Economy

Source: Reproduced by author from AfDB Statistics Department data

According to NSO as cited in the National Health Accounts report (MOH, 2014), GDP has been growing at an average rate of 3.16 percent. Malawi's Economic performance in 2012 slowed down and real Gross Domestic Product (GDP) grew by 1.8 percent compared to 3.8 percent in the previous year. Figure 2.2 below illustrates this erratic GDP growth rate for Malawi for the period 2003 – 2015. The poor performance for 2005 – 2006 is largely attributed to the drought effect that eroded agricultural productivity and induced contraction in the economy. However, this was turned around by the Farm Input Fertilizer Subsidy (FISP), supported by the Highly Indebted Poor Country (HIPC) relief which allowed government more space to redirect resources to productive investment areas such as agriculture (AFDB, 2012). The 2011 – 2012 poor performance of the economy is partly explained by the withdrawal of donor aid on grounds of violation of aid conditions. Donor aid flows were restored following regime change mid-2012, when the new government went back to the agreed conditions for donor support, which included full liberalization of the Kwacha among others. This is explained by the gradual recovery in the economy as evidenced by the upward trend in the real GDP growth rate from 2013.



Figure 2.2 GDP Performances, 2003 – 2015

Source: Reconstructed by author from Malawi 2014 HDI report. 2014- 2015 data based on estimates

2.3 Education, Poverty, and Development situation at a glance:

Highest qualification acquired (population aged 15 years and above)

This section looks at the Malawi population aged 15 years and above in terms of highest academic qualifications attained, as a key determinant to access economic opportunities, ability to command decent income and lead a better life. According to the IHS3 report, an average of 74% of the Malawi population aged 15 years and above has not attained any form of formal academic qualification. This implies that only 26% of the Malawi population aged 15 years and above have acquired some form of academic qualifications. Disaggregating by place of residence, 80% of population aged 15 years and above in rural areas have no formal education, while 45% living in urban areas have no formal

education. As indicated above, this has significant implications in terms of access to economic opportunities, access to salaried employment, and ability to command a descent income to afford basic necessities, including health care. Figure 2.3 shows percentage distribution of Malawians with access to formal education at different levels.

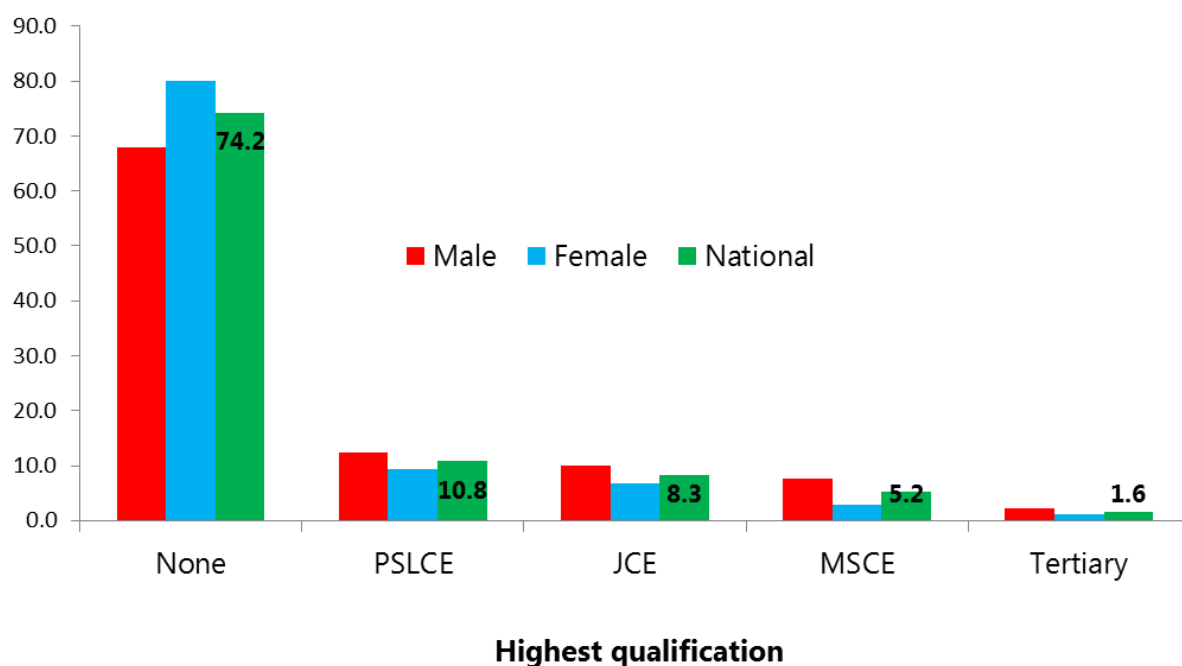


Figure 2.3 Highest qualification attained by sex of a person, Malawi 2011 (Source: IHS3)

In terms of poverty levels, Malawi is one of the poorest countries with more than half of its population living under the poverty line (Government of Malawi, 2011, cited in MOH, 2014).

According to IHS3, the national poverty rate is at 50.7%, a slight decrease of 2% from IHS2 reported in 2004/2005. In addition, 25% of the population is ultra-poor, unable to afford the basic the minimum standard for daily-recommended food requirement. Figure

2.4 shows that while overall poverty has reduced by nearly 2%, slightly more people have fallen into ultra-poverty trap as demonstrated by the higher ultra-poverty bar in IHS3 relative to that in IHS2.

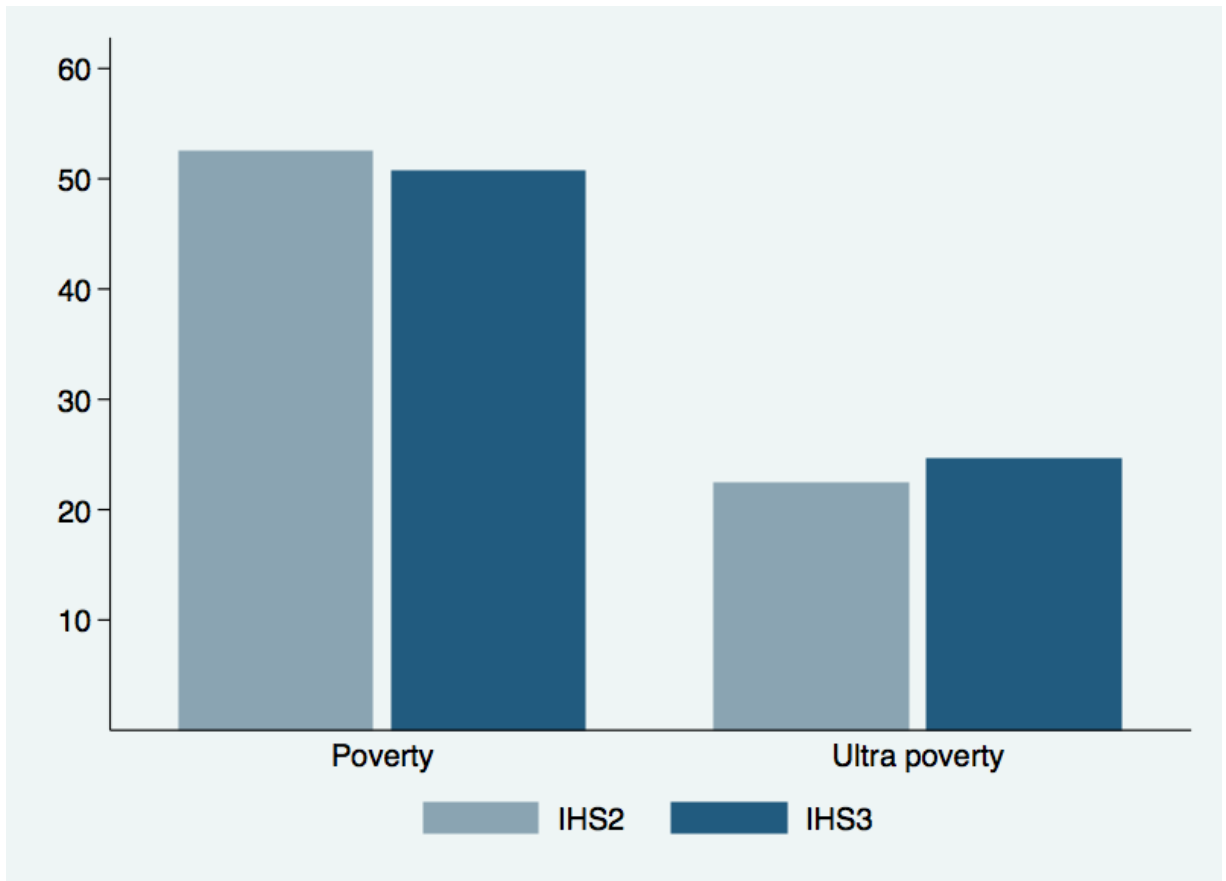


Figure 2.4 Proportion of poor and ultra-poor persons, Malawi 2011

Disaggregating the poverty measures into rural and urban areas, HIS data shows that poverty is a bigger problem in rural areas compared to urban areas.

The graph in Figure 2.5 has been reconstructed using data from IHS3, Table 13.3. The graph shows that overall urban poverty is less than that in rural areas of Malawi.

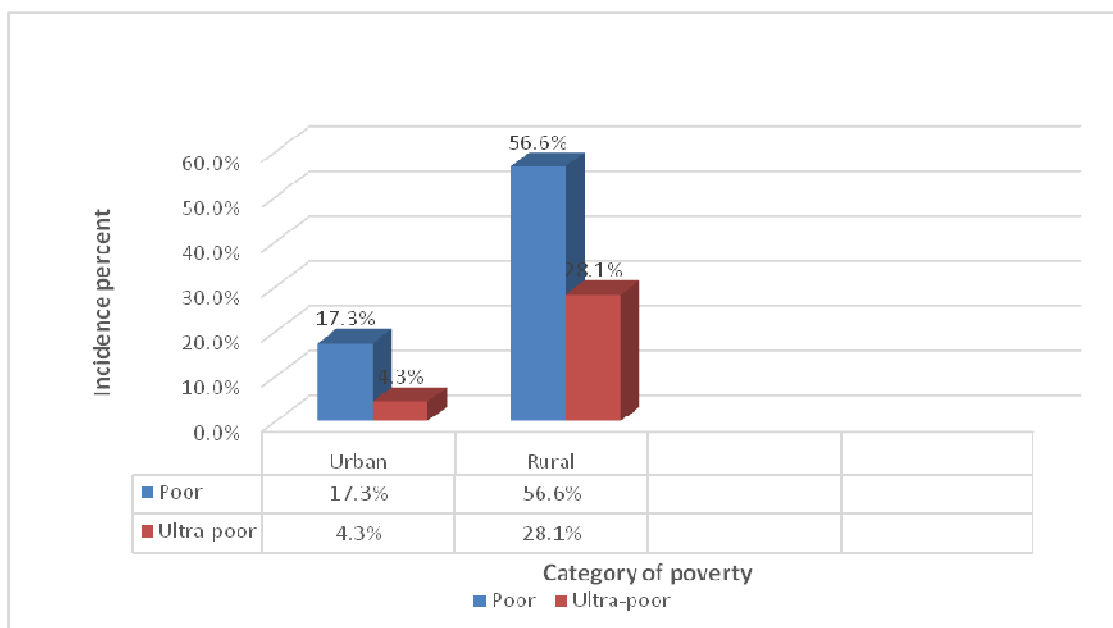


Figure 2.5: Poverty Incidence, by geographical area

Source: Reproduced from NSO data

The Human Development Index for 2014 ranks Malawi at 174th out of the 187 countries in terms of development. Life expectancy at birth for Malawi for 2015 hovers around 53 years.

2.4 Overview of the Malawi Health Economy

2.4.1 Health Vision, Mission Policy, and Instruments

According to the Constitution of the Republic of Malawi as cited in MOH (2014), health is a human right and the State is obliged “to provide adequate health care, commensurate with the health needs of Malawian society and international standards of health care.” Thus, all Malawians are supposed to be provided with free health care and other social services of the highest quality within the limited resources available, in an equitable

manner. This has been recognized and provided for in the national overarching development blueprint, the Malawi Growth and Development Strategy (MGDSII), where a healthy and educated population has been recognized as a necessary centerpiece to achieving sustainable economic growth and development. Thus, the long-term goal of the MGDS with regard to health is to “improve the health of the people of Malawi regardless of their socio-economic status, at all levels of care and in a sustainable manner, with increased focus on public health and health promotion.” The goal of Malawi’s government is therefore “to raise the level of health status of all Malawians by reducing the incidence of illness and occurrence of premature deaths in the population” (Ministry of Economic Planning and Development 2002, cited by MOH, 2014).

Furthermore, the MOH (2014) through the NHA identifies policy focus as aimed at raising the level of health status of all Malawians through the development of a health delivery system that is capable of promoting health, preventing, reducing and curing disease, protecting life and fostering the general well-being and increased productivity and reducing the occurrence of premature deaths” (MoH 1999). The vision of the MoH is “to improve the health status of all Malawians through the provision of effective, efficient and safe health care” (MOH, 1999). In the HSSP, the vision of the Malawi health sector has been stated as “to achieve a state of health for all the people of Malawi that would enable them to lead a quality and productive life” (MOH, 2012). The mission is framed as “to provide strategic leadership by the Ministry of Health for the delivery of a comprehensive range of quality, equitable and efficient health services to all people in Malawi through creation of an enabling environment for health promoting activities”

(MOH, 2012). This is a refinement of the previous version of the MOH mission as crafted in 2004, which aimed at “stabilizing and improving the health status of Malawians by improving access, quantity, cost-effectiveness and quality of EHP and related services so as to alleviate the suffering caused by illness, and promoting good health, thereby contributing to poverty reduction” (MoH 2004, cited by Phiri and Masanjala, 2009).

The main policy instrument for achieving above mission and vision in the health sector is the Malawi Health Sector Strategic Plan (HSSP), a blueprint that identifies priority areas for investment in health to support national development. This is supported by related sub-sector policy and strategic plans aimed at tackling specific health issues, such as the malaria, child health, TB, HIV/AIDS, and Reproductive Health, among others. The main instrument supporting implementation of the HSSP is the Essential Health care Package (EHP), a package of minimum but critical promotive, preventive, curative, and rehabilitational health services. This initially was adopted by the government of Malawi early 1990s as a minimum package of proven cost-effective health interventions (Phiri and Masanjala, 2009).

The main thematic areas of the HSSP include the following:

1. Maternal, neonatal and child health
2. Family Planning
3. Major Communicable Diseases
4. Disability, including mental illness

5. Non Communicable diseases
6. Social Determinants of Health
7. Health Systems Challenges, and
8. Policy Context

Most of these thematic areas are further disaggregated into sub-components. For example, the maternal, neonatal, and child health is sub-divided into vaccine preventable conditions; acute respiratory infections; malaria; acute diarrheal diseases; malnutrition; and maternity and neonatal care.

2.4.2 The Burden of Diseases for Malawi

According to the MOH (2012), the University of Malawi through College of Medicine conducted a burden of diseases study in 2006, looking at the incidence and prevalence of all major diseases and disease-specific death rates. These were ranked according to their rates in terms of incidence and causing deaths in Malawi, and provided a basis for prioritization in the EHP. The study showed that HIV/AIDS was the major cause of mortality at the time, followed by Lower Respiratory Infection (LRI), malaria, diarrhea diseases and conditions arising from perinatal conditions. The full ranking is presented in Table 2.1.

Table 2.1: Burden of Disease Ranking

1. HIV/AIDS	7. Tuberculosis
2. ARI	8. Malnutrition
3. Malaria	9. * Cancers
4. Diarrheal diseases	10. Vaccine preventable diseases
5. Perinatal conditions	11. * Mental illness and epilepsy
6. * NCDs including trauma	12. * Neglected Tropical Diseases (NTDs)
	13. Eye, ear and skin infections

Source: Reconstructed from HSSP, MOH (2012)

The NSO (2011) through the IHS3 also ranked the top 5 disease conditions as reported by respondents (HIV/AIDS remains top most, but not included in Figure 2.6). The ranking is generally consistent with the burden of diseases findings, except that malaria is now second top-most reported cause of morbidity and mortality and the IHS3 assigns relative contribution of each condition to morbidity and mortality.

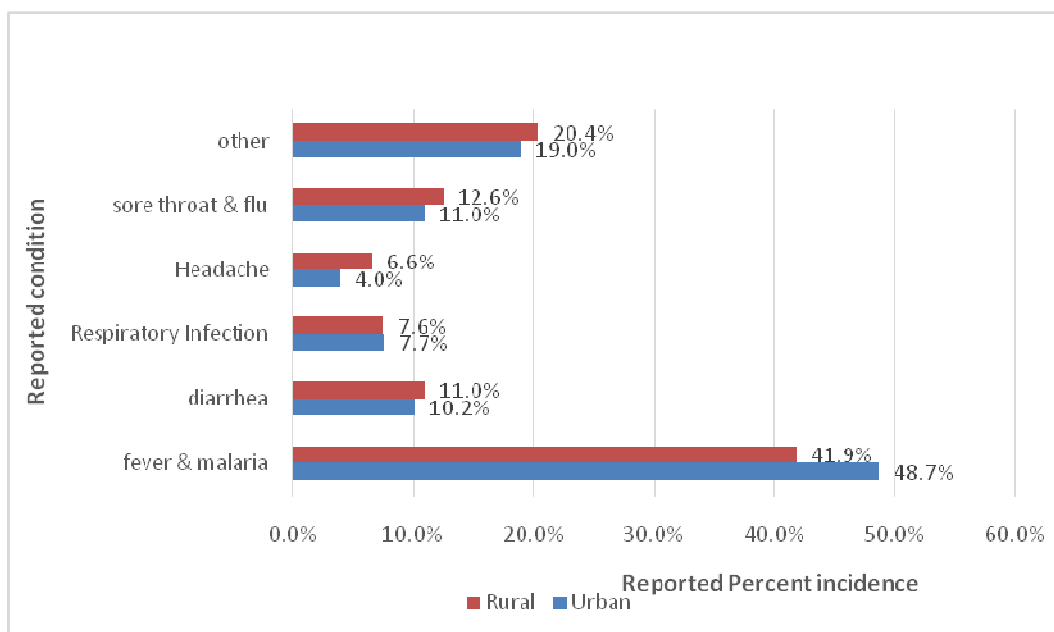


Figure 2.6: Malawi top 5 disease conditions

Source: Reproduced from NHA, 2014

According to MOH (2014), the NHA indicates that malaria is endemic in Malawi and continues to be a major public health problem and a leading cause of morbidity and mortality in children under five years of age and pregnant women. It is estimated that 6 million cases of malaria occur annually.

2.4.3 Size of the Malawi Health Economy (Expenditure) and Financing Sources

This section looks at bringing out information on several critical policy questions in health economics: 1) How much of Malawi's wealth is being invested in health? 2) What trend does the funding pattern seem to suggest? 3) What are the key sources of health financing in Malawi and their relative contributions? 4) Are such resources – irrespective of source – sufficient to finance the minimum package of the cost-effective EHP?

According to MOH (2014), figures from the National Health Accounts suggest that Malawi's total spending on health rose from K75.8 billion (US\$520.1 million) in 2009/10 to K93.9 billion (US\$611.6 million) in 2010/11, before hitting K127.3 billion (US\$624.8 million) in 2011/12 fiscal year. This represented 7.4 percent, 8.2 percent, and 9.0 percent of GDP in 2009/10, 2010/11, and 2011/12, respectively (Appendix1). Thus, there was a general increase in resources being invested into health averaging 67.9% in nominal terms and 20.1% in real terms, respectively.

Based on WHO recommendation, per capita spending on a cost-effective EHP is estimated at US\$54. The per capita cost of delivering the Malawi EHP in 2011/2012 is US\$44.4. Thus, the average per capita government spending of US\$7.6 per annum (not including donor contribution) clearly falls below the amount needed to cover the cost of Malawi EHP which is expected to be provided for free to every one requiring health services from public health facilities. Thus, the Malawi health system is facing serious financing shortfalls to fully meet its needs to deliver effective EHP. As illustrated in Figure2.7 below, despite increases in nominal allocations, increases in per capita spending and total health expenditure (THE) in real terms has only been marginal over the last ten years.

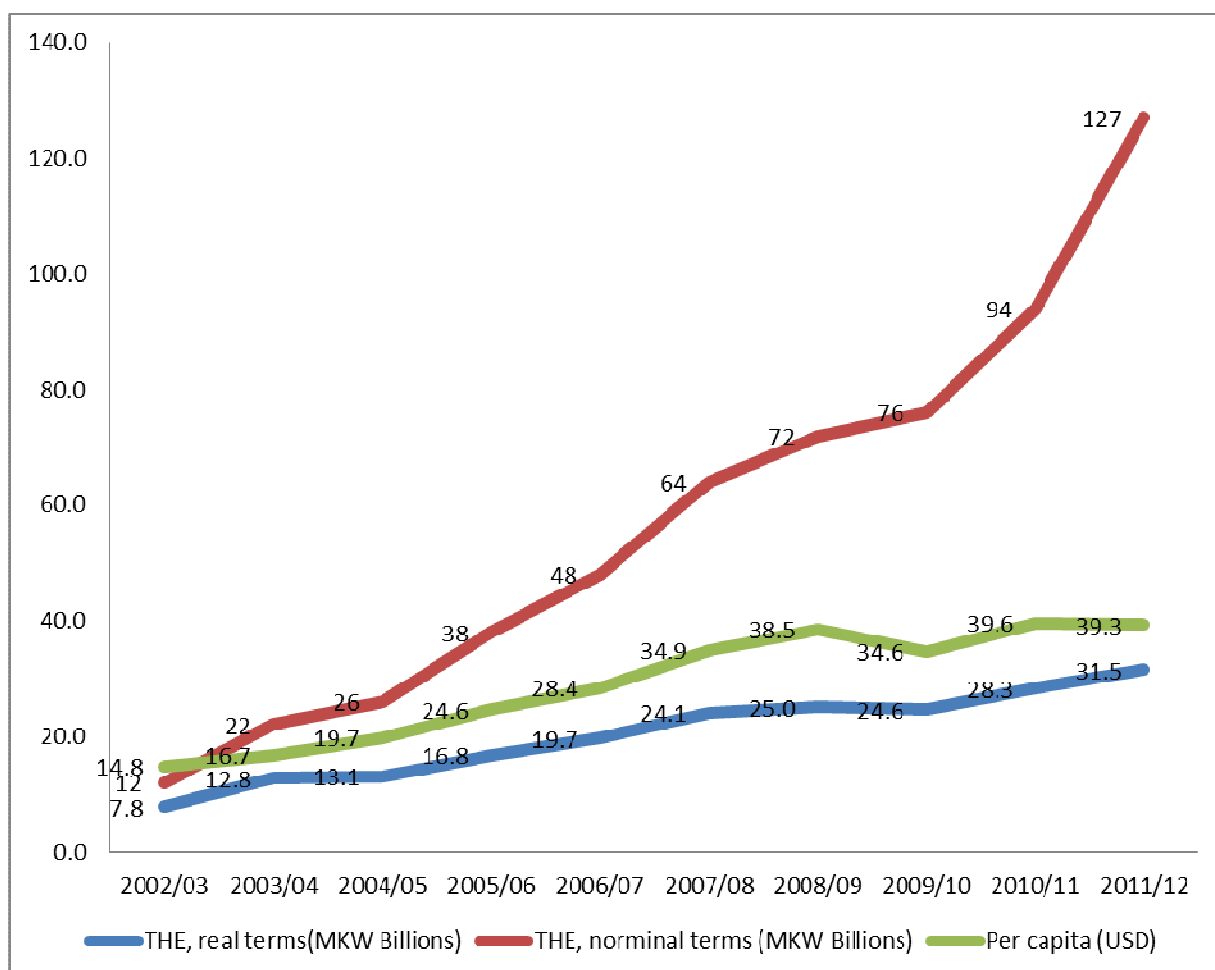


Figure 2.7: Malawi THE (Real & Nominal) and Per Capita Trend line Growth, 2002/03 to 2011/12

Source: MoH 2007, 2008, 2010 and General NHA Tables 2013 in Annex A, cited in MOH (2014)

In relation to GDP, Malawi government health spending as a percentage of total government expenditure stood at 6.4 percent in 2009/10, 6.7 percent in 2010/11, and 6.2 percent in 2011/12 – an average of 6.5 percent of total government expenditure

(excluding pool donors). These funding levels represent a significant shortfall from the 15 percent Abuja minimum target (Fig 2.8). Thus Malawi has not been able to meet this commitment even as recent as 2012, nor has Malawi been able to finance the very minimum package of health care services enshrined in the EHP. At WHO Africa regional level, Malawi ranks second lowest in terms of per capita expenditure in 2012. Similarly, Malawi ranks poorly at SADC level. In terms of government spending on health as a percentage of total government spending, Malawi ranks second poorest after Angola (Appendix 3). Not surprisingly, Malawi was one of the countries with the worst health outcomes in the SADC region, though slightly better than countries with comparable per capita GDP such as Tanzania and Mozambique. This highlights the long standing chronic underfunding problems to the health sector and calls for innovativeness to identify viable alternative health care financing mechanisms that could fill the gap.

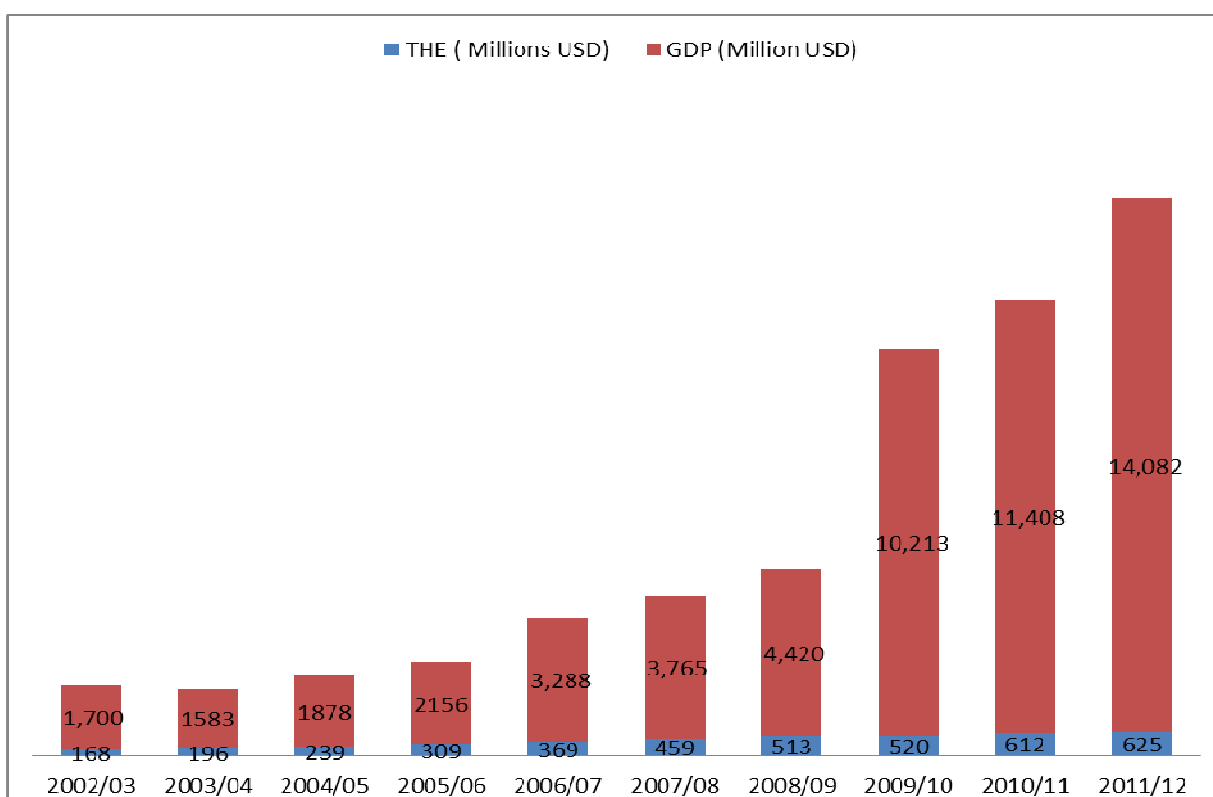


Figure 2.8: Malawi THE and GDP (Millions, USD), 2002/03 - 2011/12

Source: MoH 2007, 2008, 2010 and General NHA Tables 2013 in Annex A.

One of the critical factors that determine sustainability of a health system is the structure of its financing. The National Health Accounts of 2009-2012 (MOH, 2014) indicate that the health sector is heavily dependent on donors, who finance an average of 65% of the national health spending. The government has averaged nearly 20% between 2009 and 2012 (Fig 2.9). Actual donor contribution in 2011/2012 fiscal year averaged 70% while government contribution averaged 16.7%. While the amount of resources going to the health sector have increased significantly since 2001, this increase is largely accounted

for by the donor support. The report indicates that donor contribution has gone up from 36% in 2001 to nearly 70% of total health spending. In contrast, government share in total health spending has actually fallen from over 38 percent in 2001 to around 17% by 2012 (Fig 2.9; Appendix 2). The private sources contribution in total health spending also fallen from 26% in 2001 to 14 percent by 2012. Figure 2.9 illustrates these trends since 2001, and underline the degree of vulnerability facing Malawi health system in terms of over-reliance on donors to finance healthcare service delivery. Again, this calls for urgent attention at higher government levels to identify alternative financing sources, especially in the wake of donor pull out from the pooled financing arrangement on grounds of non-compliance with agreed donor conditions.

Mussa (2015) has correctly observed that “the heavy reliance on donor funding to finance health expenditure is unsustainable and leaves Malawi in a vulnerable position to external shocks such as aid suspension, and financial crises in donor economies.” He further supports this argument with evidence that in the 2011/2012 fiscal year, the execution of donor pledges was greatly affected by the global financial crisis which started in 2008, to an extent that only 25% of donor pledges were in fact released (World Bank, 2013, cited in Mussa, 2015). Given the tax payer is already overtaxed and health insurance industry growth faces limitations, Mussa sees the Malawi health system transitioning to a cost-sharing arrangements in future and a growth in the OOP. It is therefore necessary to understand the demand side of the health system a lot better in terms of willingness to pay and extent of possible exclusion of the poor as this direction may be inevitable,

though likely to be contested by different interest groups. Knowledge of this missing information will help policy makers approach the decision with better rationality.

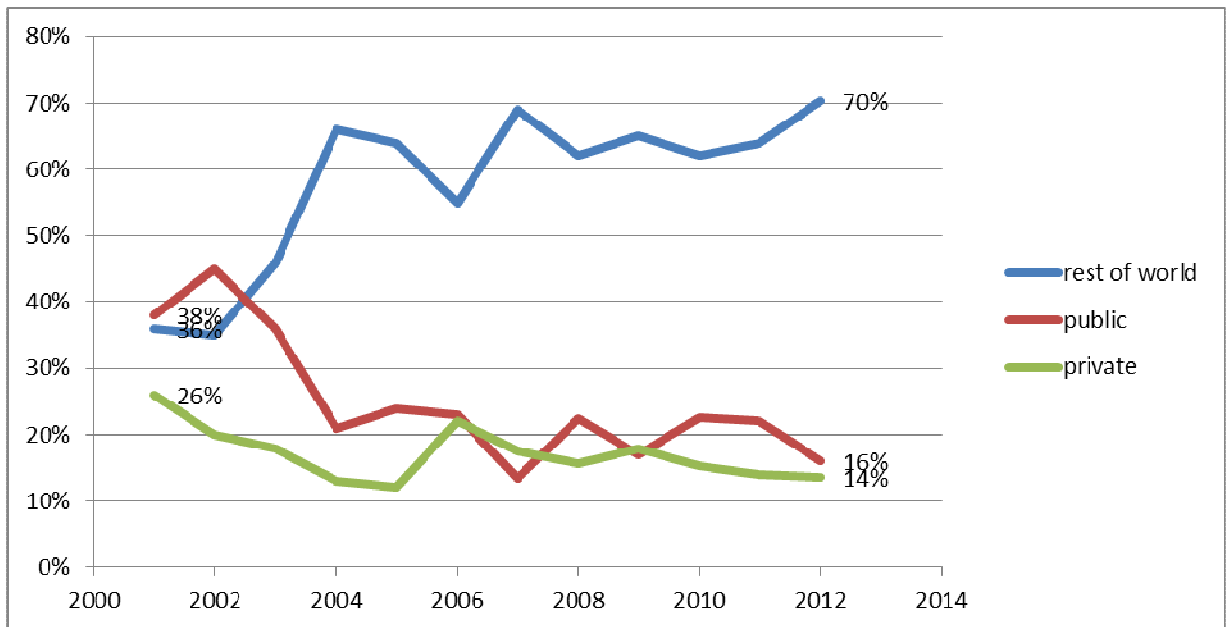


Figure 2.9: Trends in Malawi Health Financing by Top Three Sources: 2001/2002-2011/12

Source: General NHA Tables 2013

2.4.4 Household Direct Out of Pocket (OOP) Expenditure Overview

In any health economy, OOP expenditure is an important variable within the healthcare financing equation. OOP measures the extent to which households are spending out of their resources to finance their healthcare needs. In a free health care system, the degree of OOP may signal inability of the free healthcare system to fully meet people's needs, or even how people value the quality of care they get at the free public health facilities vis-à-vis same services from private clinics. It may also signal unauthorized "paying system"

that may be evolving from within the formal free healthcare system. As such, policy makers need to pay great attention to the extent of OOP and changes over time.

Figure 2.10 maps trends in both real OOPs and nominal OOPs in a ten year period from 2002 to 2012, based on the NHA data (MOH, 2014). The data shows that nominal OOP and real OOP expenditures have grown by 69% and 21% respectively during the period under review. Appendix 4 gives the household direct OOP spending by provider.

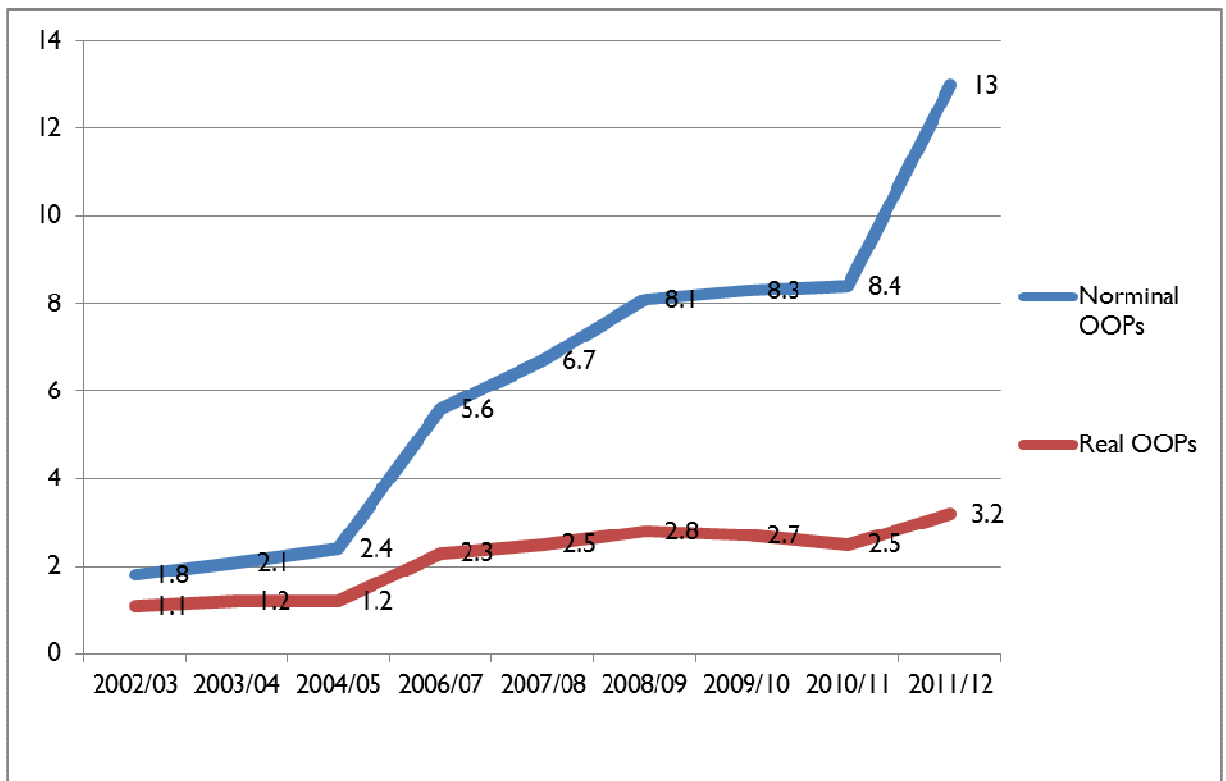


Figure 2.10: Changes in real OOPS and Nominal OOPS Over Time: 2002/03-2011/12

Source: General NHA Tables 2013

From the table above, OOP expenditure as a percentage of THE averaged 10% during the period 2009 – 2012. While this is a lot lower than the 2011 average OOP expenditure of 37% within the WHO African Region, it still raises a question regarding why care seekers should be spending this much when healthcare is free and poverty levels are pretty high. It is either that careseekers have informally accepted and are already paying some form of user fees within the public healthcare system, or that the quality of care is so poor that either they prefer to go to a private clinic in spite of free public services, or that the public healthcare system frequent stock out of medicine compels them to buy from private pharmacies or private clinics (MOH, 2014). Either way, it raises a need to understand this phenomenon and diagnose care seekers' opinion about acceptability of user fees in public healthcare system aimed at improving quality of healthcare services. In the absence of clear explanation for this trend, it is imperative that a study be undertaken to understand if this signals that people are willing and ready to pay for healthcare services in public hospitals that meet their quality needs.

CHAPTER 3

LITERATURE REVIEW

3.1 Introduction

This chapter reviews some of the relevant literature about the theoretical foundations and empirical evidence pertaining to the topic of willingness to pay. The purpose is to lay a foundation in terms of what has already been done and highlight gaps that this paper seeks to address. The review will look at willingness to pay as demand curve; evidence on use of the willingness to pay approach in the health sector in several countries, examine their findings, and identify some of the key determinants of willingness to pay from those studies to see if findings from this study will validate their applicability to the context of Malawi or not. In terms of flow, the chapter begins with section 3.2 which gives a review of the theoretical foundational origin of the willingness to pay approach, including a distinction between revealed preference and stated preference approaches to undertaking willingness to pay studies.

Thereafter, section 3.3 explores some of the most relevant studies that have already been undertaken using this approach and their findings, and how that relates to the topic at hand. Section 3.4 follows with gap identification in terms of answering the research

objectives of this study with available evidence as basis for this study. The chapter ends with a summary and outlook for the next chapter.

3.2 Health Policy and User Fees in Malawi

The Malawi constitution obliges the State to “provide adequate health care, commensurate with the health needs of Malawian society and international standards of health care.” In other words, the constitution makes healthcare one of the basic human rights to its citizens by guaranteeing equality of all people in access to healthcare services financed and delivered through government facilities. It is not surprising, therefore, that since independence in 1964, Malawi has maintained a universal (free) access to healthcare policy stance in all its public health facilities (MOH, 2012; MOH, 2004). This has been reinforced in the Malawi Growth and Development Strategy (MGDS), by recognizing good health as human capital and a prerequisite within the broader goal of creating wealth and sustaining economic growth and development in Malawi. As clearly acknowledged in the MGDS, “...a healthy and educated population is necessary if the country is to achieve sustainable economic growth.”

In recent years, Malawi has faced and continues to face a very challenging economic environment and budget squeeze. The economic challenges partly emanate from pressures exerted by an increasing healthcare bill, a fast growing population that is not in sync with economic growth rate, and the withdrawal of donors from direct budgetary support for various reasons, including governance concerns. As the country continues to struggle to find resources to improve its healthcare (among other areas) in the absence of

donor support, the long standing policy of free healthcare for all and its sustainability has sharply come into question from many quarters. A proposal for introduction of user fees has come up on several occasions. User fees have been defined as out-of-pocket (OOP) charges that are levied at the point of accessing healthcare service (Lagarde and Palmer, 2011). They represent a strategy aimed at sharing the burden of health care provision cost with patients for purposes of generating additional resources and supplementing the constrained government resource envelope in order to improve quality of healthcare services.

In terms of evidence, numerous studies have attempted to assess the consequences of introducing user fees for health care in many developing countries. In Africa, evidence about user fees' effects on patient attendance (access to care) and community health-seeking behaviour are mixed (Mubyazi et al, 2005). Proponents of user fees have argued that introduction of user fees does have several benefits. For example, they argue that user fees do in fact improve allocative efficiency by screening out those who don't value the product enough to pay for it, or deterring moral hazard behavior (Dupas, 2012). This argument is premised on the fact that in a free health care public system, there is a high degree of moral hazard from consumers, which results in 'excessive consumption' of public free healthcare that is not necessarily based on need. Therefore, the argument is that user fees which are only a small fraction of the true cost of healthcare production do help in preventing this excess use by requiring consumers to demonstrate their need for the service with some minimal contribution. This argument is closely related to that noted by Barnum and Kutzin, 1993 (cited in Bitran and Giedion, 2003), which indicates that

user fees promote gains in consumption efficiency by deterring spurious demand and reflecting the true relative costs of production to promote more appropriate (cost-effective) demand patterns.

Akin, 1986 (cited in Bitran and Giedion, 2003) has argued that user fees do help in reducing poverty by substituting for the much higher payments that are actually made by the same poor consumers in private clinics/pharmacies when the free public facilities fail to make drugs available and force the poor consumers into impoverishing spending in the private clinics and pharmacies and traditional places. This is supported Arhin-Tenkorang (2001) using an example of Tanzania where care seekers were reported to be paying a lot more fees to traditional medicine men due to flexibility to pay even in non-cash terms, including assets, labour, among other options. Evidence from the Dominican Republic and El Salvador indicates that nominally free, low quality government health services faced low demand (Bitran 1987; 1989, cited in Bitran and Giedion, 2003) and that even the poorest valued better quality care and paid substantial fees to access better quality private care despite having a free public health care service in place. Birdsall, 1986 (cited in Bitran and Giedion, 2003) has further argued in favour of user fees that they can potentially signal higher service quality and boost demand above that achieved when the same services are offered free of charge. This is in addition to promoting a sense of ownership for the services received, thus empowering consumers to demand greater quality and higher provider accountability.

Another school of thought has argued that user fees do more harm than the anticipated benefits cited above. For example, they argue that fees inhibit appropriate demand by screening out the poorest that cannot afford them, thus keeping access to preventive and curative services below a social optimum. This deters early healthcare seeking behavior, in addition to widening inequity particularly among the poorest members of society. Lagarde and Palmer (2011) conducted a systematic study of publications from 25 various health literature databases in order to assess effects that the introduction, increasing, reducing or otherwise removing of user fees had on the uptake of various health services in low- and middle-income countries where some form of user fees were implemented. This data was mainly from low-middle income economies that had been forced to implement painful reforms in the 1980s and 1990s, including user fees in public hospitals, as one mechanism of addressing their unsustainable fiscal imbalances at the time. Despite several methodological issues noted with many of such studies which are beyond the scope of this work, findings suggest that introducing/increasing user fees were found to have created a barrier to access and resulted in significant decrease in uptake and use of health services by eligible but poor care seekers.

Similarly, Waddington and Enyimayew (1989) conducted health care service utilization studies. Their findings also provided strong evidence that significant reductions in healthcare services utilization resulted from user fee introductions in Ghana, Lesotho, Zaire, and Swaziland. Furthermore, the additional revenue generated has reportedly tended to represent only a small and insignificant share of total revenue, yet have had a

substantially detrimental effect on access by the poorest (Gilson and Russel, 1994 cited in Bitran and Giedion, 2003).

In Malawi, there have been a few studies that specifically focused on effects of user fees on access to care. In a study on impact of user fee exemption on maternal health care utilization and health outcomes, Manthalu (2014) found that user fee exemption from CHAM facilities had led to increases in first antenatal care visits in the first trimester, first antenatal care visits in any trimester, average antenatal care visits and deliveries at CHAM health care facilities with service level agreements (SLAs). In addition, his results also showed that the probability of using a CHAM health facility where user fees had been exempted for antenatal care increased; the probability of using home antenatal care declined and the probability of not using antenatal care also declined due to removal of the access barrier - user fee. The probability of delivering at a CHAM health care facility with SLA was also found to have increased while the probability of delivering at home declined.

It is also important to note that findings have not consistently supported one single side of the argument. In the same cross-country study by Lagarde and Palmer (2011), two studies found that introduction of user fees actually resulted in marked increase in health service uptake and use where such fees were introduced and/or increased *alongside* quality improvements in the healthcare services at the same time. This supports the 'signal effect' argument of user fees on quality as confirmed by evidence from the Dominican Republic and El Salvador which actually indicated that nominally free, low quality

government health services faced low demand (Bitran, 1987; 1989) and that even the poorest valued better quality care and paid substantial fees for better private care as cited earlier on. On balance, nevertheless, evidence seems to support the notion that user fees do in fact exclude the poorest from accessing healthcare services, thereby increasing inequality and working against the primary goal of any healthcare system which is to improve overall health and contribute to economic development of any nation.

In conclusion, therefore, the issue of user fees still remains contentious and unresolved in Malawi, and will continue to create heated debate as budget pressures continue to mount in absence of direct donor budget support. While previous studies have mainly focused on welfare effects of user fees, hardly have any of them specifically obtained perspectives of the actual consumers of the free health care service in Malawi in terms of their willingness to pay user fees if introduced and factors that influence that willingness. In addition, such studies have also failed to estimate extent of possible exclusion of the poor at different levels of user fees (price levels) in Malawi.

This study seeks to generate evidence from the neglected demand side of Malawi's free public healthcare system in terms of willingness to pay user fees for malaria treatment, key determinants influencing this WTP, and assess probability of exclusion of the poor at different hypothetical price levels.

3.3 Theoretical Foundations

One of the fundamental premises of economics is that in a perfectly competitive market, consumers have perfect information about the products being traded, their preferences are fairly stable, and that the choices they make is a perfect reflection of these preferences, *ceteris paribus*. The implications from above is that we can or ought to be able to estimate their demand behavior by examining their observed behavior from past choices, commonly known as their revealed preference (McFadden, 1997).

The perfect competitive market concept further postulates that in the market for any traded goods, price is determined at the point where the demand curve and the supply curve for the goods intersect.

By definition, demand measures the *willingness* of consumers to buy a given good at a stated price, while supply measures the willingness of suppliers to make available a given tradeable good in the market at a given price. Effective demand on the other hand reflects an additional attribute of buyer willingness – their ability to back their willingness with economic ability to pay for the goods at the demanded price under certain conditions. Demand, therefore, measures consumers' willingness to pay (WTP) for a given good in a market place at a given stated price and under a given set of conditions. Thus, the demand curve may also be viewed as the curve that reflects consumers' willingness to pay for a given good or service at a stated price. Demand is typically a function of several attributes: utility – a measure of ability of a product or service to satisfy a consumer's needs; economic ability to pay for the goods/services; and consumer's ability to decide to

make a purchase. A thorough discussion of these terms and their interactions is beyond the scope of this paper.

For goods that are traded in the market, determining their value and consumers' valuation of such goods is fairly easy. However, not all goods are tradeable in the market. Thus, the valuation or attribution of value for public goods such as healthcare has tended to create challenges for economists for some time. While consumer valuation of traded goods can be estimated/deduced from consumers' observed choice behavior in the market, estimating consumers' valuation of non-traded goods requires a different approach. Economists have developed a method for estimating public valuation of non-traded goods which is known as the contingent valuation method (CVM). The CVM involves asking relevant consumers of the goods of interest carefully phrased direct questions about whether they would be willing to pay for a given product/service at a stated price or not. This technique is used to value public goods that are not traditionally traded in the market, or new innovations that have not yet found their way into the market. The method is now the most widely accepted approach for assessing WTP for services in the public health sector which traditionally are not traded services. A full treatise of the CVM as a methodology is reserved for the next chapter on methodology, but the focus of this chapter is to illustrate more features of the willingness to pay as a proxy demand curve for non-traded goods and their policy implications.

3.3.1 The Concept of WTP, Demand Curve, and Consumer Surplus Linkages

According to Gall-Ely (2009), willingness to pay is a measure of the maximum price that a given consumer is willing to accept to pay for a given product, and can be used to measure consumer reactions to prices before those price changes are actually effected. Gall-Ely (2009) further states that WTP essentially reflects a price judgment, a reference price, what is deemed acceptable “ceiling reservation price” that a consumer is willing to pay for a given good or service of interest; and is designed to determine prices for pure public goods and services which are not traded on the open market (Kalish and Nelson, 1991; Kohli and Mahajan, 1991; Wertenbroch and Skiera, 2002, cited in Gall-Ely (2009)). At this maximum price and at any other price below it for normal goods, the consumer is certain to buy the product. If the same good or service is offered at a price above the consumer’s WTP, the consumer is certain not to buy the product as it is above his maximum valuation or reserve price.

In essence therefore, mapping WTP values for a given set of consumers for a particular good or service produces a demand curve for that product or service. At any price above that demand function, there is no potential for market transaction, while producers pricing their good along or below the demand function generates and guarantees market exchange between consumers and producers, *ceteris paribus*. The implication of this statement is that consumers automatically experience a surplus when the producer price is pegged at any point below the WTP curve. In other words, consumers enjoy a surplus when WTP is greater than the proposed price. By definition, therefore, consumer surplus

is the difference between the maximum price a consumer is willing to pay and the actual price they do pay.

In Figure 3.1, the horizontal axis reflects quantities of a good demanded while the vertical axis reflects the price level. The downward sloping curve is the demand curve, where fewer quantities of the good are demanded with each increase in price level. In other words, consumers are less willing to buy goods as their prices rise. The opposite is true as prices go down.

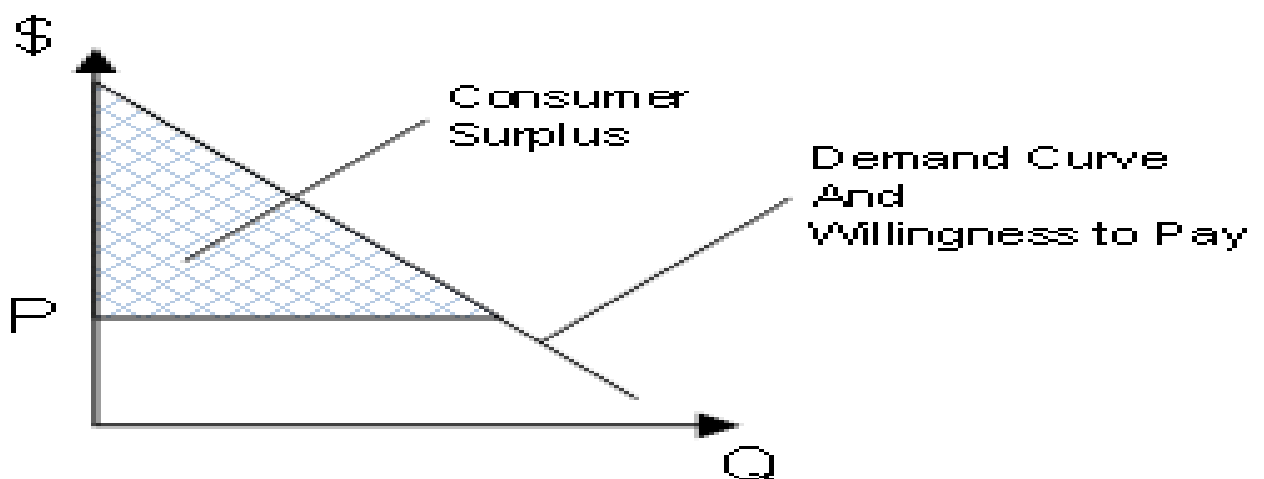


Figure 3.1: Illustration of Consumer surplus and WTP

The area just below the demand curve up to the X-axis represents the total budget that consumers in a given market are willing to part with to obtain the utility/benefit from a given quantity of product. By contrast, the area under the price line and bounding the X-axis represents the actual amount that the same consumers finally pay for the same

amount of goods and utility. If the price is fixed at P and denoted by the price line through P horizontal to the X-axis, then the shaded area between the demand curve and the price line essentially represents the difference between total consumers' budget and actual costs they spend to obtain same amount of utility. This difference measures the degree of consumers' surplus (or welfare) in this hypothetical market situation. The lower the price level, the higher the surplus (welfare) that accrues to the consumers. As producers increase their price in the market, consumer surplus is eroded and their welfare reduced.

3.3.2 WTP and Health Policy Implications

As argued by Gall-Ely (2009), the WTP is of major interest in analyzing consumer reactions to different price levels for a given product. This is very important for pure public goods such as healthcare, where major policy decisions such as introduction of user fees in a previously free healthcare system are under debate or consideration. As indicated in the introductory chapter, the health policy goal for most countries generally is to maximize access and use of essential healthcare services in order to improve overall health of a country and contribute to wealth creation. Where user fees need to be implemented to fill health financing gaps, the policy dilemma is to balance the revenue generation goal on one hand with the ultimate goal of optimizing access and utilization of the service on the other hand. In most developing economies with high poverty rates such as Malawi, managing this dilemma is an uphill task.

Knowledge of WTP about the healthcare service in question does help policy makers in terms of understanding the WTP level that seems to be acceptable to most of the consumers of the service. By extension, such knowledge also helps policy makers to have a fair understanding of how many people roughly or what percentage simply will be excluded on account of financial inability and therefore require some level of government support. In addition, government will also be in a better position to estimate potential revenues expected from that decision, and weigh that against cost of administering the fee collection system to determine net benefit. This does not include issues of how to screen and identify legitimate poor people that will need support. Thus, in view of the growing push for user fee expansion to mitigate effects of increasing health cost, shrinking resource envelope, and exploding population, there is urgent need to generate evidence from demand side in terms of willingness to pay by those who access the free healthcare services and will be directly affected by any policy change around the currently free healthcare service.

3.4 Empirical Evidence

In a study in Selangor, Malaysia, Aizuddin et al (2011) assessed willingness to contribute to national healthcare financing scheme among households in farming communities. Her findings indicate that as many as 96.5% of the farming community respondents interviewed were willing to pay for healthcare services, and agreed to have a national healthcare financing scheme set up, despite being relatively poor. Results from this study also revealed that socio-demographic factors such as age, education, and per capita income were significant. In addition, the study found that age was negatively related to

willingness to contribute; that mean value willingness to contribute varied positively with per capita incomes. Furthermore, higher educational levels were associated with higher willingness to contribute to healthcare financing. Similar other studies have been undertaken in other places. In a study on determinants of willingness to pay for hip and knee joint replacement surgery, Cross (2000) established that willingness to pay was high (above 70%). Income, older age, and lower post operation pain were found to be significant predictors of willingness to pay.

Despite its wide spread use, the contingency valuation method suffers some draw backs, ranging from difficulties separating true zero bids from protest bids and various types of biases (Cho et al, 2008; Arrow *et al* (1993), cited in Phiri (2009).

In Malawi, very few willingness to pay studies have been conducted. The closest known relevant study is that by Phiri and Masanjala (2009) who studied willingness to pay for micro-health insurance (MHI) among members of micro-lending institutions such as MUSCO and FINCA. Similar to previous studies referred to earlier, this study also found that respondent sex, age, literacy, household size income, occupation, and membership in a credit union all were significant in the general model but varied in the treated model. However, consumers of the free healthcare services and their preferences may not be adequately represented by this population of micro-lending institution members that formed the sample of the study referred to above.

This particular study on willingness to pay for malaria treatment in Lilongwe urban facilities, therefore, was necessitated by the need to fill this gap. The goal was to understand better the willingness to pay user fees among current users of the free public health care services in the face of heightened interest to introduce user fees.

CHAPTER 4

RESEARCH METHODOLOGY

4.1 Introduction

This chapter explains systematically the approach and activities that were undertaken in conducting the study in order to meet the objectives already stated in the introductory chapter. The chapter starts with a review of methods that are used to measure willingness to pay and empirical literature. Next, the chapter assesses the applicability of each of those methods to current study, and narrows down to select the preferred method and justification for choice of that method for application in light of the specific needs of this study.

4.2 Review of Methods for Measuring Willingness to Pay

WTP can be measured using different methods, but the most common one is what has been referred to as the contingent valuation method. According to Verbic et al (2007), the contingent valuation method (CVM) was first proposed by Ciriacy-Wantrup (1947) as a method for eliciting price data for non-market goods. The method has been used extensively, first in the environmental economics and later in other disciplines including health (Verbic et al, 2007; Cho, 2008). Breidert et al (2006) presented a model for measuring WTP, based on consumer utility theory. In the model recast in Figure 4.1, he argued that WTP can be measured directly from price-response data through the revealed preference method. This is a method which uses actual consumer purchases data from

past market transactions or from experiments. For non- traded goods or services such as public health care services, Breidert (2006) has proposed use of the stated preference, which takes the form of survey where target respondents are asked hypothetical questions regarding whether they would be willing to pay for a given well known good or service at a given price.

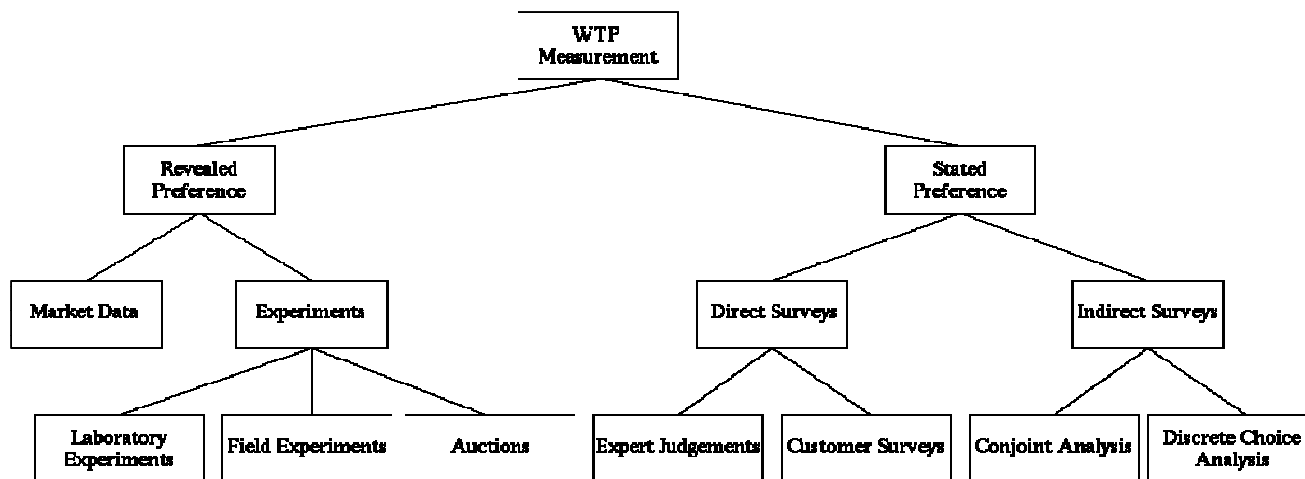


Figure 4.1: WTP Measurement

Source: Breidert (2006)

Due to practical difficulties associated with obtaining real market data from private clinics or government paying wards, the revealed preference method was deemed practically challenging. In addition, even if actual market data had been available from private clinics and paying wards in public hospitals, the revealed preference method was still considered inappropriate to use on a population that had already self-screened to the low quality free healthcare services when the option to go for better quality paying wards or private clinics was clearly available to them. Such care seekers probably fall into a different income group relative to those that self-screen into the paying wards.

Therefore, the stated preference method was considered most appropriate and practical given the population that the researcher was studying. The researcher therefore used the stated preference method which has also been widely used in many similar studies in many countries. The researcher administered a standard questionnaire to systematically sampled respondents from the selected target public health facilities in urban Lilongwe.

4.3 Study Area and Rationale for Choice of Lilongwe Urban and malaria condition

This study targeted respondents in urban public health facilities of Bwaila Hospital, Kawale Health Centre, and Area25 Health Centre in Lilongwe district, focusing on malaria condition. The selection process of these facilities has been explained and justified in the next section of this chapter. Lilongwe district was selected as an ideal district for the study, mainly because it has the largest urban population as a lead city. Thus, it was deemed relatively more representative of urban population willingness to pay than would smaller cities/urban areas such as Mzuzu or Zomba. The choice of urban facilities (as opposed to rural facilities) is based on the relative low levels of poverty that is already documented for urban areas compared to poverty situation in rural areas. For instance, the IHS3 conducted by the NSO in 2011 indicates high incidence of poverty in rural areas estimated at 57% (and 28% ultra-poverty), compared to urban areas where poverty levels stand at 17% (and 4.3% ultra-poverty) as already highlighted in earlier chapters. In addition, urban areas have shown greater reductions in poverty levels between IHS2 and IHS3 than the rural areas. The severity and chronic nature of poverty in rural areas therefore makes such areas unsuitable for consideration of user fees exploration if further impoverishment of rural people is to be avoided. Just to illustrate

depth of rural poverty, as many as 2,833,212 people in 2015 mostly in rural areas need emergency food assistance, a 44% jump from 1,972,993 people that needed food assistance in 2012 according to Malawi Vulnerability Assessment Committee reports (GoM 2012; 2015).

Finally, malaria was preferred as a condition of focus for this study for two reasons: first, it accounts as the second largest disease burden for Malawi after HIV/AIDS in terms of health spending, according to National Health Accounts (MOH, 2004; 2014). Secondly, malaria is one of the most well-known disease conditions that respondents would be very familiar with for valuation purposes for the hypothetical questions, compared to other disease conditions, such as diabetes or cardiovascular conditions.

4.4 Sampling strategy and design

The researcher followed a two-stage sampling strategy: facility selection, followed by respondent selection. First, the researcher obtained a listing of all health facilities in Lilongwe district, categorized into rural and urban facilities. All rural facilities were immediately dropped from consideration, leaving a total of six facilities classified as urban facilities. These included Deayoung Hospital, Area 25 Health Centre, Kawale Health Centre, Bwaila Hospital, Likuni Hospital, and Area18 Health Centre. As the study focused on public health facilities only where health services still remain free, Likuni and Deayoung Hospitals were dropped from the list as these are not public health facilities. This left a total of four health facilities, which were later ranked from highest to lowest based on malaria case data (for both ≤ 5 and >5 cases) recorded for the period February

2014 – January 2015, based on HMIS Data obtained from Lilongwe DHO. The top 3 facilities that were selected from this process in order of malaria burden severity for the next stage of respondent sampling included Bwaila Hospital, Kawale Health Centre, and Area 25 Health Centre.

Figure 4.2 summarizes this facility selection process.

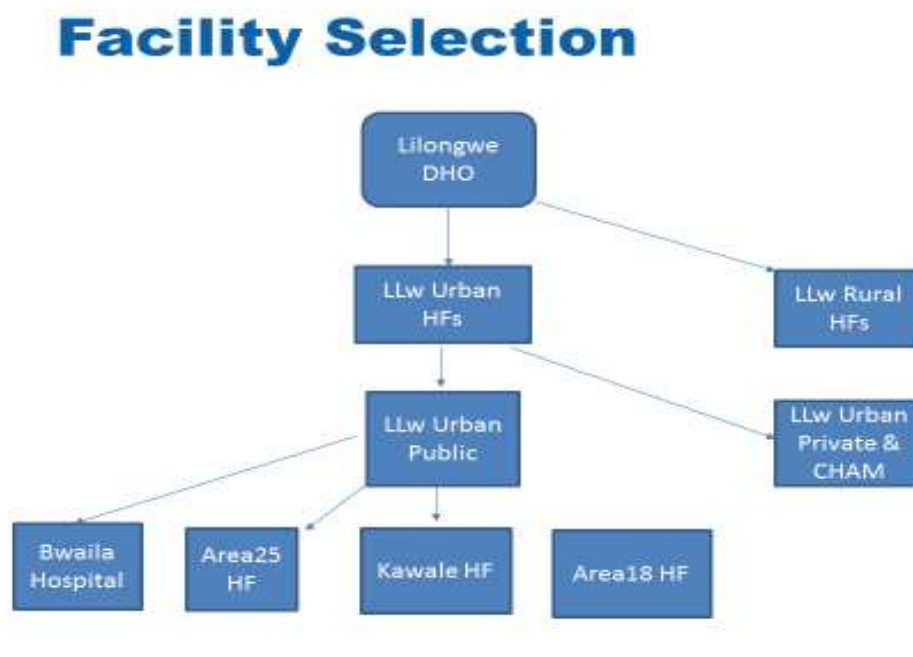


Figure 4.2: Facility Selection Strategy

4.5 Questionnaire Design and Ethical Approval

This research was conducted in form of cross-sectional study, using a structured pre-coded questionnaire to collect primary data. The questionnaire had three sections: 1) demographic and wealth measures questions; 2) Willingness to pay questions; and 3) Service quality perception questions.

A full package consisting of thesis proposal, sampling strategy, questionnaire, and respondent consent form (in both English and Chichewa), were reviewed and approved prior to data collection by the researcher's supervisor, Lilongwe District Health Office, as well as the National Health Sciences Research Council (NHSRC) in the Ministry of Health, herein referred to as the "Ethics Committee".

The full questionnaire that was used is appended at the end of this study report as Appendix 6.

4.6 Sample Size Determination and Respondent Sampling

Sample size determination was partly guided by malaria case data from Lilongwe DHO HMIS office for the period February 2014 - January 2015 as explained in earlier section.

In determining overall sample size, the researcher assumed a 95% confidence level and 5% margin of error. As will be seen from the table below, average monthly malaria cases for the three sampled health facilities of Bwaila Hospital, Kawale Health Facility, and Area 25 Health Facility amounts to 5,587 malaria cases. With this monthly average, and given the desired confidence level and margin of error, the Survey Sample Size Calculator gives a sample of 360 respondents. This is approximately 10% of the target population and is consistent with minimum recommended standard sample proportion size in survey work. Facility level sample size determination was based on this total sample, adjusted by the facility malaria burden proportion. The result was adjusted by ensuring that the smallest facilities still had a sample of at least 110 respondents to allow a sensible regression analysis. Final sample sizes are given in Table 4.1.

Table 4.1: Sample size determination and distribution among facilities

Sample Size Determination using Sample Size Calculator

Facilities: Bwaila, Area25; and Kawale

Total monthly

caseload: 5,587

Total Sample Size 360 (<http://fluidsurveys.com/survey-sample-size-calculator/>)

Proportionate distribution of the 360 sample by facility				
	Facility Name	% malaria burden	Facility sample size	Adj. facility sample size
	Bwaila	43%	155	140
	Area25	31%	110	110
	Kawale	26%	95	110
	TOTAL	100%	360	360

The study involved collecting primary data from randomly selected respondents from Bwaila Hospital, Kawale Health Centre, and Area25 Health Centre in the numbers calculated above. The sampling unit used in this study was defined as a care seeker (patient or guardian) that would be found at any of the selected facilities. In terms of exclusion, the following respondent categories were not allowed to participate in the

study to avoid biasing results and/or rendering some records incomplete: minors, school children and students, people deemed to be of unsound mind, and those deemed seriously ill from visual inspection only.

Based on *facility exit interview* model, respondents were drawn from the pharmacy line after they had already been attended to by clinicians. Starting with a random selection at the start of each day, subsequent respondents were drawn from the queue at an interval of 4 (i.e. every 4th person in the queue), subject to exclusion criteria stated above. The pharmacy line was deemed most appropriate because at this point, respondents had already seen the clinician and the probability of having their adequate attention at this point, as opposed to before being seen by a clinician, was relatively high. In addition, the probability of getting sufficient respondents after they had already received medicine was very low, hence the pharmacy line was deemed the most appropriate place to draw respondents for interviewing. The researcher and his team of three trained assistants explained the purpose of the study to each selected respondent and asked if respondents needed any clarification on subject matter before administering questionnaire. In addition, respondents were asked for voluntary consent to proceed with interview. Once selected respondents consented to interviewing, the researcher or his assistant would proceed administering the questionnaire and recording responses.

4.7 Data Collection

Data collection was conducted in April 2015 over a period of two weeks by the researcher assisted by a team of three well experienced research assistants. The assistants were trained in the questionnaire tool and how to administer it prior to the data collection, and were duly supervised by the researcher during actual data collection to assure data quality. Using the approved questionnaire and the CVM approach, randomly selected respondents were asked to respond to a series of questions covering demographic and wealth measures, willingness to pay questions, and malaria treatment quality perception questions. These elements were deemed necessary to answer the three research objectives set.

In line with recommendations by the Population Council's FRONTIERS (Aguilar et al, 2001) and the National Oceanic and Atmospheric Administration (Foreit and Foreit, 2004), the researcher adopted "the bidding game" approach. This involved asking respondents to indicate whether they were willing to pay a specified pre-determined amount of money for improved quality malaria treatment in public health facilities or not. The initial asking price used was K1600 based on weighted market price data for anti-malaria drugs (ACTs) obtained from private pharmacy stores in the absence of cost data from paying wards in central hospitals or private clinics. Where response to initial bid price was positive, the question was asked again but now with a higher hypothetical price and the response recorded. If response to initial bid price was a "No", the question was asked again, but now with a lower cost. Thereafter, the respondents' were asked to indicate the maximum amount that they were willing to pay for improved malaria

treatment in public hospitals, and the responses were also recorded. This approach reduced risk of strategic bias and hypothetical bias, as recommended by the Population Council's FRONTIERS and the National Oceanic and Atmospheric Administration (Aguilar et al, 2001; Foreit and Foreit, 2004).

4.8 Determinants of WTP

Various researchers have attempted to investigate determinants of willingness to pay (WTP), from environmental economics, to health economics, to marketing and other fields of application. Gall-Ely (2009), Cross et al (2000), Liebe (2011), Phiri and Masanjala (2009), and Makoka (2007) are some of them. Previous studies focusing on willingness to pay for community health insurance have found that respondent age, gender, education level, household size, and other variables such as respondent perception of scheme organizers' trustworthiness were significant determinants of their willingness to pay for the community health insurance (Onuwujekwe et al, 2010; Babatunde et al, 2012; Barnighausten, 2007; Asfaw et al, 2006).

In a study on willingness to pay for community health insurance in Malawi, Makoka et al (2007) found that income, membership, and awareness of the schemes were significant determinants of willingness to pay. These findings were consistent with those by Phiri and Masanjala (2009). In addition, Phiri and Masanjala (2009) also found education, income, household size, and employment as positively influencing willingness to pay while age and perceived quality of healthcare service were found to negatively influence willingness to pay.

This study proposed the following assumed determinants for testing the model, as tabulated below:

Table 4.2 Definitions of Explanatory Variables of the Model

Variable	Description	Value
SEX	Observed respondent sex	1=Female; 2=Male
AGE	Respondent reported age	Number
EDU	Respondent highest education	0=none; 1=Primary Level; 2=Junior Certificate level 3=MSCE level 4=Diploma level 5=Degree and above
HOUSEHOLD SIZE	Number of members in hh	Number
KNOWLEDGE LEVEL	Respondent awareness of user fees	0=Not aware; 1=Aware;

ELECTRICITY	Electricity in respondent house	1=Available; 0=otherwise
PIPED WATER	Water in respondent house	1=Available; 0=otherwise
COMMUNAL WATER	Communal water nearby	1=Available; 0=otherwise
FLUSH TOILET	Flush toilet in respondent house	1=Available; 0=otherwise
CAR OWNERSHIP	HH owns a car	1=Yes; 0=otherwise
ASSET OWNERSHIP	HH owns asset (ox-cart, bicycle)	1=Yes; 0=otherwise
GROSS INCOME	Respondent monthly gross income	amount (Kwacha)
SPOUSE INCOME	Spouse's monthly gross income	amount (Kwacha)
MALARIA FREQ	Malaria freq. in family last quarter	number
MALARIA SEVERITY	Perceived malaria severity	1=not serious at all 2=somewhat serious 3=serious 4=very serious 5=indifferent

SERVICE QUALITY	Perceived current service quality	1=excellent 2=very good 3=reasonable 4=poor 5=very poor
IMPROVEMENT PERCN	Perceived service will improve with fees	1=Believe quality will improve 2=Believe quality will not improve
LOCATION	Respondent location	name of location

4.9 Model Selection and Specification

This section reviews several econometric regression models that involve a dependent variable that is qualitative in nature, such as willingness to pay (Gujarati, 2004).

The linear probability model (LPM), the logit model, the probit model, as well as their variants and extensions (tobit, multinomial logit and multinomial probit) have all been identified as useful qualitative response regression models (Gujarati, 2004; Woodridge, 2003). However, Gujarati (2004) and Woodridge (2003) cite a number of shortfalls that the LPM faces that effectively reduce its suitability as a dichotomous, binary response regression model. The widely cited shortfalls include 1) the likelihood that the expected value of the dependent variable, given the value in a given regressor, as a probability may fall outside the normally acceptable probability range of 0 – 1; 2) its inherent assumption that the partial effects of regressors are constant. That is, the model wrongly assumes that the regressand and regressors are connected in a linear relationship; 3) heteroscedastic error term which affects efficiency of prediction; and 4) the error term not being normally distributed. In light of these shortfalls, the logit and probit have been found to be more suitable models as they both guarantee that the expected value of the regressand (estimated probabilities) will lie within the normal expected range of 0-1, and that the regressand and its regressors will not be related in a linear manner as assumed under the linear probability model. According to Gujarati (2004), the logit and the probit models give qualitatively similar results. They are quite similar, almost interchangeable, and therefore the choice of one over the other is a matter of preference rather than compelling technical superiority.

This study used cross-section data where the sample data is censored. That is, in a sample of 360 respondents, some expressed willingness to pay while others were not willing to pay user fees for malaria treatment. This study, therefore, used an extension of the probit model known as the Tobit model. Gujarati (2004) and Woodridge (2003) strongly recommend use of the Tobit model as the most appropriate model in cases where the sample data is censored, as is the case with this study. In the latter part of the session, the Tobit model is presented and explained.

The Tobit model is therefore specified in its standard form as below (Wiesmann and Jutting, 2001; Gujarati, 2004; Woodridge, 2003):

$$\begin{aligned} Y^* &= \beta_0 + x'\beta + \mu_i, \mu_i | x \sim \text{Normal}(0, \sigma^2), Y = 1(Y^* > 0), \text{ or} \\ &= \beta_1 + \beta_2 X_i + \mu_i, \text{ if } \text{RHS} > 0 \end{aligned}$$

Where:

- i. Y^* is the dependent variable (regressand), in this case, the willingness to pay for malaria treatment
- ii. X is a matrix of values of explanatory variables/assumed determinants of willingness to pay as specified in the table above
- iii. β is a vector of regression coefficients to be estimated, and
- iv. μ represents a vector of residuals.
- v. RHS means right hand side

The full model specification for this study, given the assumed determinants in table above, is therefore given as follows:

$$Y^* = \beta_1 + \beta_2SEX + \beta_3AGE + \beta_4EDU + \beta_5HHSIZE + \beta_6KNOWL + \beta_7ELECTR + \beta_8PPWATER + \beta_9COMMWATER + \beta_{10}FLUTOILET + \beta_{11}OWNCAR + \beta_{12}ASSET + \beta_{13}INCOMEG + \beta_{14}INCOMESPOUSE + \beta_{15}FREQMALARIA + \beta_{16}SERMALARIA + \beta_{17}QUALSERVICE + \beta_{18}IMPROVEPERC + \beta_{19}LOCATION$$

4.10 Data Preparation and Analysis Approach

Data was analyzed using STATA12. Both descriptive and econometric analyses were conducted to inform results in a manner that directly answered the different hypotheses and research questions set in the introduction section.

Specifically, descriptive analysis was conducted to understand the population better in terms of its key characteristics. Secondly, Tobit regression analysis was conducted to examine which determinants were significant from the pool that was proposed in previous table. Next, STATA12 was also used to conduct ‘marginal effects at mean’ analysis to assess impact of marginal changes in each of the independent variables on the value of the dependent variable, holding the effects of other variables constant.

Finally, frequencies were run to estimate exclusion of care seekers at different price levels and these were plotted into a cumulative density function (CDF) to reflect probability of excluding eligible care seekers at different price levels.

4.11 Diagnostic Tests

Cross sectional data is usually plagued by the problem of heteroskedasticity. This analysis included a log linear transformation of the regression models in order to eliminate possible heteroskedasticity and possible multicollinearity between variables, such as education and income that traditionally tend to move together.

The t-test and the F-test were used to test individual coefficient and model significance.

4.12 Conclusion

This chapter has presented detailed methodology in terms of how the study was conducted. The researcher has also provided justification for choice of study area as well as clearly discussed alternative econometric models available for this kind of study, culminating in the choice of the Tobit model with clear justification. The specific Tobit model for the research question has been presented, including specification of the econometric models and diagnostic tests used.

The next chapter presents results and their interpretation

CHAPTER 5

RESULTS AND INTERPRETATION

5.1 Introduction

This chapter presents and interprets results from both the descriptive and the regression analyses. Specifically, the chapter presents results from descriptive analyses in terms of explaining the unique characteristics of the population of interest in the study. In addition, the chapter identifies variables that influence respondents' mean willingness to pay for malaria treatment. The chapter further highlights the sensitivity of the dependent variable to marginal changes in each of the influencing variables through the 'marginal effects at mean' analysis. Finally, the chapter illustrates the potential exclusion effects of introducing user fees on malaria treatment in public health facilities for different assumed price levels.

5.2 Descriptive Analysis

Of the 354 valid responses obtained, 259 were female representing 73% of all valid responses. This is an indication that women take a lead role at family level in terms of taking care of the sick, including taking them to health facilities to access care. The higher percentage of females accessing care in public health facilities is clearly visible across all health facilities of Bwaila Hospital, Kawale Health Centre, and Area25 Health Centre as can be seen in Table 5.1.

In terms of education, the majority of respondents in this study have very minimal formal education levels. For instance, 36 respondents out of the 354 (10%) valid responses have no formal education; and 105 of the 354 valid responses (30%) are educated to primary school. Thus, cumulatively, only 40% of valid responses have attained formal education up to primary school level. In addition, only 4 respondents out of the valid 354 responses (1%) have a formal education above the Malawi School Certificate of Education (MSCE) level (Appendix5). These findings are fairly consistent with those from IHS3 as presented in earlier chapter.

Table 5.1: Willingness to pay by facility by gender

Facility	Willing To Pay by Gender						Total
	Not willing to pay			willing to pay			
	Female	Male	Total	Female	Male	Total	
Area25 HC	20	4	24	68	18	86	110
	83%	17%	22%	79%	21%	78%	100%
Bwaila							
Hospital	21	11	32	60	35	95	127
	66%	34%	25%	63%	37%	75%	100%
Kawale HC	7	5	12	83	22	105	117
	58%	42%	10%	79%	21%	90%	100%
Sub-Total	48	20	68	211	75	286	354
Total	19.2%			80.8%			100%

In terms of occupation, Table 4.2 shows that majority of the people accessing healthcare services in public urban health facilities are either unemployed or self-employed. For example, as many as 127 of the valid 354 responses representing 36% are unemployed. In addition, 99 respondents (representing 28%) are self-employed in some petty jobs, such as hawking, second-hand clothes vending, quarry stone breaking and selling, and selling river sand among others. Cumulatively, therefore, up to 64% of the respondents are outside the formal employment system. Thus, only 36% are having a steady income through participation in the formal job sector. These findings on employment mirror well the findings on education levels, given that education in Malawi is one of the critical determinants of job access.

The average household size is 4.4 people, and monthly respondent gross income averages K20, 868.90 (US\$33, at Dec 2015 exchange rate of K640/US\$, or US\$0.25 per person per day), but with greater variability among respondents. Thus, on average, this is a population that is poor as it subsides on an income that is far below the global poverty cut off point of US\$1 per person per day. Therefore, the above findings indicate that the population that is accessing the free healthcare services in the public facilities constitutes mostly women with little to no formal education. In addition, these respondents are coming from families that are largely poor as their per capita falls below the global cut off poverty level of US\$1. This is the population that any policy change around user fee introduction in public health facilities will impact the most, directly and immediately.

In terms of willingness to pay for malaria treatment in public health facilities in Lilongwe urban, nearly 81% of respondents indicated willingness to pay, with mean WTP amount

of K965.73. Disaggregating respondents' willingness to pay by gender, 81% of women who participated in the study indicated they were willing to pay for malaria treatment while for men, 79% indicated as willing to pay. In general, therefore, there are no significant differences in WTP for malaria treatment between male and female respondents for the facilities sampled, as both male and female respondents seem to value malaria treatment almost equally.

However, Kawale Health Centre registered the highest percentage of respondent willingness to pay (90%), followed by Area25 Health Centre respondents at 78% and lastly Bwaila at 75%. The exact reasons for these differences were not investigated.

5.3 Tobit Regression Analysis Results

This chapter presents results from the Tobit regression analysis, specifically to answer hypothesis number 2, which seeks to examine socio-economic factors (determinants) that influence respondents' willingness to pay for malaria treatment in public health facilities in Lilongwe urban.

As will be seen in Table 5.2, a total of eight factors are significant at 10%, 5%, and 1% levels as explained.

Table 5.2: Tobit Regression Output

Log likelihood =	-2362.5283		Pseudo R2 =	0.0264
Variable Name	Coefficient	p-value	95% CI	
SEX	7.62206	0.943	-203.568	218.812
AGE*	-9.18652	0.063	-18.877	0.504
EDU	-34.33644	0.461	-125.793	57.120
HHSIZE	25.35819	0.321	-24.839	75.555
KNOWLCODE**	180.95060	0.049	0.636	361.265
ELECTR	129.75560	0.342	-138.327	397.838
PPWATER***	524.97420	0.007	146.475	903.474
COMMWATER*	347.50530	0.065	-21.879	716.889
FLUTOILET**	553.03550	0.040	26.432	1079.639
OWNCAR	98.19333	0.815	-724.684	921.071
ASSET	216.40610	0.181	-101.041	533.853
INCOMEG***	0.00186	0.003	0.001	0.003
INCOMEGSPOUSE***	0.00260	0.002	0.001	0.004
FREQMALARIA	-40.15424	0.230	-105.818	25.509
SERMALARIA	26.49196	0.580	-67.625	120.609
Quality service	-107.18970	0.480	-405.182	190.802
IMPROVEMENT PERCEPTION***	731.06240	0.000	538.588	923.537
Location	-178.09890	0.154	-423.295	67.097
Cons	43.18159	0.902	-645.246	731.609
* = significant at 10%; ** = significant at 5%; *** = significant at 1%				

At 10% confidence level, respondent 1) *age* and 2) *access to communal piped water* are significant. Age negatively influences willingness to pay because as respondents grow older, their ability to access income (and therefore afford user fees) gets diminished, thereby reducing their overall WTP for malaria treatment. Results on this factor suggest that a unit increase in age of the population that accesses the free healthcare services will result in WTP reduction by an average of K9.19.

However, access to communal piped water positively relates with willingness to pay. This is expected, since access to piped water denotes some level of wealth. Thus, as families get wealthier over time and command relatively more income (denoted partly by ability to afford and access clean communal piped water), they will tend to be more willing to pay for malaria treatment. In other words, with appropriate policy and programme interventions that improve peoples' overall wealth standing as to afford communal piped water, overall mean WTP will increase by K347.51. Thus, economic empowerment programmes that truly improve peoples' wealth standing have the capacity to increase their WTP for malaria treatment and create the right conditions to move away from a completely free health care system in future, *ceteris paribus*.

At 5% confidence level, 1) *awareness regarding the topic of user fees at time of interview*, and 2) *access to flush toilet* were found to positively influence willingness to pay for malaria treatment. Based on the findings, a unit change in awareness of target population about user fees and their benefits will result in a K180.95 improvement in mean WTP for malaria treatment, holding other factors constant. Thus, the more aware

respondents are to issues of user fees, the greater the chance of advance reflection regarding benefits and the higher their willingness to pay for malaria treatment. This factor underlines the value of advance information sharing on policy issues such as user fee introduction that helps inform and influence peoples' decision making around WTP. Thus, moving any important agenda such as user fee introduction calls for advance information sharing and awareness creation among the target people that will be affected by that policy change so that they are adequately well informed.

For the access to flush toilet in the house, this is a proxy measure of wealth index as explained already above. Thus, a unit increase in peoples' wealth standing as to afford a house with flush toilet, other things being equal, will result in an overall K553.04 overall improvement in mean WTP. This is because with increased wealth comes ability to command higher incomes and afford necessities that were otherwise not affordable, such as malaria treatment. The implication of this factor is that to influence peoples' future WTP for malaria treatment, there is need to invest in policy and programmes now that empower them economically and improve their overall wealth position as to afford basic necessities such as houses with running water and flush toilets.

Finally, the following factors positively influence WTP at 1% as can be seen from Table 5.2: 1) *access to piped water in the home*, with a coefficient of K524.97; 2) *gross income of the respondent*, with coefficient of K0.002; 3) *gross income of respondent spouse*, with coefficient of K0.003; and 4) *respondents' perception and confidence regarding government's ability and credibility* to channel extra resources from user fee introduction

into service quality improvement. The latter has a coefficient of K731.06, implying that improvements in peoples' perception regarding government credibility to use proceeds from user fees to improve service delivery has a huge positive impact on their willingness to pay such user fees for malaria treatment. The opposite is true: any development that reduces government credibility to use user fees to improve service quality can reduce overall mean WTP by the same factor. As expected, improvements in wealth index (access to piped water in the home) and incomes at household level influence WTP positively.

Finally, note that coefficients for respondent and spouse gross incomes are very negligible, though positive. This is expected, since a unit change in income levels (say, an increase of K1 in respondent monthly income) will be so negligible that it cannot change respondents' economic wellbeing as to influence overall WTP. The change in gross incomes must be significant enough to impact on WTP.

Equally interesting are the findings on sex, education, ownership of car and assets, as well as location which are not significant at the three significance levels. As noted earlier, sex does not influence WTP, since both male and female respondents are nearly equal in terms of their WTP (79% versus 81%, respectively). In addition, the sample is less differentiated in terms of their education levels. In fact, the effect of increasing the level of formal education among this population is to reduce overall WTP for malaria treatment. The logic is that as the population gets more educated, access to incomes increases and therefore they are able to afford better quality healthcare services elsewhere outside the public healthcare system. Thus, their overall WTP for malaria treatment in

public health facilities, which is usually of lower quality compared to privately managed facilities, will diminish with more formal education acquired. Therefore, education carries a negative sign. Furthermore, while respondents were drawn from different locations, location in this case does not necessarily seem to influence WTP as would normally be expected. The likely reason is that location in this particular case does not signal economic wellbeing. Rather, the majority of respondents, irrespective of their location, represent the face of urban poverty and therefore nearly homogeneous in terms of key characteristics.

Overall, these findings are consistent with those obtained by Phiri and Masanjala (2009) from their study on WTP for micro health insurance, except findings on education. In the study by Phiri and Masanjala (2009), education positively influenced WTP and was a significant determinant, unlike in this study.

5.4 Findings from ‘Marginal Effects at Mean’ Analysis

Table 5.3 summarises findings from the “Marginal Effects at Mean” Analysis. The main goal of the ‘*marginal effects at mean*’ analysis was to assess impact of a unit change in the value of each of the regressors individually on the regressand, holding the effects of other regressors constant at their mean. For example, a unit change in education level (say from Junior Certificate of Education to Malawi School Certificate of Education) should result in overall *reduction* in mean WTP by K34.34. Similarly, a shift from having no piped water to having piped water in the house will result in an improvement in overall WTP by K524.97, *ceteris paribus*.

In terms of structure of the table, column labelled ‘mean value’ gives the mean values for each of the different predictor variables in the model. The (dy/dx) measures the effects on the dependent variable that would result from a unit change in the value of a given predictor, holding the values of the rest of predictors at their mean. When the dependent variable is a binary response choice WTP, the (dy/dx) measures the probability change in the dependent variable that would result from a unit change in the value of a predictor of interest, holding other predictors at their mean values. When presented in absolute terms with the WTPMAX as dependent variable, the (dy/dx) should be understood as a change in absolute value of the mean WTP amount as a result of a unit change in the value of one of the predictor variables, with all other predictor variables held constant at their mean values. For example, unit changes in availability of electricity, piped water and flush toilets in target respondent houses would individually cause increases in mean value of WTPMAX as a dependent variable by nearly K130, K525, and K553 respectively. Thus, willingness to pay appears to be very sensitive to the changes in fundamentals that would cause households to afford basic wealth indicators of electricity, piped water and flush toilet in their homes. In practice, results from the ‘Marginal Effects at Mean’ Analysis (Table 5.3) serve to confirm the correctness of the analysis in the previous tobit regression.

Table 5.3: Marginal Effects at Mean Analysis, Tobit

y = Linear prediction (predict)	674.71791				
Variable	dy/dx	p-value	95% CI		Mean Value
SEX	7.6221	0.9430	-202.8070	218.0510	1.2684
AGE	-9.1865	0.0620	-18.8422	0.4691	31.9661
EDU	-34.3364	0.4600	-125.4630	56.7904	1.6045
HHSIZE	25.3582	0.3200	-24.6580	75.3744	4.4237
KNOWL _{C~E} *	180.9506	0.0480	1.2853	360.6160	0.3559
ELECTR*	129.7556	0.3410	-137.3610	396.8730	0.2797
PPWATER*	524.9742	0.0060	147.8380	902.1110	0.2147
COMMWA _{~R} *	347.5053	0.0640	-20.5482	715.5590	0.8559
FLUTOI _{~T} *	553.0355	0.0390	28.3292	1077.7400	0.0339
OWNCAR*	98.1933	0.8140	-721.7200	918.1070	0.0113
ASSET*	216.4061	0.1800	-99.8977	532.7100	0.0847
INCOMEG	0.0019	0.0030	0.0006	0.0031	20868.9000
INCOME _{~E}	0.0026	0.0020	0.0010	0.0042	24587.6000
FREQMA _{~A}	-40.1542	0.2290	-105.5810	25.2727	1.6780
SERMAL _{~A}	26.4920	0.5800	-67.2863	120.2700	0.6723
QUALITY OF SERVICE*	-107.1897	0.4790	-404.1080	189.7290	0.9124
IMPROVEMENT PERCEPTION*	731.0624	0.0000	539.2810	922.8440	0.6921
LOCATION*	-178.0989	0.1530	-422.4120	66.2136	0.8531
(*) dy/dx is for discrete change of dummy variable from 0 to 1					

5.5 Probability of Excluding Legitimate Careseekers at different price levels

One of the arguments against user fees is that they exclude legitimate poor care seekers in need from accessing life saving healthcare services and induce inefficiencies in the distribution of healthcare services (Manthalu, 2014; Lagarde and Palmer, 2008; Lagarde and Palmer, 2011; Arhin-Tenkorang, 2010; Deininger and Punga, 2004). Just how much is the exclusion in the case of Malawi? And what is the tipping point at which exclusion is at its worst? These questions do not have ready answers for Malawi and this study seeks to draw insights to help answer these questions.

Figure 5.1 summarises risk of exclusion in form of cumulative density function (CDF) that current users of the free public healthcare services would face if user fees were introduced at different hypothetical price levels. The vertical axis measures probability of exclusion in percentage, while the horizontal axis maps different hypothetical price levels. While no level of exclusion is acceptable, the CDF shows that price changes from zero to K300 have minimal marginal effects on cumulative exclusion, estimated at 12%. However, any increase in price from K300 to K500 increases probability of exclusion by 45% to 58%. This implies that if price of malaria treatment were hiked to K500, as many as 58% of eligible care seekers in need of health services would be excluded from accessing the service in public health facilities. From a health access policy standpoint, this would be a very undesirable consequence which could potentially roll back gains already made in fighting malaria and reducing malaria related mortality and morbidity. In a country where citizens have no national identification cards, the option of identifying

and screening poor people for purposes of subsidizing their health care to prevent exclusion would be both arbitrary and costly to implement if user fees were in place.

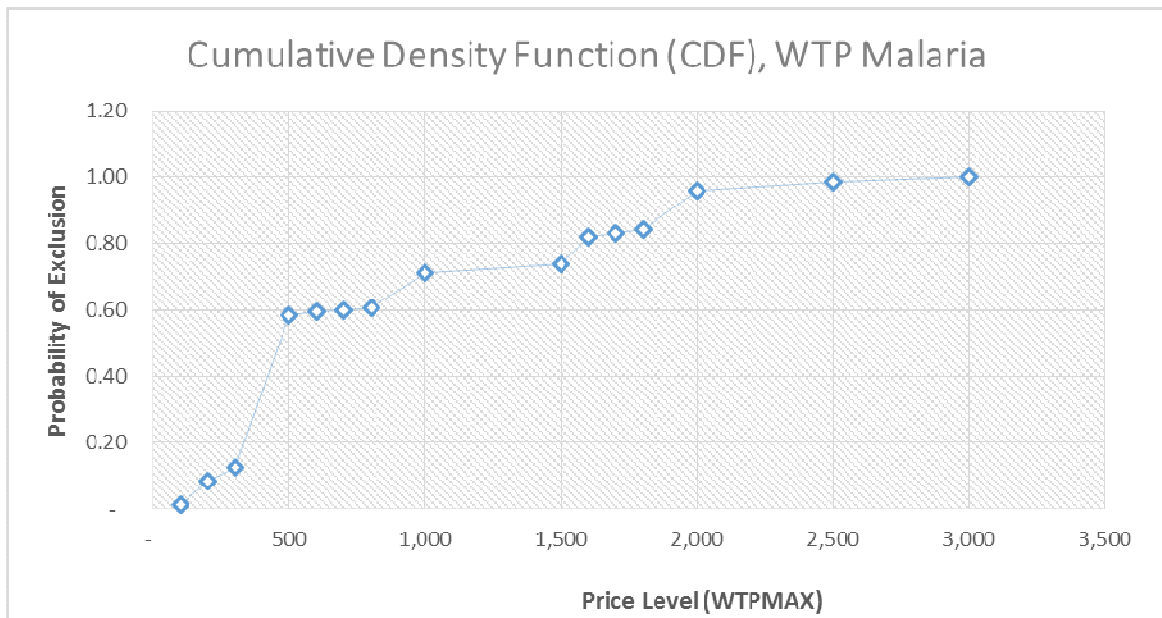


Figure 5.1: Probability of Patient Exclusion at Different Price Levels

In terms of understanding the people that are likely to be excluded, Table 5.4 gives some insights for policy makers. Of the 36 respondents that have no formal education, only 2 (5.5%) indicated they would seek care from private clinics if user fees were pegged above their maximum WTP. The alternative options, such as *stay home* (desperation), seek care from traditional doctor, and *don't know*, all point to the fact that these respondents have nowhere else better to go for care. In fact, the majority of them would still go to government facilities even where user fees were pegged above their reservation

price (maximum WTP). This clearly confirms that they are heavily dependent on government facilities for care.

Similarly, only 11 – 16% of those with primary education, Junior Certificate of Education and Malawi School Certificate of Education (MSCE) indicated private clinic as an option. The majority would either remain destitute or still hang on to the poor quality service available in public health facilities. It is only the respondents with diploma and above that indicated willingness to go to private clinics up to 50%.

In terms of employment, only 15% of those unemployed or in self-employment would go to private clinics. The rest would either hang about with the poor quality service in public facilities or remain helpless in the home. Even among those in formal employment, only 13% indicated willing to go to private clinics in the event that user fees exceeded their maximum WTP. In summary, therefore, the people that are likely to be excluded are those with low levels of formal education to none, unemployed or in petty self-employment, and already living below the poverty line of US\$1 per person per day. The results clearly demonstrate that the working class and those with decent incomes have screened themselves out of the public healthcare system to private clinics where quality of care is better than what is available in public facilities. Thus, policy decision that introduces user fees will directly affect the poor vulnerable part of the society, with no viable alternative care options other than the government facilities themselves.

Table 5.4: Patient Alternative Care Options by Factor

Factor	Category	Care Options when price exceeds WTPMAX				
		Stay	Tradition	Don't	Private	Government
		Home	Healer	know	Clinic	Hospital
Education level	None	8	1	1	2	24
		22.22	2.78	2.78	5.56	66.67
	PSLC	19	1	14	17	54
		18.1	0.95	13.33	16.19	51.43
	JC	10	0	5	7	41
		15.87	0	7.94	11.11	65.08
	MSCE	9	2	5	13	49
		11.54	2.56	6.41	16.67	62.82
	Diploma and above	1	0	0	2	1
		25	0	0	50	25
Occupation	Formal employed	5	0	3	8	44
		8.33	0	5	13.33	73.33
	Self Employed	19	1	5	14	60
		19.19	1.01	5.05	14.14	60.61
	Unemployed	23	3	17	19	65
		18.11	2.36	13.39	14.96	51.18

5.6 Consistency with postulations of economic theory and empirical evidence

In general, most of the findings are consistent with empirical evidence from studies conducted on key determinants of WTP elsewhere. For example, older respondents (senior citizens) will tend to be less willing to pay for healthcare in public facilities, possibly due to declining income earning capacity (Aizuddin et al, 2011; Phiri and Masanjala, 2009). The model also correctly predicts that with increasing levels of knowledge/awareness about the topic of user fees, there is a corresponding positive effect on willingness to pay (Makoka, 2007). The model also correctly predicts that as households attain some level of economic wellbeing as to afford some wealth (house with electricity, piped water, flush toilet), their WTP goes up because they can now afford healthcare.

Similarly, findings that user fees have an exclusionary effect on eligible care seekers are very consistent with findings from many similar studies from other places, such as those by Gertler and Gaag (1990); Lagarde and Palmer (2011); and Manthalu (2014), among others. Thus there is greater consistency between findings from this study and economic theory postulations and empirical evidence as already outlined.

5.7 Departures from postulations of economic theory and empirical evidence

The model has unearthed two interesting pieces of results which run contrary to some of the available empirical evidence. For instance, the model has found a negative relationship between respondent education and WTP, which is contrary to available empirical evidence from Aizuddin et al (2011), and Phiri and Masanjala (2009). In the

case of this study, the most likely explanation for this departure from theory and available evidence is that people with higher education levels are likely to be in better paying jobs and having greater ability to afford better quality healthcare services outside the public system. Thus, they will not be willing to pay beyond a certain amount for a service they know well to be of poor quality and less value for money in public facilities. This supports the observation already made that the more educated richer residents of the urban have most likely self-screened themselves out of public healthcare system into the private clinics where quality of service is far much better. This possibly may also explain why location is not a significant predictor of WTP as the 'income signal' element associated with location in urban setting has migrated to private clinic.

The second interesting finding is that marginal changes in gross incomes has an almost negligible coefficient size. Ordinarily, one would expect that consistent with findings by Aizuddin et al (2011), small change in incomes would affect willingness to pay in form of a bigger coefficient. However, findings in this study indicate that a unit change in the value of gross income has only a marginal effect on WTP, having a coefficient of 0.002 (nearly zero). Despite the apparent departure, this finding is very valid in this study. A small change (such as K1.00) in gross income will not be sufficient enough to significantly change a household's economic wellbeing as to affect their WTP. The change in income would have to be big enough to break structural barriers and poverty traps and allow the households to move to the next level of welfare for WTP to be affected in a meaningful manner. In addition, findings from this study also contradict

those by Phiri and Masanjala (2009) with respect to sex and household size being determinants.

5.8 Conclusion

This chapter has presented findings from descriptive and econometric analyses using the tobit model and ‘Marginal Effects at Mean’ Analysis. The analyses have clearly demonstrated that majority (81%) of the sample that was interviewed value malaria treatment and are willing to pay some level of user fees, with mean WTP amount of K965.73.

The study has also shown that the majority of people accessing the free healthcare services in public hospitals in Lilongwe urban are women (73%), and that there is no significant difference in WTP between male and female respondents (79% and 81%, respectively). However, there are some variations in WTP findings across health facilities, with Kawale Health Centre registering the highest percentage of WTP (90%), followed by Area25 Health Centre (78%), and lastly Bwaila Hospital (75%). In addition, the study has illustrated that majority of beneficiaries from the current free healthcare services have very minimal to no formal education, and are either unemployed or self-employed in petty jobs. Only 60 of the 354 valid respondents (17%) have a formal job. The population represented by this sample is also predominantly poor, with per capita income averaging US\$0.25, far below the poverty threshold of US\$1 per person per day. In terms of determinants, the study has found eight factors as significantly influencing mean WTP at different confidence levels. The factors include: respondent age, awareness

about user fees in general, respondent and spouse gross incomes, attainment of a certain minimum wealth standing as demonstrated by access to electricity, piped water and communal piped water, and flush toilets; as well as the respondents' perception regarding government credibility to improve quality of care if user fees were introduced. The marginal effects analysis further highlighted that increasing public awareness about user fees, empowering the poor economically as to afford basic necessities, and improving their incomes are critical to moving towards a paying public health system in future.

CHAPTER 6

CONCLUSIONS AND POLICY RECOMMENDATIONS

6.1 Conclusions

This study sought to assess willingness to pay for malaria treatment in public health facilities in Lilongwe urban. Specifically, the objectives of the study included 1) assessing mean WTP for malaria treatment; 2) examining determinants that influence WTP for malaria treatment; and 3) assessing extent of potential exclusion that would arise from introducing user fees at different price levels. Using primary data collected through a survey using the contingency valuation method (CVM), descriptive and econometric analyses were conducted to answer the research hypotheses that had been set at the beginning of the study. Based on findings from these analyses, the researcher draws a number of key conclusions as stated below.

Firstly, majority (81%) of current consumers of the free public healthcare services do value malaria treatment services in public health facilities and are willing to pay some level of fees. Thus, the first hypothesis which states that consumers are not willing to pay for malaria treatment in public facilities is not supported by evidence. The hypothesis may therefore be rejected and its alternative accepted.

Secondly, there are no significant differences in WTP between male and female respondents (79% and 81% respectively). Thus, gender is not a relevant variable in making the final decisions around introducing or not introducing user fees in public health facilities.

Thirdly, the following factors have been confirmed as actually influencing consumers' WTP for malaria treatment: respondent age, prior awareness about user fees, ownership of basic wealth indicators (electricity, piped water, piped communal water, and flush toilet), respondent monthly gross income, spouse monthly gross income, and expectations that service quality will improve if user fees are put in place. Thus the hypothesis which states that socio-economic factors do not influence WTP is not supported and may be rejected.

The immediate implication is that introduction of user fees in public facilities in future will need several prerequisite conditions to be in place. These include a general improvement in household economic conditions to a level that people can afford basic necessities of life such as electricity and piped water; greater confidence among consumers that government is credible enough and can be trusted to channel resources from user fees towards improving quality of health services; and advance sensitization and awareness creation among target population to appreciate value of paying in public facilities.

Fourthly, evidence has shown that user fees will exclude some consumers at any price levels. A price of K300 has been found to be the tipping point beyond which the probability of exclusion goes up dramatically. The hypothesis that user fee introduction will not exclude deserving but poor consumers is therefore not supported and may be rejected in light of this evidence.

In conclusion, therefore, introduction of user fees is not recommended under the present conditions, despite high acceptance rate by consumers. This is because most of the proxy measures of ability to pay do not support this high WTP acceptance rate. Mean household incomes remain far below poverty levels (US\$0.25 per capita); most of the consumers are unemployed or in petty self-employment, therefore have no secure incomes; and most of the consumers lack viable alternative care options other than government facilities if user fees were pegged above their maximum WTP. Thus, introducing user fees on an already poor and vulnerable urban population of consumers without clear cushioning mechanism is likely to either exclude them from accessing malaria treatment, or further impoverish the already poor and vulnerable consumers and worsen malaria related mortality and morbidity outcomes against the desired goals of the Malawi health system.

6.2 Policy Recommendations

Several policy recommendations emanate from the findings and discussion of findings in previous sections. These are presented below.

- First, it is recommended that user fees should not be introduced in public health facilities as mandatory arrangement, despite a high WTP acceptance rate among

consumers. This is because most of the proxy ‘ability to pay’ economic indicators do not support this high WTP as already illustrated in previous sections. The high WTP of 81% should therefore be considered only as illustrative to guide policy makers to make broader assessment of their political, cultural, and institutional conditions, fiscal realities, and income and poverty dynamics among other areas of readiness, before making major policy decisions (Gertler and Gaag, 1990).

- Achieving readiness for a fully paying public healthcare system in urban areas is a task that extends far beyond Ministry of Health. It requires substantive reduction in urban poverty through skills development, economic empowerment, and improvement in real incomes among the urban poor. Therefore, government needs to develop and roll out comprehensive economic empowerment and skills development programmes that can effectively address urban poverty and move people to an economic level where they can afford basic necessities of life before they can be expected to pay user fees in public health facilities.
- User fees do exclude eligible poor consumers from accessing healthcare services. As such future decisions around revisiting user fee introduction would need to include other urban areas such as Blantyre, Mzuzu, and Zomba to develop a national-level understanding of WTP and economic readiness of urban consumers and identify a more representative tipping point price that minimizes exclusion of the poor across all urban areas in Malawi.

6.3 Limitations of the Study

This study was an attempt to assess willingness to pay among consumers of the free public health care services in Lilongwe urban. The study focused on malaria condition as an example of a curative rather than preventive service, and covered a sample size of 360 respondents across 3 health facilities. The study also attempted to analyze and identify key determinants of willingness to pay, in addition to estimating probability of exclusion at different price levels.

Given this set of objectives and scope, several limitations need to be declared as below:

Results from this study may not be generalizable to the other urban areas such as Mzuzu, Blantyre, or Zomba due to possible differences in economic situations facing urban dwellers in those cities. A separate but broader study may be needed to develop a bigger picture across more urban areas regarding WTP at national level.

The second limitation is that the study focused only on one disease condition for practicality and resource reasons. However, consumers of the free public health care services may value different types of curative services differently. Thus, results from this study may not necessarily be extended to other disease conditions even where such conditions fall within the same category of curative services.

The third limitation is that the study focused on estimating willingness to pay, but did not extend to measure the degree of that willingness.

REFERENCES

- Aguilar, Z et al. (2001). *Willingness to Pay for Reproductive Health Services among APROFAM Clients*. USAID. Guatemala.
- Aizuddin, AN et al (2011). Ability and willingness to pay for health care and contribute to national healthcare financing scheme among farmers in Selangor. *Journal of Community Health* 2011, 17, 1
- Arhin-Tenkorang, D (2001). Health Insurance for the Informal Sector in Africa: Design Features, Risk Protection, and Resource Mobilization. HNP Discussion Paper. (Online) available from <http://siteresources.worldbank.org/HEALTHNUTRITIONANDPOPULATION/Resources/281627-1095698140167/Arhin-HealthInsurance-whole.pdf>
- Arhin-Tenkorang, D (2001). Mobilizing Resources for Health: The Case for User Fees Revisited. (Harvard Centre for International Development Working Paper No. 81). Cambridge: Harvard University.
- Asfaw A, et al. (2008). *Willingness to pay for health insurance: An analysis of the potential market for new low-cost health insurance products in Namibia*. Amsterdam; Institute for International Development, 01/2: 1–22.
- Babatunde OA, et al. (2012). Willingness to pay for community health insurance and its determinants among household heads in rural communities in North Central Nigeria. *International Review of Social Sciences and Humanities*, 2, 133-142
- Barnighausten T, et al. (2007). *Willingness to pay for Social Health Insurance among informal workers in Wuhan, China: A contingent valuation study*. London. Biomed Central Health Services Research.

- Bitran, R. and Giedion, U. (2003). *Waivers and Exemptions for Health Services in Developing Countries*. (Social Protection Discussion Paper Series). Washington, D.C: World Bank.
- Breidert, C et al. (2006). A Review of Methods for Measuring Willingness to Pay. *Innovative Marketing*, 2, 4
- Bukola, A.U. (2013). Willingness to Pay For Community Based Health Care Financing Scheme: A Comparative Study among Rural and Urban Households in Osun State, Nigeria. *Journal of Dental and Medical Sciences*, 5 (6), 27-40
- Cho, SH et al (2008). Modeling Willingness to Pay for Land Conservation Easements: Treatment of Zero and Protest Bids and Application and Policy Implications. *Journal of Agricultural and Applied Economics*, 40 (1), 267–285.
- Cross, MJ et al (2000). *Determinants of willingness to pay for hip and knee joint Replacement surgery for osteoarthritis*. Sydney: Department of Medicine, University of NSW.
- Deininger, K and Mpuga, P (2004). *Economic and Welfare Effects of the Abolition of Health User Fees: Evidence from Uganda*. Makerere University, Kampala. Department of Economics, University of California. Berkeley
- Foreit, KGF and Foreit, JR, (2004). *Willingness to Pay Surveys for Setting Prices for Reproductive Health Products and Services: A User's Manual*. Washington D.C : The Population Council.

- Gall-Ely, M (2009). Definition, Measurement and Determinants of the Consumer's Willingness to Pay: a Critical Synthesis and Directions for Further Research. *Recherche et Applications en Marketing*, 24 (2), 91-113.
- Gertler, P and Van der Gaag, J., (1990). *The Willingness to Pay for Medical Care: Evidence from Two Developing Countries*. Baltimore: Johns Hopkins University Press.
- GOM (2012). *Malawi National Health Accounts with subaccounts for HIV/AIDS, Malaria, Reproductive Health, and Child Health for Financial Years 2006/07, 2007/08, and 2008/09*. Lilongwe: Department of Health Planning and Policy Development,
- GOM (1999). *Malawi National Health Accounts (NHA): A Broader Perspective of the Malawian Health Sector*. Lilongwe: Ministry of Health and Population, Planning Department.
- Gujarat, D. (2004). *Basic Econometrics* (4th ed). New York: McGraw Hill.
- Honda, A. (2006). *User Fees Policy and Equitable Access to Health Care Services in Low- and Middle-Income Countries: with the Case of Madagascar*. Tokyo; Research Group, Institute for International Cooperation (IFIC), Japan International Cooperation Agency (JICA)
- Lagarde, M and Palmer, N (2011). The impact of user fees on health service utilization in low- and middle-income countries: how strong is the evidence? *Bulletin of the World Health Organization*, 86 (11).
- Lang, H. (2010). Willingness to Pay for Lung Cancer Treatment. *Value in Health*, 13, 6

- Liebe, U et al. (2011). To Pay or Not to Pay: Competing Theories to Explain Individuals' Willingness to Pay for Public Environmental Goods. *Environment and Behavior*, 43(1), 106 –130.
- Makoka, D., Kaluwa, B., and Kambewa, P. (2007). Demand for Private Health Insurance Where Public Health Services are Free: The Case of Malawi. *Journal of Applied Science*, 21, 268-3273
- Manthalu, GH (2014). *The Impact of User fee exemption on Maternal Healthcare Utilization and Health Outcomes at Mission Healthcare Facilities in Malawi*. Unpublished Doctoral Thesis, University of Aberdeen, Aberdeen.
- McFadden, D (1997). *Measuring Willingness to Pay for Transportation Improvements*. Berkeley: Department of Economics, University of California.
- Ministry of Health (2014). *Malawi National Health Accounts with subaccounts for HIV/AIDS, Malaria, Reproductive Health, and Child Health for Financial Years 2009/10, 2010/11, and 2011/12*. Lilongwe: Department of Planning and Policy Development.
- Ministry of Health (2014). *Malawi National Health Accounts with subaccounts for HIV/AIDS, Malaria, Reproductive Health, and Child Health*. Lilongwe.
- Ministry of Health (2012). *Health Sector Strategic Plan: Moving towards Equity and Quality*. Lilongwe: Directorate of Planning and Policy.
- Ministry of Health (2007). *Malawi Public Expenditure Review: Health Sector*. Lilongwe: Directorate of Planning and Policy.

- Mubyazi, G (2005). *User charges in public health facilities in Tanzania: effect on revenues, quality of services and people's health-seeking behaviour for malaria illnesses in Korogwe district*. Harare: Health Services Management Research.
- Mussa, R (2015). *Catastrophic Health Payments in Malawi: Analysis of Determinants Using a Zero-Inflated Beta Regression*. Zomba: Department of Economics, Chancellor College.
- Mussa, R (2015). *Partial Mean and Inequality Effects on Catastrophic Health Payments: Methods with Application to Malawi*. Zomba: Department of Economics, Chancellor College.
- Nanda, P. (2002). Gender Dimensions of User Fees: Implications for Women's Utilization of Health Care. *Reproductive Health Matters*, 10 (20), 127-134.
- National Statistics Office (2008). *Population and Housing Census 2008*. Lilongwe: NSO
- Onwujekwe O, et al. (2010). Willingness to pay for community-based health insurance in Nigeria: Do economic status and place of residence matter? *Health Policy Planning*, 25(2), 155-161.
- Phiri I., and Masanjala, W. (2009). *Willingness to Pay for Micro-Health Insurance in Malawi*. Zomba: Department of Economics, Chancellor College.
- Phiri, IC (2009). *Household Willingness to Pay for Micro-Health Insurance in Malawi*, Unpublished Master Thesis. Zomba: Chancellor College.
- Tabor, S.R (2005). Community-Based Health Insurance and Social Protection Policy. Social Protection Discussion Paper series. (Online). Available from <http://siteresources.worldbank.org/SOCIALPROTECTION/Resources/0503.pdf>

- Verbic, M and Erker, RS (2007). An econometric analysis of willingness to pay for sustainable development: a case study of the Volcji Potok Landscape Area, ENEPRI. (Online). Available from www.ceps.ce
- Wagstaff, A and E. Doorslaer (2003). *Catastrophe and impoverishment in paying for health care: with applications to Vietnam 1993-1998*. Washington D.C: John Wiley and Sons.
- Woodridge, J.M (2003). *Introductory Econometrics: A Modern Approach* (2nd ed). Cambridge: MIT Press
- World Health Organization. (2005). *Sustainable Health Financing, universal coverage and social health insurance*. 115th World Health Assembly. Geneva: WHO
- Zapata, S.D (2012). The Theoretical Structure of the producer willingness to pay Estimates. Clemson University. (Online). Available from http://ageconsearch.umn.edu/bitstream/123434/2/The%20Theoretical%20Structure%20of%20Producer%20WTP%20estimates%20_AAEA.pdf

APPENDICES

APPENDIX1: SUMMARY OF GENERAL NHA FINDINGS ON HEALTH

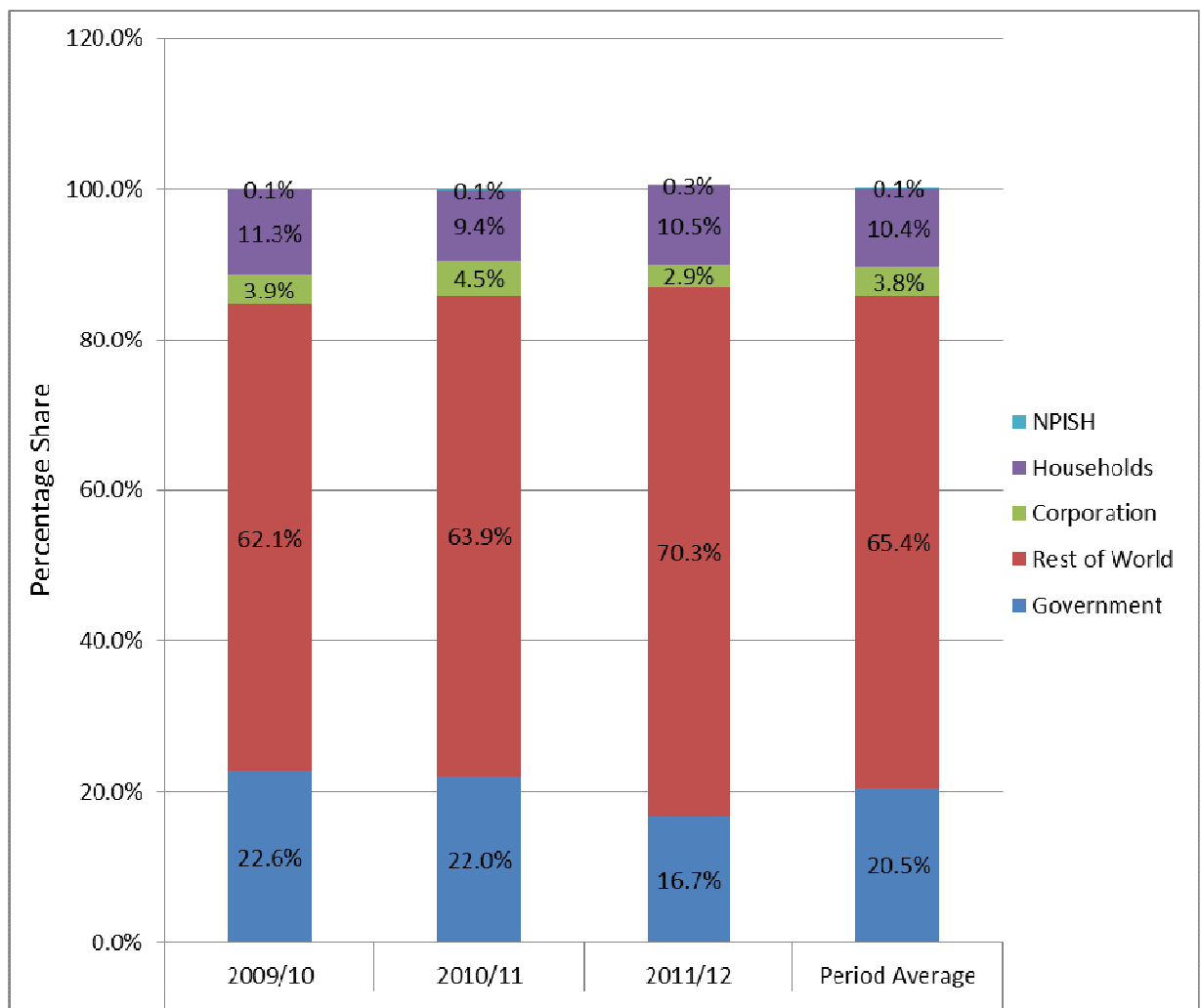
EXPENDITURES: 2009/10 – 2011/12

Variable	Financial Year			
	2009/10	2010/11	2011/12	Average 2009/10 to 2011/12
Total expenditure on health (K)	75,842,406,463	93,878,825,647	127,349,004,685	99,023,412,265
Total expenditure on health (USD)	520,085,516	611,584,058	624,839,641	585,503,072
Total government expenditure on health (K)	17,170,370,679	20,670,685,315	20,501,274,012	19,447,443,335
Total government expenditure on health (USD)	117,744,960	134,661,480	100,589,783	106,629,498
Per capita total expenditure on health (at average US\$ exchange rate)	34.6	39.6	39.3	37.8
Total expenditure on health as a percentage of GDP	7.4%	8.2%	9.0%	8.2%
Government expenditure on health as a % of total expenditure on health	22.6%	22.0%	16.1%	20.3%
Government per capita total health expenditure (at average US\$ exchange rate)	7.8	8.7	6.3	7.6
Government total expenditure on health	6.4%	6.7%	6.2%	6.5%

as a % of total government expenditure				
National expenditure on health (K)	78,429,825,527	98,388,204,054	129,770,338,322	102,196,122,634
Per capita national expenditure on health (at average US\$ exchange rate)	35.8	41.5	40	39.1
Total private expenditures as a percentage of THE	15.2%	13.9%	13.3%	14.2%
Household expenditure on health as a percentage of THE	11.3%	9.4%	10.5%	10.4%
Out-of-pocket expenditure on health as a percentage of THE	10.9%	9.0%	10.2%	10.0%

Source: MOH (2014)

APPENDIX2: TOTAL HEALTH EXPENDITURE BY FINANCING SOURCE



Source: General NHA Tables 2013, Annex A.

APPENDIX3: Health Expenditure by SADC Countries, 2012¹

Country*	THE as Percentage of GDP	THE/Capita	Government Expenditure on Health/Capita	General Government Spending on Health as Percentage of Total Government Expenditure
Angola	3.5%	190	118	5.6%
Botswana	5.3%	384	216	8.1%
Lesotho	11.6%	138	108	14.5%
Malawi	9.0%	39.3	6.3	6.2%
Mauritius	4.8%	444	217	10.1%
Mozambique	6.4%	37	16	8.8%
Namibia	8.4%	473	292	13.9%
South Africa	8.8%	645	309	12.9%
Swaziland	8.5%	259	192	18.1%
United Republic of Tanzania	7.0%	41	16	10.3%
Zambia	6.5%	96	62	16.4%
Average	6.7%	147	141	11.0%

Source: General NHA Tables 2013 in Annex A and WHO (2013).

¹ There is no comparable data available on Zimbabwe.

APPENDIX4: Household Direct OOP Spending by Health Provider Type

Provider Type	2010/11
Central hospitals	8.4%
District hospitals	10.9%
Private not for profit hospitals-Other	0.3%
Private not for profit hospitals-CHAM	20.7%
Private for profit hospitals	21.5%
Offices of physicians (private clinics)	6.3%
MoH health centers/dispensaries/maternity	7.7%
CHAM health centers/dispensaries/maternity	10.1%
Traditional practitioners	4.8%
Pharmacies/dispensing chemists/groceries ²	2.9%
Other industries (rest of the economy)	4.8%
neck-Other Provider not elsewhere classified	1.6%
Total	100%

Basic source: Malawi Household Health Expenditure and Utilization Survey 2010

APPENDIX5: Respondent distribution by education level and occupation type

Education level	Occupation		
	Unemployed	formal employment	self-
			employment
None	19	4	13
	52.78	11.11	36.11
PSLC	49	19	37
	46.67	18.1	35.24
JC	26	16	21
	41.27	25.4	33.33
MSCE	33	20	25
	42.31	25.64	32.05
Diploma and above	0	1	3
	0	25	75

APPENDIX 6: DATA COLLECTION TOOL

Questionnaire Form

“Willingness to Pay for Malaria Treatment” Study

[Label: Salutation and self-introduction as a student. Show STUDENT ID and APPROVAL LETTER from DHO and NHSRC as proof].

Study Introduction: As you may probably be aware, different stakeholders have been debating the issue of introducing user fees in public hospitals to generate additional resources for purposes of improving health care service quality in Malawi.

Study Objective: This study seeks to elicit willingness to pay for quality malaria treatment at public facilities among care seekers like you. This information is collected purely for academic reasons and your identity will remain anonymous throughout the process and after you leave. There are no good or bad answers: what we need are your very honest and truthful responses about your willingness to pay, assuming the fees are introduced. The interview will take approximately 15 minutes. Your decision to participate or not participate in this interview will not in any way affect your continued ability to access healthcare service at this and any other health facility. Hence, please feel free to respond truthfully. Are you agreeable that we can continue with the interview?

[Label: Having explained nature and purpose of study and if they agree, ask them to sign the consent form. Then proceed with interview]

- A. Health Facility Name []
- B. Target Sample size at this facility
- C. Respondent Number:/.....
- D. Interviewer Name:
- E. Interview Date: Date:.....Mo:.....Yr:...2015...
- F. Time Interview Began:
- G. Time Interview Completed:.....

Demographic and Economic Ability Questions:

1. **[Label]:** Observer sex of respondent and check appropriate box below?
☐ Female [1]
☐ Male [2]
2. Which location /area in Lilongwe do you come from?
3. How old are you (number of years)?
4. What is the highest academic qualification that you have?
☐ None [0]
☐ PSLC [1]
☐ JC [2]
☐ MSCE [3]
☐ Diploma [4]
☐ Degree and above [5]
5. How many people are you in your family (you and your spouse included)?
.....
6. Have you ever heard about issue of introducing user fees in public hospitals in Malawi at all?
☐ Yes, I have heard about it before [1]
☐ No, first time hearing about it [0]
7. Does your house have the following basic utilities and necessities? Mark as applicable
NOTE: Yes = 1; 0 otherwise

- | | | |
|---|-----|-----|
| ☐ Electricity | [1] | [0] |
| ☐ Piped water right in/at your house | [1] | [0] |
| ☐ Piped water from a communal spot serving many households | [1] | [0] |
| ☐ Flush toilet | [1] | [0] |
8. Does your house/family have/own a car (any type, any size)? Mark as applicable
- | | |
|------------------------------|-----|
| ☐ Yes | [1] |
| ☐ No | [0] |
9. Do you have asset that generates cash/revenue for the family (e.g. livestock, car?)
- | | |
|------------------------------|-----|
| ☐ Yes | [1] |
| ☐ No | [0] |
10. Please, tell us about your occupation
- | | |
|---|-----|
| ☐ Not working at all | [0] |
| ☐ Self-employed/Doing Business | [1] |
| ☐ Employed | [2] |
11. What type of job/work do you do?
-
- ..
12. How much GROSS income do you make per month (Mwk)?
- Mwk.....
-
13. Please, indicate whether your spouse is working (employed or doing business)?

- ☐ Not working [0]
- ☐ Yes, employed/ doing business [1]
- ☐ NA (single/widowed/divorced) [2]

14. How much GROSS income does your spouse make per month (Mwk)?

- ☐ Mwk.....
- ☐ Not working
- ☐ NA (single/widowed/divorced)

Willingness to pay questions:

15. In the last 3-months period, how many times (on average) did you experience malaria illness in your family?

.....

16. How serious a problem is malaria in your family from your experience?

- ☐ Not serious at all [1]
- ☐ Somewhat serious [2]
- ☐ Serious [3]
- ☐ Very serious [4]
- ☐ Indifferent [5]

17. Let's assume that government introduces mandatory small fee of Mk1, 600 per malaria treatment and that this service improves quality of service you receive in public hospitals. Would you be willing to pay this amount in order to receive a better quality malaria treatment service?

- ☐ YES, willing [1]

☐ NO, not willing [0]

18. If **YES** to above question, would you still be willing to pay if the fee was increased up to Mk1, 800 per malaria treatment?

☐ YES, Willing [1]

☐ NO, Not willing [0]

19. If **NO** to Question 17 above, would you then be willing to pay if the fee was reduced to Mk1, 500 per malaria treatment?

☐ YES, willing [1]

☐ NO, Not willing [0]

20. What is the highest/maximum possible fee that you would be willing to pay for a better quality malaria treatment in public hospitals?

Mwk.....

21. If the government increased malaria treatment fee beyond the level you can afford, what **OPTIONS** would you pursue to still access healthcare services?

☐ Just stay home without a service/state of desperation [1]

☐ Look for treatment from traditional healers [2]

☐ I don't know [3]

☐ Go to private clinics or pharmacy [4]

☐ Go to government hospitals [5]

Service Quality Perception questions:

22. How would you rate quality of malaria treatment services that you receive in public hospitals?

- | | |
|-------------------------------------|-----|
| ☐ Excellent | [1] |
| ☐ Very good | [2] |
| ☐ Reasonable | [3] |
| ☐ Poor | [4] |
| ☐ Very poor | [5] |

23. If government introduced a small fee on malaria treatment, do you believe that government will improve service quality?

- | | |
|---|-----|
| ☐ Believe quality will improve | [1] |
| ☐ Believe quality will NOT improve | [2] |

.....

END OF QUESTIONNAIRE

THANK PARTICIPANT FOR ACCEPTING TO PARTICIPATE