

**University of KwaZulu-Natal**

**Investigating Medicines Availability for Selected Non-Communicable diseases at Raleigh Fitkin Memorial Hospital, Manzini, Swaziland and the Impact on Patient out-of- pocket Payments**

---

Mini-dissertation Presented to the School of Health Sciences, Discipline of Pharmaceutical Sciences

**By: Kholiwe Shabangu**

In Partial Fulfillment of Requirements  
For the Degree of Master of Pharmacy  
(Pharmacoeconomics)

Under the Supervision of Professor Fatima Suleman

October 2014

## **ABSTRACT**

**Background:** The burden of non-communicable diseases (NCDs) in low and middle-income countries is greatly increasing and posing both financial and public health concerns. Increased morbidity has significantly reduced quality of life in these populations and Swaziland is no exception. Patients with NCD's often have to pay for their medicines out-of-pocket. The extent of this practice is not known.

**Methods:** The study was conducted at a regional hospital in Manzini that serves majority of NCD patients in the central part of the country. Exit interviews were conducted with 300 patients diagnosed with diabetes, hypertension and asthma. Patients were asked how often they experienced stock-outs of essential medicines at the facility and how much they paid at private pharmacies to access the medicines. Responses were triangulated with Central Medical Stores' (CMS) 2012 annual stock records to ascertain availability of the selected medicines and their turnaround time which was the time taken for medicines to be issued to the facility on receipt after they had been out of stock at CMS. Results were analyzed using the Statistical Package for Social Sciences (SPSS).

**Results:** Majority of patients (n=213; 71%) confirmed not receiving the complete package of their prescribed medicines at each visit to the hospital in the past six months. On average patients spent 10-50 times more for their medicines in private pharmacies than they would when accessing them from the health facility. Stock-outs at CMS ranged from minimum of 30 days to over 217 days in the course of the assessment period (12 months) were recorded and found to be the cause of stock-outs in the health facility. The turnaround time of medicines from CMS to the facility was not found to have influence on shortages recorded in facility.

**Conclusion:** Out-of-pocket expenditure is very common for patients with NCDs using this health facility which increases the possibility of default on treatment because they cannot afford the commercial fees charged at private pharmacies. Patients were paying 10 to 50 times more to access medicines for their conditions in private pharmacies than when accessing them from the health facility in the event they were out-of-stock.

## DECLARATION

In fulfillment of the requirements of the degree of Masters in Pharmacy (Pharmacoeconomics) in the School of Health Sciences, University of KwaZulu-Natal, Durban, South Africa, I, Kholiwe Shabangu declare that: -

- (i) The research reported in this dissertation, except where referenced, is my original work.
- (ii) This dissertation has not been submitted for any degree or examination to any other university.
- (iii) This dissertation does not contain other persons' text, tables, data, graphs or other information, unless specifically acknowledged as being sourced from other persons.
- (iv) This dissertation does not contain other persons' writing, unless specifically acknowledged as being sourced from other researchers. Where other written sources have been quoted, then: -
  - (a) Their words have been re-written but the general information attributed to them has been referenced;
  - (b) Where their exact words have been used, their writing has been placed inside quotations marks, and referenced.
- (v) Where reference to a publication for which I am a principal author, I have referenced the "In Press" publication.

**Student Signature:** \_\_\_\_\_

## **ACKNOWLEDGEMENTS**

I would first and foremost thank my Almighty God for availing me the opportunity to complete this study in partial fulfillment of my degree. Special thanks go to Professor Fatima Suleman who has been very instrumental and provided guidance, supervision and mentorship as I conducted this research. I am also thankful to my friend and mentor Brenda Dlamini – Mhlanga who has been a resourceful link throughout the course of my studies. This final product would not have been possible without the assistance of Mavis Vilane – Magongo who willingly availed herself whenever I needed her analysis expertise and Sandile Ginindza who provided technical expertise in formatting this document.

I am overly indebted to my husband and two sons who have stood by me for the duration of this research and provided the needed support and encouragement. I am equally thankful to my data collectors; Nonhlanhla Dlamini and Zandile Mahlambi for dedicating their time and energy during the data collection process. Lastly, to all my family members and friends who have given me all the necessary support in order to complete the study.

Finally, I extend sincere thanks to Raleigh Fitkin Memorial Hospital Management team for opening their doors for me to conduct the study, their contribution is invaluable. I am equally thankful to Central Medical Stores Management team for opening their doors and allowing use of their stock data as part of this research.

## LIST OF ACRONYMS

AIDS	Acquired Immune - Deficiency Syndrome
ART	Anti – Retroviral Therapy
ARV	Anti- Retroviral
CMS	Central Medical Stores
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immune - Deficiency Syndrome
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information System
LMIC	Low Middle Income Country
MOH	Ministry of Health
MSH	Management Sciences for Health
NCD	Non Communicable Diseases
NCPP	National Commission on Prevention Priorities
NEML	National Essential Medicines List
NIH	National Institutes of Health
RFMH	Raleigh Fitkin Memorial Hospital
SIAPS	Systems for Improved Access to Pharmaceuticals and Services
SDHS	Swaziland Demographic Health Survey
SNPP	Swaziland National Pharmaceutical Policy
STI	Sexually Transmitted Infections
STG	Standard Treatment Guidelines
TB	Tuberculosis
UN	United Nations
US	United States
WHO	World Health Organization
WEF	World Economic Forum

## TABLE OF CONTENTS

ABSTRACT .....	2
DECLARATION .....	3
ACKNOWLEDGEMENTS .....	4
LIST OF ACRONYMS .....	5
TABLE OF CONTENTS .....	6
CHAPTER 1: .....	9
1.1. INTRODUCTION .....	9
1.2 BACKGROUND .....	10
1.3 PROBLEM STATEMENT .....	12
1.4 AIM AND OBJECTIVES .....	12
1.5 TYPE OF STUDY AND METHOD .....	12
1.6 STUDY OUTCOMES .....	13
1.7 DEFINITION OF TERMS .....	13
1.8 OUTLINE OF THE STUDY .....	13
1.9 SUMMARY .....	14
CHAPTER 2: LITERATURE REVIEW .....	15
2.1 INTRODUCTION .....	15
2.2 SUMMARY .....	19
CHAPTER 3: METHODOLOGY .....	21
3.1 INTRODUCTION .....	21
3.2 STUDY DESIGN .....	21
3.3 STUDY AREA .....	21
3.4 STUDY POPULATION .....	23
3.5 STUDY SAMPLE AND SIZE .....	23
3.6 INCLUSION AND EXCLUSION CRITERIA .....	24
3.6.1 INCLUSION CRITERIA .....	24
3.6.2 EXCLUSION CRITERIA .....	24
3.7 DATA COLLECTION INSTRUMENT .....	24
3.8 PILOT STUDY .....	25
3.9 DATA COLLECTION .....	25

3.10 DATA MANAGEMENT .....	26
3.11 DATA ANALYSIS .....	26
3.12 RELIABILITY AND VALIDITY .....	27
3.13 ETHICAL CONSIDERATIONS .....	27
3.14 SUMMARY .....	27
<b>CHAPTER 4: RESULTS .....</b>	<b>28</b>
4.1 INTRODUCTION .....	28
4.2 RESULTS .....	28
4.3 DEMOGRAPHIC INFORMATION .....	29
4.4 HEALTH STATUS AND HEALTH SEEKING BEHAVIOR .....	31
4.5 AVAILABILITY OF MEDICINES .....	32
4.6 DOCTOR-PATIENT RELATIONSHIPS .....	37
4.7 STOCK AVAILABILITY AT CENTRAL MEDICAL STORES (CMS).....	38
4.8 SUMMARY .....	42
<b>CHAPTER 5: DISCUSSION .....</b>	<b>43</b>
5.1 INTRODUCTION .....	43
5.2 DEMOGRAPHIC INFORMATION SUMMARY .....	43
5.3 SOCIOECONOMIC STATUS.....	44
5.4 HEALTH STATUS AND HEALTH SEEKING BEHAVIOR .....	45
5.5 AVAILABILITY OF MEDICINES .....	45
5.6 DOCTOR-PATIENT RELATIONSHIPS .....	46
5.7 STOCK AVAILABILITY AT CENTRAL MEDICAL STORES .....	47
5.8 SUMMARY .....	47
<b>CHAPTER 6: CONCLUSION .....</b>	<b>48</b>
6.1 INTRODUCTION .....	48
6.2 STUDY LIMITATIONS.....	48
6.3 RECOMMENDATIONS .....	48
6.4 SIGNIFICANCE OF THE STUDY .....	49
6.5 CONCLUSION .....	49
<b>REFERENCES.....</b>	<b>52</b>
ANNEXURE 1: PATIENT QUESTIONNAIRE .....	56
ANNEXURE 2: CENTRAL MEDICAL STORES DATA COLLECTION SHEET .....	63
ANNEXURE 3: PATIENT DATA COLLECTION SHEET .....	66

<b>ANNEXURE 4: CENTRAL MEDICAL STORES DATA SHEET .....</b>	<b>67</b>
<b>ANNEXURE 5: UNIVERSITY RESEARCH ETHICS COMMITTEE APPROVAL LETTER .....</b>	<b>68</b>
<b>ANNEXURE 6: MINISTRY OF HEALTH SCIENTIFIC AND ETHICS COMMITTEE APPROVAL LETTER.....</b>	<b>69</b>
<b>ANNEXURE 7: RFMH AUTHORIZATION LETTER .....</b>	<b>71</b>
<b>ANNEXURE 8: PATIENT CONSENT FORM .....</b>	<b>72</b>

**LIST OF TABLES**

<b>Table 1: Demographic Characteristics of Respondents.....</b>	<b>29</b>
<b>Table 2: Health Status and Health Seeking Behavior of Patients (n=300) .....</b>	<b>31</b>
<b>Table 3: Availability of prescribed medicines in the facility (n=300) .....</b>	<b>32</b>
<b>Table 4: Patient- Doctor or Health Personnel communication (n=300) .....</b>	<b>37</b>
<b>Table 5: Summary of Descriptive Analysis of Days for out-of-stock medicines at CMS.....</b>	<b>40</b>
<b>Table 6: Descriptive Analysis of Turnaround Time of Medicines to Health Facility.....</b>	<b>41</b>



## **CHAPTER 1:**

### **1.1. INTRODUCTION**

Non communicable diseases are the leading cause of death and disability worldwide and their prevalence in low and middle income countries is on the rise (WHO, 2005). The burden of chronic health expenditure borne by patients may be very high particularly where out-of-pocket payment is common (Murphy et al., 2013). High out-of-pocket medical spending comprises the overwhelming majority of medical spending in developing countries. According to Smith-Spangler et al. (2012) it is associated with impoverishment and decreased spending for other necessities including food. Other studies conducted in developing countries have suggested that individuals with diabetes often delay seeking medical care until complications develop leading to high medical spending (Smith-Spangler et al., 2012).

Availability of essential medicines in Swaziland has been a challenge just as it has been for most developing countries. The National Pharmaceutical Policy (2011) highlights the shortage of medicines in public health facilities and calls for patient user fees to top up the purchase of medicines. Despite paying user fees in order to access health care, patients may still experience shortages of essential medicines (Bhojani et al., 2012). Consequently, prescriptions may need to be filled by means of out-of-pocket payment by patients at private pharmacies. This is assumed to be the major challenge faced by patients who need full access to health care in Swaziland by this study.

This study focused on the availability of essential medicines for the three selected chronic conditions at Raleigh Fitkin Memorial Hospital (RFMH) and the financial burden of patients in the event that their medicines were not available in the facility. Data collection focused on the availability of 10 essential medicines for three non-communicable chronic conditions; diabetes, hypertension and asthma at RFMH and the impact of out-of-pocket expenditure by patients. These three non-communicable diseases are among the top 5 (five) chronic conditions that increase the burden of illness in Swaziland. The other two conditions that contribute to the burden of illness in the country are HIV/AIDS and Tuberculosis (HMIS, 2010).

The first section of this chapter presents the background and context of the study including the geographic and population context. The next section discusses the study problem being addressed by the research questions as well as the research questions being investigated. Also presented are the objectives and aims of the study. Lastly, the final section of the chapter presents a brief outline of the study design and methods, the expected outcomes as well as the definition of terms as used in the aims and objective statements. A brief outline of the rest of the chapters is presented last and the summary ties all the sections of the chapter together at the end.

## **1.2 BACKGROUND**

The United Nations projects further increases in NCDs as a result of increases in world population coupled with increase in the share of people surviving to the age of 60 years (UN, 2011). Furthermore, the prevalence of NCDs will increase globally and in developing countries as a result of accelerated economic growth fuelled by globalization and urbanization. As low and middle income countries shift from agricultural economies to service based economies and urbanization takes center stage, a shift towards more sedentary lifestyles will emerge and NCDs will prevail (WEF, 2011).

The devastating impact of NCDs are projected to result in long term macroeconomic effects on labor supply, capital accumulation and GDP worldwide but even more severe in developing countries (Mayer-Foulkes, 2011). The economic impacts in developing countries are estimated to range from US\$ 3 billion for direct medical costs of obesity related diabetes, coronary heart disease, hypertension and stroke in China to US\$72 billion for treatment and productivity losses due to these conditions in Brazil (Fuster & Kelly, 2010). Evidently, as participation in the labor markets is relatively low and unemployment rates very high in developing countries, these costs will be borne by the already weak health systems and subsequently by the patients leading to increase in burden of the diseases. As noted by the World Economic Forum (2011),

NCDs compromise future economic and human development because poverty and ill-health are often passed down from one generation to the next.

In Swaziland, both communicable and non-communicable diseases continue to be a major challenge (SDHS, 2006/2007). The death rate reports due to NCDs globally stood at 64% and those reported for the country were 41.4% for males and 45.5% among females under the age of 60 years in 2008 (WHO, 2010). This showed that there is a great need for the country to improve their focus on disease pattern of NCDs and develop interventions to manage them effectively in order to reduce the increasing population affected by these conditions. NCDs have received inadequate attention, given the serious double burden of disease that prevails in the country which is communicable diseases and HIV/AIDS (WHO, 2013). The situation has been worsened by the advent of HIV and AIDS, and rising incidence of TB (SDHS, 2006/2007). The burden of communicable diseases is similarly reflected in the leading causes of patient morbidity and mortality, with AIDS and TB together accounting for two-thirds of admissions and a third of deaths (SDHS, 2006/2007). NCDs are among the top 15 conditions that lead to hospital admissions and out-patient visits in health facilities in the country (SDHS, 2006/2007).

While the Swaziland government is solely responsible for procurement and storage of essential medicines for the country's public health facilities, this has not been without challenges. The Swaziland National Pharmaceutical Policy (SNPP) (2011) states that the current warehouse, which is about 3500 cubic meters can only accommodate 6 months' supply of stock for facilities, resulting in an over burden to the existing inventory system and often stock-outs of pharmaceutical commodities due to inadequate storage area to maintain the desired months of stock for CMS. In addition, medicines are provided for free in all public health facilities in the country with standard user fees of E10 which is equivalent to US1.13 charged for consultation in hospitals and E5 which is equivalent to US0.56 charged in clinics. Not only can these charges present a barrier for access to services for the poor and unemployed but it poses a problem for NCD affected patients whenever stock outs of essential drugs in public facilities occur.

### **1.3 PROBLEM STATEMENT**

Availability of medicines in low income countries to manage chronic conditions has been a challenge. Researchers have shown that there is an increase of non-communicable conditions in low income countries hence a need to improve the quality of life by making medicines available at the point of care (National Commission on Prevention Priorities, 2007). In Swaziland there have been very few studies that assessed the availability of medicines to manage non-communicable conditions in health facilities and none investigated the cost impact of out-of-pocket spending by patients for medicines not available in public health facilities.

### **1.4 AIM AND OBJECTIVES**

The aim of the study was to investigate the availability of medicines for non-communicable conditions in the health facility and the impact of out-of-pocket spending by patients for medicines not available in the facility. Specific objectives were;

- To assess the availability of a basket of medicines for three selected non-communicable chronic conditions (Asthma, Diabetes and Hypertension) in the health facility.
- To assess the average turnaround time (time taken for medicines to be issued to the health facility on receipt at CMS of the selected medicines at CMS to the facility in the event it was out of stock.
- To assess the cost impact of out-of-pocket expenditure by patients in the event their prescribed medicines were out-of- stock in the health facility.

### **1.5 TYPE OF STUDY AND METHOD**

This was a cross sectional study that surveyed NCD patients that visited the health facility during the study period. A questionnaire was administered in an interview format by data collectors and responses were recorded. All respondents were assured of confidentiality and that their participation in the study would not hinder them access to quality care at any point.

## **1.6 STUDY OUTCOMES**

The study outcomes included identifying the root causes of frequent stock-outs of essential selected basket of medicines for treating the three NCD conditions at RFMH and establishing the financial burden imposed to patients when buying the out-of-stock medicines from private pharmacies.

## **1.7 DEFINITION OF TERMS**

*Non-Communicable Diseases:* are defined as diseases of long duration, generally slow progression and they are the major cause of adult mortality and morbidity worldwide (WHO, 2005a).

*Asthma:* is a chronic lung disease that inflames and narrows the airways. It has clinical features including intermittent dyspnea, chest tightness and coughing. The coughing often occurs at night or early in the morning (NIH, 2012).

*Diabetes:* is a metabolic disorder caused by defects in insulin secretion or insulin action or both. If ineffectively controlled, the resulting chronic hyperglycemia is associated with numerous complications (WEF, 2011).

*Hypertension:* Hypertension, also known as high or raised blood pressure, is a condition that can lead to coronary heart disease, heart failure, stroke, and kidney failure. If blood pushes hard through the walls of the arteries as the heart pumps blood and the pressure remains high over time, it can damage the body. Blood pressure is measured through systolic and diastolic pressure (WHO, 2013).

*Out-of-pocket expenditure:* refers to when people pay for their health costs directly to health care providers out of their own pockets (WHO, 2007).

## **1.8 OUTLINE OF THE STUDY**

The main part of the thesis contains six major chapters. Each chapter is intended to link with the next and flow chronologically as per the process of conducting research. Chapter 2 contains a comprehensive review of related literature that is peer reviewed. Explicit definition of terms

and the theoretical frameworks that inform the study are also presented by their themes. Chapter 3 presents a detailed description of the methodology adopted in this study. The study setting, design and sampling procedures are explained in detail including the inclusion and exclusion criteria as well as ethical considerations. Also outlined in the chapter are the data analysis processes for each objective as well as the statistical software used for analysis. Chapter 4 presents the results of the analysis disaggregated by the demographics of the respondents. Also presented is the breakdown of responses per objective and graphical displays together with brief interpretation of the findings. Chapter 5 focuses on discussion of the results and how they compare to other studies in the same area. The discussion follows the chapter 4 results analysis and addresses each objective outlined in chapter 1. The last chapter, chapter 6, summarizes the study findings and answers the main study question. It presents the limitations, recommendations and significance of the study.

### **1.9 SUMMARY**

This chapter has provided background information about NCDs from a global perspective as well as regional and Swaziland context. The problem statement, purpose of the study as well as the specific objectives has been explained. A brief outline of the study type and methods was provided as well as the study outcomes and comprehensive definition of terms used in the objectives

## **CHAPTER 2: LITERATURE REVIEW**

### **2.1 INTRODUCTION**

This chapter presents the relevant literature that was reviewed based on local studies that have been conducted both in Swaziland and elsewhere in the world pertaining to NCDs and patient costs. The chapter begins with interrogation of global strategies and policy frameworks for availability of medicines in health facilities and then outlines specific findings from studies conducted world over but mainly in Africa. The chapter concludes by relating the literature to the problem under investigation in order to put the current study into perspective and link it with existing body of knowledge and work performance.

#### **Universal Health Coverage**

The availability of essential medicines in public hospitals in universal health coverage has two important components. The first is the extent to which people are covered by the health services that they need. The second is the degree of financial risk protection they have in using services – for example, do they suffer financially as a result of having to pay for the services they need (Xu et al., 2007). It is estimated that over a billion people globally are unable to use the health services they need, while a 100 million people are pushed into poverty and 150 million more face financial hardship because they have to pay directly for the health services they use at the point of delivery (Xu et al., 2007; WHO, 2010). These statistics are a reflection of the challenges faced by poor patients in developing countries as they seek health care for their conditions. Evidently, they are further pushed into financial distress by their chronic conditions as they cannot afford to pay for medicines they need to manage their conditions.

According to Hogerzeil et al. (1995) problems of irrational use of medicines and non-availability of medicines in the public sector are often similar in many countries. The non-availability of medicines in public health facilities is one of the contributing factors to catastrophic financial situations for most families who have relatives that need chronic treatment as they need to make provisions of making the medicines available by digging deeper into their pockets to finance their conditions in most developing countries.

## **Health Spending on Medicines**

Medicines account for 20–60% of health spending in developing and transitional countries, compared with 18% in countries of the Organization for Economic Co-operation and Development (Cameron et al., 2009). Up to 90% of the populations in developing countries purchase medicines through out-of-pocket payments, making medicines the largest family expenditure item after food. As a result, medicines are unaffordable for large sections of the global population and are a major burden on government budgets (Cameron et al., 2009).

In studies conducted by Uplekar et al. (2001) and Gertler & Gruber (2002) it was found that disease and ill health does not only cause suffering and death but also have an important cost. They found that in most societies disease does not only create out-of-pocket expenditures for patients and their families, but also undermines income generation, and as a consequence jeopardizes future economic welfare.

Furthermore, a study carried out in Cambodia looking at out-of-pocket health expenditure and debt in poor households found that patients who used only the public hospital paid US\$8 for services provided to them (Van Damme et al., 2004). These households used a combination of savings, selling consumables, selling assets and borrowing money to finance their health expenditure. When followed up a year after the study, most families with initial debts were found to have been unable to settle these debts, and continued to pay high interest rates ranging between 2.5% and 15% per month. Consequently, several households had to sell their land to meet this expenditure which further increased poverty and shows the economic costs to patients of out-of-pocket health expenditures.

## **Economic Impact of out-of-pocket expenditures**

While health economists dedicated much effort to document the impact of user fees on access to health care in developing countries as early as the 1990s there was little attention given to the impact of out-of-pocket health expenditure on welfare (Gilson et al., 2002). Recent developments however has put this in the global research agenda and the first attempt by



WHO to estimate the importance of catastrophic health expenditure was recorded in 2000 (Xu et al., 2003; Whitehead et al., 2001). In developing countries, more focus has been put on communicable and transmittable diseases and patient access to healthcare has been increased because of the removal of user fees at the point of care. If removal of user fees has worked quite well for conditions like TB, HIV/AIDS and STI's to achieve health goals, then policy developers should look into how best they can achieve the same goal with NCDs in these poor countries.

Findings from a study that was carried out in India – Delhi, showed that prior to 1994 most Delhi hospitals and dispensaries experienced constant shortages of medicines (Chaudhury et al., 2005). A number of factors contributed to this drug shortages including erratic prescribing of expensive branded products, complaints on poor drug quality and low patient satisfaction (Chaudhury et al., 2005). Since 1994, in hospitals run by the Government of Delhi, the Essential Drugs Programme has provided good quality medicines to patients. Establishing and using a limited list of carefully selected essential drugs was the cornerstone to improving drug supply management (Chaudhury et al., 2005).

Swaziland public expenditure on medicines has generally remained low at about US\$1 per capita which is equivalent to E8.88. Patients largely depend on out-of-pocket expenditure by purchasing from chemists (retail pharmacies) and private practitioners (SNPP, 2011). The policy also conceded that while nearly three quarters of health care, including medicines, is obtained from private sources, underprivileged populations, often living in remote rural areas, depend largely on public facilities. A study carried out in Laos found that out-of-pocket payments made up about 80% of medical care spending at hospitals in Laos, thereby putting poor households at risk of catastrophic health expenditure (Syhakhang et al., 2011). As a result, it was found that the increasing out-of-pocket expenditures in public and private health care services are driving many families into poverty, and are further burdening those who are already poor (Syhakhang et al., 2011). In addition, in order to gain access to public hospitals and to receive a higher quality of services, in some countries; informal payments are widespread and are a major source of inequality and inefficiency in health care systems (Syhakhang et al., 2011).

Another study carried out in Kenya investigating major failures to provide access to effective treatment of malaria, found that a key benchmark of successful therapeutic policy implementation and effectiveness is ensuring that recommended or prescribed medicines are available at the point of care (Kangwana et al., 2009). Furthermore, a review study carried out in selected low and middle income countries by McIntyre et al. (2006), found that the reasons for the high frequency of medicine stock outs varied and reflected perennial problems facing weak health systems in resource poor countries. This study also showed that the impact of direct and indirect costs of medicines continued to impoverish households through out-of-pocket payment for medicines. They also noted growing evidence of households being pushed into poverty or forced into deeper poverty when faced with substantial medicine expenses especially when combined with loss of household income due to ill health (McIntyre. et al., 2006). This situation is experienced by most families in developing countries which further impacts on the economic growth of a country.

Another study carried out by WHO looking at how families were coping with out-of-pocket health payments established empirical evidence that in the short run, when medical bills exceed a household's income, households may use savings, sell assets, borrow money from friends and family, or take out a loan using collateral (Leive et al., 2008). Families may also alter their labor allocation decisions; if a household head falls ill, family members previously not working may begin to do so to substitute for lost income and repay loans (Leive et al., 2008). The study show a great need for improving availability of essential medicines at the point of care in developing countries for all conditions inclusive of NCDs.

### **Diabetes as a Case Study**

Individuals with diabetes in developing countries delay seeking medical care until they have developed complications which lead to further high medical spending because they do not have enough funds to pay when accessing healthcare therefore delaying to seek health care whilst increasing the complication of their condition and making it more expensive to treat (Smith-Spangler et al., 2011). A study carried out in the U.S. on problems of paying out-of-pocket for

medication costs among older adults with diabetes, found that many adults under-used their medication because of out-of-pocket costs (Piette et al., 2004). The study interviewed 875 adults with diabetes and treated with diabetes medication and 19% (n=167) reported that they had underused prescription medications because of cost pressures.

Also, respondents were asked to describe their interactions with clinicians about medication costs. Only 32% of respondents who reported cutting back on medication use due to out-of-pocket costs reported telling a doctor or nurse in advance, and more than one in three (37%) reported never talking with clinicians about their medication cost problem at all. The most common reason that respondents gave for not talking with clinicians about medication cost problems was that clinicians never asked them. About half (50%) of respondents who did not talk with clinicians about their cost-related adherence problems stated that they did not think that their health care providers could help them with medication costs, 39% did not think it was important enough to mention it, and 35% indicated that they felt embarrassed. A total of 30% of respondents indicated that they felt that there was insufficient time during their visits to raise this issue (Piette et al., 2004).

The results of the study showed that medication costs posed significant problems for people with diabetes in the U.S., affecting both their adherence to medication regimens as well as other aspects of their lives. Moreover, the study suggested that there is substantial room for improvement in clinicians' and health systems' efforts to assist patients with their medication costs (Piette et al., 2004). Addressing these issues effectively may improve not only individuals' adherence to treatment regimens but their health outcomes as well (Piette et al., 2004).

## **2.2 SUMMARY**

This chapter provided a comprehensive review of studies conducted on non-communicable diseases and patient out-of-pocket health care expenditures world over. The themes to be assessed by this study were clearly articulated and included challenges in universal health coverage, health spending gaps especially as they relate to ensuring uninterrupted supply of

essential medicines as well as coping strategies adopted by health systems in developing countries and how they impact the access to care for the poorest in these countries. The chapter also discussed the literature findings on how much of health care costs are borne by patients in developing countries when availability of essential medicines in the health system is a challenge and how this leads to cycles of poverty and diminished household income.

## **CHAPTER 3: METHODOLOGY**

### **3.1 INTRODUCTION**

This chapter presents a detailed description of the research methodology. It outlines the detailed procedure that was followed to realize the research objectives. The first section addresses the study design, setting and sampling procedure. The last sections describe the data collection methods, data analysis and ethical considerations.

### **3.2 STUDY DESIGN**

The study was a prospective cross-sectional survey that measured the cost burden incurred by patients on chronic medication for asthma, diabetes and hypertensive treatment in the event that their prescribed medicines were out of stock at RFMH, Manzini.

### **3.3 STUDY AREA**

The study took place at RFMH, a 350 bed regional referral hospital situated in Manzini, the hub of Swaziland. The hospital is a referral for all hospitals, clinics and health centers in the Manzini region. The hospital attends to an average of approximately 200 000 patients per year which is approximately 20% of the country's population. Approximately 40% of patients seen at RFMH have asthma, diabetes and hypertension conditions. The number of out-patients that receive medications in the Pharmacy stands at an average of 750 patients a day. An average of 200 patients is admitted into the hospital wards for different conditions including both communicable and non-communicable diseases which accounts for an average of 57% bed occupancy at any given time (RFMH, 2012).

More than 50% of in-patients also receive their prescribed medicines from the pharmacy on a daily basis. The hospital has recently been upgraded to having an Intensive Care Unit and a Renal Unit which is the second hospital providing this service after Mbabane Government Hospital, the national referral hospital which was the only facility providing this service in the country previously.

The hospital has 23 general practitioners and 8 Specialists which includes 2 gynecologists, 1 pediatrician, 1 internist, 1 orthopedic surgeon, 1 general surgeon and 2 anesthesiologists<sup>1</sup>. The hospital is situated at a radius of 7 kilometers away from CMS which is the supplier for medicines and medical supplies in the country. The hospital uses its own transport to collect its orders for medicines from CMS. It sometimes requests the assistance of CMS transport when the facility itself has transport shortages.

CMS is the main pharmaceutical warehouse mandated to manage the supply chain of medicinal commodities in the country. The current warehouse is approximately 3500 cubic meters and can only accommodate 6 month supply for facilities (SNPP, 2011). Procurement of medicines and medical supplies is managed by the recently established procurement unit within the CMS. In principle, procurement is restricted to medicines and medical supplies listed in the country's National Essential Medicines List (NEML). Procurement of medicines and medical supplies is done through the open tender system whereby the procurement unit advertises the tender on the local newspaper and the government website. Bidding companies submit their bidding documents to the MOH and the National Medicines Advisory Committee is responsible for the evaluation of the tender which is then approved by the National Tender Board usually awarded as one year contracts (SNPP, 2011).

CMS currently have four pharmacists who are responsible for the functioning of the organization and hold different responsibilities in the different units of the organization. CMS has a schedule for filling out health facilities requisition orders. Orders from facilities are processed by pharmacy technicians, assisted by the clerks and verified by store keepers. Each region is allocated one week for processing and delivering of their orders. CMS uses its own transport to deliver orders for clinics and health centers. Hospitals collect their orders from CMS when these are ready for collection. Orders from facilities have a lead time of two weeks for processing after placement of an order by a facility. Facilities are immediately informed by

---

<sup>1</sup> Personal Communication: Human Resources Offices of Raleigh Fitkin Memorial Hospital, March 2013

the warehouse pharmacists when a product that has been out of stock has arrived to place their orders immediately and these orders are treated as emergency orders<sup>2</sup>.

The system that is currently used by CMS for inventory control is called an Rx solution that is provided by Management Sciences of Health (MSH), a Non- Governmental Organization in support of the MOH to strengthen the pharmaceutical sector. Internal orders are generated based on the quantities available on hand at Central Medical Stores. This is verified by doing physical checks and through the inventory system. MOH is currently working on strengthening this unit by making it autonomous and also improving its organizational structure<sup>3</sup>.

### **3.4 STUDY POPULATION**

The study population comprised of all patients who were seen for the three chronic conditions (diabetes, asthma and hypertension) per month in the facility. The hospital was seeing on average a total of 2,778 in-patients and out-patients per month and 40% of the patients seen accounted for the three conditions. On average, a total of 1,111 patients were consulted for asthma, diabetes and hypertension at RFMHI per month<sup>4</sup>.

### **3.5 STUDY SAMPLE AND SIZE**

The statistical formula below (Machin & Cambell, 1987) was used to calculate the number of patients to be interviewed based on the monthly statistics of the hospital.

$$n = N/[1 + (Ne^2)]$$

Where n is the sample size, N is the target population and e is the accepted level of error taken at  $\alpha$  of 0.05.

Calculation:

$$n = 1100/[1 + (1100*0.05^2)]$$

---

<sup>2</sup> Personal Communication: Senior Pharmacist at Central Medical Stores, March 2013

<sup>3</sup> Personal Communication: Senior Pharmacist at Central Medical Stores, March 2013

<sup>4</sup> Personal Communication: Statistics Office of the Raleigh Fitkin Memorial Hospital, March 2013

n = 293 (300 patients were selected)

Based on the calculation, a sample of three hundred patients with the chronic conditions (diabetes, hypertension and asthma) were selected at their point of exit which was the pharmacy and interviewed using a questionnaire.

### **3.6 INCLUSION AND EXCLUSION CRITERIA**

The following inclusion/exclusion criteria were applied in selecting patients for the study

#### **3.6.1 INCLUSION CRITERIA**

- Patients who had asthma, diabetes or hypertension.
- Patients who had been diagnosed with their conditions for more than 6 months.
- Patients who were refilling their medications at RFM hospital.
- Patients who made their refill visit to the hospital during the study period.
- Patients who were 18 years and above.
- Both female and male patients were recruited into the study.

#### **3.6.2 EXCLUSION CRITERIA**

- Patients who were not diagnosed with asthma, diabetes and hypertension.
- Patients who had been diagnosed for less than 6 months with asthma, diabetes and hypertension.
- Patients less than 18 years old.
- Patients who came to the facility as emergency cases and do not do their monthly refills for their conditions in the hospital.

### **3.7 DATA COLLECTION INSTRUMENT**

A quantitative coded questionnaire (with some open ended questions) was used for the exit interviews with patients that fulfilled the inclusion criterion. The questionnaire was divided into three sections; the demographics section including patients' employment status, a section on patients' experiences of stock outs of medicines and a section on costs of buying the medicines



out-of-pocket. Both SiSwati and English versions of the questionnaires were availed to allow patients to choose their preferred language of interview. At CMS, stock status data for the ten selected basket of medicines was used to check the availability of the medicines and the time it took to be available at RFMH after receipt when it was out of stock for the period July 2012 to June 2013.

### **3.8 PILOT STUDY**

Pre-testing of the questionnaire was conducted on 10 patients by the data collectors. Prior to pre-testing a one day training was done for the data collectors on how to administer the questionnaire to patients as well as controlling for any bias in the sampling procedure thereof. The pharmacy staff that was to select the patients based on prescription data was also part of the training. After pre-testing the questionnaires were revised to increase usability and address any ambiguous questions that were noted during interviews with hospital staff.

### **3.9 DATA COLLECTION**

Data was collected from patients who had come to collect their medicines from the pharmacy through exit interviews. The interviews were done to patients at their exit point which is the Pharmacy at RFMH. The interviews were done by two, second-year Pharmacy students from the Southern Africa Nazarene University after the prescriptions were pre-selected by the Pharmacy Technicians and Pharmacists dispensing their prescription. The selection by the professional staff was based on the diagnosis of the patient. The data collectors randomly selected by administering the questionnaire to every third patient encounter based on age, residence and diagnosis of the patient as appearing on the prescription.

The data collection was carried out over a period of six weeks from August 23, 2013 to October 4, 2013. The questionnaire was used to; (i) determine if patients had been exposed to out of stock of medicines for their chronic conditions in this facility, (ii) establish the coping strategies they were using in order to access their medicines in the event they were out of stock in the facility, (iii) identify the consequences of the unavailability of medicines in the facility to

patients and their immediate families, (iv) establish the affordability or lack thereof, of purchasing medicines out-of-pocket and any complications or misadventures they have experienced due to out of stock of medicines in the facility.

Data collection at CMS was done through the Senior Pharmacist who provided the stock status records for the selected medicines from July 2012 to June 2013. The records were used to calculate the number of days each medicine was out of stock at CMS and how soon it was made available to RFMH after the date of receipt.

### **3.10 DATA MANAGEMENT**

All the data collected and the completed questionnaires were stored in a locked cupboard in the researchers' private abode and no access was given to anyone except for the data collectors who helped capture the data into SPSS. For confidentiality purposes, the hospital staffs who were involved in selection of patients into the study had no access to the completed questionnaires and responses of the patients. The questionnaires will remain locked safely for the next three years after which they will be destroyed in accordance with the Data Management Policy of the Ministry of Health.

### **3.11 DATA ANALYSIS**

Two open ended questions in the questionnaires were collated after data collection for ease of entry into the database. Data was categorized, coded and entered first into an excel spread sheet and later imported into SPSS where descriptive statistical analysis was conducted (A sample of the excel database is attached as annex 3). Frequency tables were generated by objective and formed the basis of the study findings. Cross tabulations were used for bivariate analysis and to test for any significant correlations between some data variables. Regression analysis was applied to further analyze the extent of correlations between some data variables.

The data analysis followed the core sections of the questionnaire as they related to the study question and objectives. The analysis was divided into five sections; Demographic information, Socio-Economic Status, Health Status, Availability of Medicines and Doctor-Patient Relationships.

### **3.12 RELIABILITY AND VALIDITY**

To increase validity of the data collected, the data collection questionnaires were shared with experts in health services research at the University of KwaZulu-Natal for review before data collection took place. This helped improve the questions that were to be posed to study respondents to avoid ambiguity. Also reliability was increased by ensuring that all respondents were asked the same questions designed in the same format and at the same setting thereby reducing interviewer bias and ensuring that if a different cohort of patients who shared similar attributes as those selected into this study were to be interviewed with the same questionnaire the same results would be observed.

### **3.13 ETHICAL CONSIDERATIONS**

Ethical clearance to perform the study was obtained from University of KwaZulu-Natal Humanities and Social Sciences Research Ethics Committee and the Ministry of Health Ethics Committee in Swaziland (See Attached Annexure 6 for sample of Approval Letters).

### **3.14 SUMMARY**

This chapter was a description of the methodology that was used for the study. It focused on research design, description of the study population, sampling and sampling procedure, piloting, and data collection procedure and data analysis.

## **CHAPTER 4: RESULTS**

### **4.1 INTRODUCTION**

This chapter presents the findings from the study together with a detailed data interpretation. First to be presented is the analysis of the demographic data of the respondents to understand their characteristics. This analysis focused on age, gender, level of education, marital status, occupation, religion, and income distribution. The next sections present findings per objective and the interpretation of tables and figures.

### **4.2 RESULTS**

A total of 300 patients participated in the study over a 6 weeks period. Demographic data will be presented first, followed by descriptive analysis of the data.

### 4.3 DEMOGRAPHIC INFORMATION

**Table 1: Demographic Characteristics of Respondents**

<b>n= 300</b>		
<b>E = Swaziland Lilangeni</b>		
<b>Variables</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Age</b>		
18 - 24	10	3.3
25 - 34	27	9
35 - 49	65	21.7
50 - 64	128	42.7
65+	70	23.3
<b>Gender</b>		
Male	85	28.3
Female	215	71.7
<b>Educational Level</b>		
Primary	96	32
Secondary	102	34
Tertiary	51	17
Never	51	17
<b>Marital Status</b>		
Single	66	22
Married	154	51.3
Divorced	7	2.3
Widowed	73	24.4
<b>Occupation</b>		
Unemployed	118	39.3
Employed	75	25
Self - Employed	68	22.7
Pensioned	39	13
<b>Religion</b>		
Christian	294	98
Muslim	3	1
Other	3	1
<b>Area of Residence</b>		
Urban	66	22
Semi - Urban	60	20
Rural	174	58
<b>Income Distribution</b>		
≤ E500	133	44.3

E501 - E1000	67	22.3
E1001 - E2000	48	16
E2001 - E5000	23	7.7
> E5000	29	9.7

Table 1 indicates the distribution of the patients interviewed according to demographic distribution. The highest age group presenting for the three non-communicable conditions was 50-64 years of age (n=128; 42.7%). There were very few patients below 34 years of age (n=37; 12.3%) that presented with the selected NCD's. Majority of patients with chronic conditions were females (n=215; 71.7%). Results showed that majority of the patients (n=249; 83%) had received some form of education but only a few among these (n=51; 17%) had reached tertiary education. The rest (n=51; 17%) had never been to school. Majority of the patients were married (n=154; 51.3%).

The rate of unemployment among these patients was very high (n=118; 39.3%) with employed patients accounting for only 25% (n=75) and self-employed accounting for 22.7% (n=68).

Almost all of the patients interviewed were Christians (n=294; 98%) and Muslims and others religions accounted for 1% (n=3) each respectively.

According to the results, a majority (n= 174; 58%) of the patients were residing in the rural areas, while 20% (n= 60) and 22% (n=66) resided in semi-urban and urban areas respectively. Results on income distribution showed that 44.3% (n=133) of the interviewed patients had a monthly income of less than E500 which is equivalent to less than USD 50. At least 22.3% (n=67) of the patients had a monthly income between E501 to E1000 which is equivalent to less than between USD 50 – USD 100 while 16% (n=48) of the patients had a monthly income of between E1001 to E2000 which is equivalent to less than between USD100 – USD 200, and 7.7% (n=23) had a monthly income of between E2001 and E5000 which is equivalent to less than between USD 200 and USD 500. Only 9.7% (n=29) of the patients had an income of above E5000 which is equivalent to less than USD 500 according to the Central Bank of Swaziland Exchange Rate of USD 1 = E10 as at 15 November 2013.

#### 4.4 HEALTH STATUS AND HEALTH SEEKING BEHAVIOR

**Table 2: Health Status and Health Seeking Behavior of Patients (n=300)**

<b>Variables</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Health Conditions</b>		
Hypertension	118	39.7
Asthma	59	19.7
Diabetes	123	41
<b>Length of time since diagnosis</b>		
6 months - 1 year	47	15.7
1 year - 2 years	48	16
> 2 years	205	68.3
<b>Frequency of refill visits</b>		
Every month	243	81
Once in two months	9	3
Only when feeling sick	48	16
<b>Reasons for missed monthly refills</b>		
Transport money to facility	21	38.2
See no reason to come every month	16	29.1
No one told me to come every month	11	20
No money for paying for consultation	7	12.7

Table 2 shows results of the health conditions of patients. Most of the patients involved in the study were hypertensive and diabetic. Diabetes accounted for 41% (n=123), hypertension 39.7% (n=118) and 19.7% (n=59) had asthma. Most of the patients had been diagnosed with their conditions for more than two years (n=205; 68.3%) and the rest were diagnosed with their conditions for less than two years. Most of the patients came for their refills on a monthly basis for their conditions (n=243; 81%). Only 3% (n=9) came once in two months and 16% (n=48) only when feeling sick. Patients who failed to come on a monthly basis for their refills were asked reasons for failing to adhere to their appointments. Of these, 38.2% (n=21) said they did not come because they did not have money for transport to the facility, 29.1% (n=16) said they did not find it necessary to do refills on a monthly basis, while 20% (n=11) said they were not informed that they were supposed to come to the hospital on a monthly basis and 12.7% (n=7) said they did not have money to pay for consultation (user fees).

#### 4.5 AVAILABILITY OF MEDICINES

**Table 3: Availability of prescribed medicines in the facility (n=300)**

<b>Variables</b>	<b>Frequencies</b>	<b>Percentage</b>
Yes	74	24.7
No	24	8
Sometimes	189	63
Don't Know	13	4.3
<b>Frequency of not receiving prescribed medicines in the past six months</b>		
Once	94	31.3
Twice	29	9.7
More than three times	29	9.7
Not Sure	148	49.3
<b>Received all prescribed medicines on the day of interview</b>		
Yes	237	79
No	50	16.7
Not Sure	13	4.3
<b>Proportion of prescribed medicines received</b>		
None (0% - 50%)	25	8.3
Partly (51% - 80%)	12	4
Mostly (81% - 99%)	26	8.7
Completely (100%)	237	79
<b>Instruction conveyed by dispensing personnel for medicines not available in the facility</b>		
Return to doctor	18	6
Referred to the chemist	282	94
<b>Turnaround time for buying medicines at the chemist</b>		
As soon as I leave the facility	119	39.7
Whenever, after getting money	152	50.7
When I go to town as there is no chemist in the community	8	2.7
When I get paid	11	3.7
When I feel sick	10	3.3



<b>Out-of-pocket expenditure by patients in private pharmacies</b>		
< E100	191	63.9
Between E100 - E300	86	28.8
Between E301 - E500	7	2.3
> E500	15	5
<b>Availability of health insurance cover</b>		
Yes	15	5
No	285	95
<b>Health Insurance Cost Incurred</b>		
< E1000	5	1.7
> E1000	4	1.3
Not Sure, paid by spouse	6	2
N/A	285	94.7
Declined to answer	1	0.3
<b>Number of family members supported</b>		
1	82	27.3
2	37	12.3
3	18	6
> 5	27	9
None	136	45.3
<b>Respondents comments on costs of medication and access to care</b>		
Government should remove user fees to improve access to health care services	55	18.3
Government should reduce user fees to improve access to health care services	66	22
Government should standardize price of medicines in private pharmacies to increase affordability	86	28.7
Government should provide health insurance for the elderly, unemployed and disabled	40	13.3
No comment	53	17

The results in table 3 illustrate the availability of medicines in the dispensary of the facility. The interviewed patients were asked if they received all their prescribed medicines in the health facility. Only 24.7% (n=74) of the interviewed patients said they always got all their prescribed medicines in the hospital's dispensary. Further analysis of the 24.7% (n=74) showed that 13.5% (n=10) were asthma patients, 48.6% (n=36) were diabetes patients and 37.8% (n=28) were hypertensive patients. About 63% (n=189) of them said that sometimes they would get their full prescription and 8% (n=24) said that every time they came to the facility they did not get their full prescribed medications and 4.3% (n=13) were not sure if they had always got their fully prescribed medicines or not in the past six months.

On availability of all prescribed medicines on the day of interview in the facility, 79% (n= 237) of the patients reported to have received all their prescribed medication on the day they were interviewed. On further analysis, it was noted that of the 79% patients who had received all their prescribed medicines on the day of interview, 13% (n=30) were asthma patients, 48% (n=114) were diabetic patients and 39% (n=93) were hypertensive patients. However, 16.7% (n=50) of the patients did not receive all their prescribed medicines on the day they were interviewed and 4.3% (n=13) of the patients were not sure if they had received all their prescribed medicines or not.

Further analysis was done to determine medicines available versus those prescribed on the day of interview. On this, 8.3% (n=25) received 0% - 50% of their prescribed medicines on the day of interview while 4% (n=12) of the patients received between 51% and 80% of their prescribed medicines and another 8.7% (n=26) had received between 81% – 99% of their prescribed medicines. A majority (n=237; 79%) of the patients received 100% of their prescribed medicines on the day of interview.

Patients were asked on the instruction given to them by the dispensing personnel in the event their medication was not available in the dispensary and 6% (n=18) said that they were referred back to the doctor or prescribing practitioner for changing of medicine not available and 94% (n=282) of the patients said that in the event their prescribed medicines were not available they were referred to the retail pharmacies to buy their medications.

The length of time patients took to obtain their medicines when not available in the facility was analyzed. The results showed that 39.7% (n=119) of the patients said that they bought their medicines as soon as they left the facility, 50.7% (n=152) of the patients said that they bought their prescription medicines when they got funds to buy their medicines while 2.7% (n=8) said that they bought their medicines when they had access to a retail pharmacy because of their proximity to access a retail pharmacy. About 3.7% (n=11) said that they bought their medicines when they received their monthly pay and 3.3% (n=10) said that they only bought their medicines when feeling sick.

The table also shows results of the cost to the patients' when they bought the medicines out-of-pocket at the chemist. About 63.9% (n=191) said that they were paying less than E100 which is equivalent to less than USD10 for their medication in the chemists, 28.8% (n=86) of the patients said that they were paying between E100 – E300 which is equivalent to less than between USD10 – USD30 while 2.3% (n=7) of the patients said that they were paying between E301 – E500 for their medication in a retail pharmacy which is equivalent to less than between USD 30 – USD 50 and 5% (n=15) were paying more than E500 which is equivalent to less than USD50 when buying their medication out-of-pocket in the event it was out of stock in the facility.

Only 5% (n=15) of the interviewed population had a private health insurance that they were using to buy medicines in a chemist in the event they were out of stock in the facility while 95% (n=285) of the patients did not have a health insurance and had to pay for their medicines out-of-pocket in the event they were not available in the facility.

The cost of the health insurance patients were paying per month for their health insurance cover varied. About 1.7% (n=5) of the patients who had a health insurance were paying less than E1000 which is equivalent to less than USD 100 a month for their health insurance, 1.3% (n=4) of the patients who had a health insurance were paying more than E1000 which is equivalent to less than USD100 per month for their insurance; 2% (n=6) of these patients were not sure on how much they were paying for their health insurance as it was paid by their spouse and 0.3% (n=1) of the patients declined to give an answer about payment of their health insurance.

The results of patients who had other family members for whom they were buying medicines out-of-pocket (other than their own medicines) were presented. About 27.3% (n=82) of the patients said that they had an extra person in their family they were buying medicines for other than their own medicines, 12.3% (n=37) of the patients said that they had other two family members they were buying medicines for out-of-pocket while 6% (n=18) of the interviewed population said that they had three members in their family they were buying medicines out-of-pocket other than themselves and 9% (n=27) of the patients said that they had more than five members of their family members that they were buying medicines for out-of-pocket. About 45.3% (n=136) of the interviewed patients said that they had no other family members they were buying medicines for out-of-pocket other than themselves.

Table 3 also illustrates results of patients' views on availability of medicines in public health facilities. About 18.3% (n=55) of the patients felt that the government should remove user fees in order to increase access to healthcare services in public health facilities, 22% (n=66) of the patients felt that government should reduce user fees in order to increase access to healthcare services in public health facilities; 28.7% (n=86) of the patients said that the government should work around standardizing the prices of medicines in private pharmacies in order to increase affordability of medicines even in retail pharmacies, 13.3% (n=40) of the patients said that the government should provide healthcare insurance to the elderly, disabled and unemployed in order to increase access to healthcare services. The rest (n=53; 17.7%) of the patients declined to say anything concerning this issue.

#### 4.6 DOCTOR-PATIENT RELATIONSHIPS

**Table 4: Patient- Doctor or Health Personnel communication (n=300)**

Variables	Frequency	Percentage
<b>Responses on receiving counseling on treatment adherence from health personnel</b>		
Yes	294	98
No	6	2
<b>Responses on hospitalization due to their health conditions</b>		
Yes	50	16.7
No	250	83.3
<b>Length of hospitalization</b>		
< 3 days	39	78
> 3 days	11	22
<b>Responses to whether they had ever missed review appointments due to lack of funds</b>		
Yes	102	34
No	198	66
<b>Responses to whether they had communicated to health personnel that they cannot afford to buy medication on their own</b>		
Yes	112	37.3
No, I thought there is nothing he/she can do	121	40.3
No, I felt it will embarrass me	17	5.7
No, I felt it was unnecessary	50	16.7

Table 4 shows results of communication by health personnel to the patients about the importance of medicines compliance. About 98% (n=294) of the patients said that the health personnel had explained the importance of medicine compliance for their conditions. Two percent (n=6) of the patients said that the health personnel had not explained or talked to them about medicines compliance.

Patients were asked if they were ever hospitalized because of their conditions in the past six months. About 16.7% (n=50) of the patients said that they were once hospitalized in the past six months because of their conditions while 83.3% (n=250) of the patients had not been hospitalized.

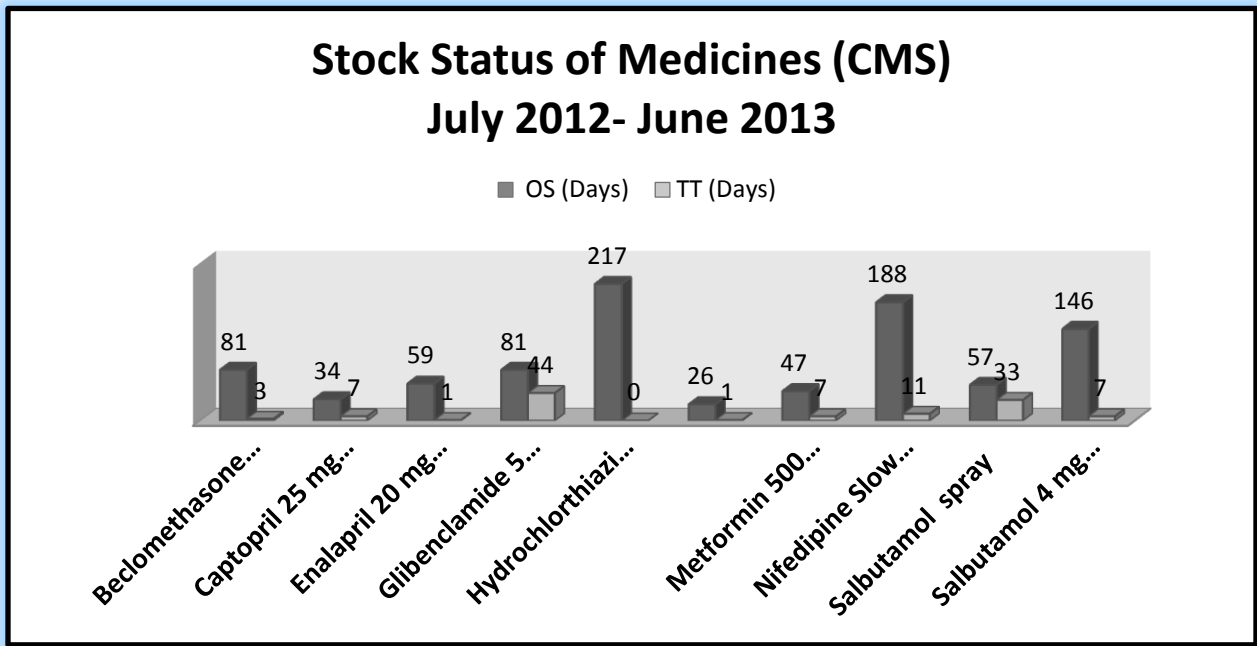
They were further asked about the number of days they spent in hospital. Of the 16.7% patients that were hospitalized, 78% (n=39) said that they were hospitalized for less than 3 days and 22% (n=11) of them said that they were hospitalized for more than 3 days. The table also shows results of patients who failed to meet their appointments because of lack of funds. About 34% (n=102) of the interviewed patients admitted to have missed their appointments due to lack of funds and 66% (n=198) of the patients had never missed their appointments due to lack of funds.

Patients' communication with health personnel about not being able afford to buy their medicines out-of-pocket was analyzed. About 37.3% (n=112) of the patients said that they explained to the health personnel about not being able to buy their medicines out-of-pocket. About 40.3% (n=121) of the patients said that they did not talk to the health personnel about medicines affordability because they felt there was nothing the health personnel could do for them. About 5.7% (n=17) of the patients said they felt that this will embarrass them and 16.7% (n=50) of the patients said that they did not find it necessary.

#### **4.7 STOCK AVAILABILITY AT CENTRAL MEDICAL STORES (CMS)**

Data of availability of ten essential medicines used to treat the three non-communicable diseases from CMS was collected using a data sheet whereby records of availability of the medicines were recorded for July 2012 to June 2013. These records were showing availability of medicines at CMS, days of stock-outs, date of receipts from suppliers and date of issues to RFMH. This data informed the study on how often medicines were out of stock at CMS which is the source of medicines supply for the facility and to confirm the information provided by patients on medicines availability in the facility.

**Figure 1: Number of days the selected medicines was out of stock at CMS between July 2012 and June 2013**



The results in figure 1 shows that Captopril 25mg tablets which is used to treat hypertension was out of stock at CMS for 34 days in a period of 12 months . Hydrochlorothiazide 25mg tablet which is used for treating hypertension was out of stock for 217 days at CMS. Enalapril 20mg tablet, which is also used to treat hypertension, was out of stock for 59days in 12 months. Nifedipine 20mg Slow Release tablets also used in treating hypertension was also out of stock for 188 days. Glibenclamide 5mg tablet used to treat diabetes in patients was out of stock for 81 days in twelve months at CMS. Metformin 500mg tablet which is also used in diabetes treatment was out of stock for 47 days and Actraphane insulin which is also used to treat diabetes was out of stock for only 21 days in a period 12 months.

Salbutamol 4 mg tablet which is used to treat asthma was out of stock for 146 days. Salbutamol spray which also used by asthma patients for management of their asthma condition was out of stock for 57 days. Beclomethasone spray which is also used for asthma management was out of stock at CMS for a period of 81 days in a 12 months period.

In general, hypertensive medications were less available in the 12 months review period as their days out of stock ranged between 34 days and 217 days with average mean of 124.5 days followed by asthma medication which ranged 57 days and 146 days with an average mean of 94.67 days and diabetes medication were the most available as their days out of stock ranged between 21 days and 81 days with an average mean of 51.3 days.

**Table 5: Summary of Descriptive Analysis of Days for out-of-stock medicines at CMS**

```
. sum osdays, detail
```

OS (Days)				
	Percentiles	Smallest		
1%	26	26		
5%	26	34		
10%	30	47	Obs	10
25%	47	57	Sum of Wgt.	10
50%	70		Mean	93.6
		Largest	Std. Dev.	66.69366
75%	146	81		
90%	202.5	146	Variance	4448.044
95%	217	188	Skewness	.84801
99%	217	217	Kurtosis	2.248383

The table shows that the overall mean of days out of stock for the selected medicines from CMS was 93.6 days which was more than three months in a period of one year. The median was 70 days and standard deviation was 66.7days. In 90% of the medicines that were out stock at CMS,



the gap of days occurred once. Only 10% of the medicines had an occurrence of two times in a period of 12 months.

Figure 1 also shows results on how soon medicines were issued to RFM hospital on receipt from suppliers at CMS. A majority n=7 (70%) of the medicines were issued within a period of 1 day and 11 days on receipt at CMS to the health facility. The list of medicines are Beclomethasone spray, Enalapril 20mg, Insulin Actraphane, Captopril 25mg, Metformin 500mg and Nifedipine SR 20mg tablets. Salbutamol spray was issued in 33 days after receipt. Glibenclamide was issued in 44 days after receipt. Both these medicines were issued to the facility above the stipulated lead time of two weeks. Data on Hydrochlorothiazide 25mg tablets was unavailable at the time of the data collection hence one could not gather whether this medicine was issued to the health facility on receipt at i CMS. Based on these findings, most medicines (70%) were issued within 2 weeks of receipt to RFMH by CMS which is the lead time stipulated in Pharmaceutical Standard Operational Procedures for ordering of medicines by facilities.

**Table 6: Descriptive Analysis of Turnaround Time of Medicines to Health Facility**

TT (Days)				
Percentiles		Smallest		
1%	0	0		
5%	0	1		
10%	.5	1	Obs	
10				
25%	1	3	Sum of Wgt.	10
50%	7		Mean	
11.4				
		Largest	Std. Dev.	14.92351
75%	11	7		
90%	38.5	11	Variance	222.7111
95%	44	33	Skewness	1.414637
99%	44	44	Kurtosis	3.468539

Table 6 further illustrates the turnaround time of medicines to the health facility on receipt at CMS in the event they were out of stock. The overall average mean was 11.4 days, the median was 7 days and the standard deviation was 14.9 days.

#### **4.8 SUMMARY**

This chapter presented a detailed analysis of the data and provided descriptive statistics of the study responses as they relate to the objectives and research questions. It showed the demographics of the patients interviewed and their socioeconomic status, presented their experiences with stock-outs of medicines at the health facility and the costs they incur when they buy the medicines from private pharmacies. It described the magnitude of the problem caused by non-communicable diseases and the challenges faced by patients affected by these chronic conditions in Manzini.

## **CHAPTER 5: DISCUSSION**

### **5.1 INTRODUCTION**

This chapter presents a summary discussion of the findings. The discussion follows the themes outlined in chapter 4 in the results analysis and links the findings to the literature examined in chapter 2. Major findings are highlighted to be further summarized in chapter 6 when addressing implications and significance of this study. The first section of the chapter discusses the demographic information of the respondents, their socioeconomic status as well as their health profile and health seeking behavior. The last section focuses on how the results corroborate existing literature regarding availability of medicines, doctor-patient relationships and patient direct costs of healthcare.

### **5.2 DEMOGRAPHIC INFORMATION SUMMARY**

There seemed to be a significant variance between the male and female patient population at RFMH, with a high proportion of patients being the females (71%). These results were anticipated by the researcher as literature confirms high proportions of females at health facilities than males. This result seemed to match other studies as they showed that most females were affected by chronic conditions when compared to males (Hannan, 2009). This may also be due to the generally high rate of health seeking behavior among the female population (Knud and Kaare, 2005). In terms of age, the results showed that NCDs were highly prevalent for the age groups above 35 years. Older patients were the ones most affected by the chronic conditions between the ages 50 – 64 years (46%) as they accounted for almost half of the interviewed population. In addition, the results showed that a majority of the patients had received some basic education, (reached up to secondary level); however, there were a proportion of patients that had reached tertiary education. It was also quite significant that 17% of the patients had never received any type education, hence were illiterate. This factor was posing a threat in terms of understanding issues in these patients when being educated about their conditions in terms of level of understanding.

### **5.3 SOCIOECONOMIC STATUS**

A significant proportion, approximately 60% of the patients at the facility were from the rural areas of Manzini region. This means patients would travel for approximately 20 kilometers to access health care services. This calls for decentralization of NCD related health services to the rural areas of the country in general. In addition, almost half of the interviewed population (44%) earned a monthly income that is almost equivalent to less than US \$50 which was way below gross national monthly income per capita (USD233.33) of the country. According to 2010 poverty world bank data, it showed that 40.6 % of the Swazi population was living below the poverty line of USD1.25 a day. This result confirmed the same findings of the World Bank data that these patients were living below the poverty line. In the face of catastrophic health expenditure, these patients were further impoverished by out-of pocket expenditure for their medicines. With this result, it showed that these patients would have to forgo other household necessities in order to access medications or health services to control their conditions. Although these patients were not asked how they were financing their health expenditure; a number of studies have shown that patients with chronic conditions will use a variety of ways to finance their health expenditure; some would sell their assets or borrow money (Van Damme et al., 2012). A majority of this population will tend to forgo the much needed care for their chronic conditions in the event of a stock out at the health facility because of financial constraints or will go into further financial catastrophe by borrowing money in order to buy medicines for their conditions out-of-pocket. The Bengal study in India also showed that the odds of incurring financial catastrophe for chronic conditions were greatest in out-patient care (Bhojani et al., 2012).

#### **5.4 HEALTH STATUS AND HEALTH SEEKING BEHAVIOR**

The results showed that a high number of the interviewed patients were hypertensive followed by diabetes and asthma respectively. Eighty one percent of the patients honored their monthly appointments for refills of their medications, and these were mainly the diabetic and the hypertensive patients. . This showed a positive indication that these patients were educated by health professionals on the importance of monitoring their conditions and attending doctors' appointments on monthly basis. Asthma patients were the least to honor doctor's appointments for refills as (58%) of them visited the facility only when feeling sick.

#### **5.5 AVAILABILITY OF MEDICINES**

A majority of the patients were not receiving all their prescribed medicines when visiting the facility and the main reason was stock outs. Although some patients were able to buy the out of stock medicines in private pharmacies immediately after leaving the facility, a significant number of these patients (60.4 %) could not because of limited financial resources. This unavailability of medicines exerts some financial pressure to the already impoverished patients and further distributes their household income share due to unanticipated health expenditure. This challenge will further increase the risk of patients not taking their prescribed medications for days and increase the risk of complications of their conditions. A number (25%) had reported hospitalization in the past six months because of their conditions. The consequence of disease complications will increase income loss due to inability to work to these patients. A study done among 875 adults with diabetes in the US in 2004 on problems paying out-of-pocket for their medication showed that medication costs posed significant problems on patients affecting both their adherence as well as other aspects of their life (Piette et al., 2004).

Medicine availability in health facilities plays a vital role in improving the chronic conditions of patients by improving their quality of life and having more controlled conditions with fewer complications that would need expensive interventions for treatment. What further aggravates the challenge of medicine availability is the lack of any form of health insurance for a majority of the patients, (95%). For a majority of the patients, average medical costs incurred due to a stock out is approximately US \$ 10, which is higher than the poverty line threshold of the country. Furthermore, the out-of-pocket amount spent in medicines by these patients due to unavailability at the facility showed to be between 10 times to 50 times more than the user fees (E10) charged to access health care services in any health facility in the country. This evidence shows a cause of concern for MOH to improve availability of medicines in health facilities in order to improve this financial catastrophe imposed to patients in the event of non-availability of medicines.

#### **5.6 DOCTOR-PATIENT RELATIONSHIPS**

From the results we could conclude that counseling on medicines use was well established with patients as eighty percent reported that they were informed by the health practitioners on consequences of not taking medication as prescribed for their conditions. However, there seems to be lack of information given to patients on their rights and the extent to which they can express their views and challenges with regards to medicine availability as most of them felt they were not supposed to talk about issues of not being able to access the prescribed medicines because of lack of funds with the healthcare personnel. This situation is similar to the US study on problems of paying out-of-pocket for their medicines among diabetic patients, whereby patients were not comfortable in informing their clinicians that they could not afford to pay for their medications because they felt it would embarrass them (Piette et al., 2004). This study suggested that a collaborative communication with patients will assist in medication cost, adherence to treatment and improved health outcomes. Clinician-Patient communication should be strengthened in order achieve positive goals for health outcomes and improve quality of life of patients. A significant percentage (16%) of patients was admitted at least once in the past six months due to their conditions. This is a cause for concern for policy developers

as it evident that patients are not well controlled in their conditions and this may affect their health outcomes negatively. There will be loss of income due to hospital stay and increased out-of-pocket payment due to other costs related to admission.

### **5.7 STOCK AVAILABILITY AT CENTRAL MEDICAL STORES**

The stock availability of the selected medicines at CMS varied per product. Some medicines were out of stock for a period of less than 30 days in a year (Captopril and Insulin Actrapahane) and some were out of stock for more than six months (Hydrochlorothiazide and Nifedipine Slow Release 20mg). This situation posed a financial threat to the patients using these medications and increased the risk of patients not taking their medication which would increase the risk of complications of their conditions. MOH should work on systems to improve availability of medicines in health facilities in order to provide financial protection to patients by reducing out-of-pocket expenditure for their medications and reduced complications from chronic conditions hence improved quality of life and economic situations. The turnaround time of medicines on receipt at CMS to RFMH was within an acceptable period as it varied from 1day to 30 days. This result showed that medicines were made available on time to the facility on receipt at CMS. This showed a good outcome in achieving some of the supply chain goals for MOH and good working relations between CMS and health facilities.

### **5.8 SUMMARY**

This chapter presented a comprehensive discussion of the study findings and how they relate to the literature reviewed on the subject matter. It tied together all the chapters of the thesis and summarized major findings that would form the basis of the next chapter on conclusion.

## **CHAPTER 6: CONCLUSION**

### **6.1 INTRODUCTION**

This chapter presents the conclusions of the study based on the findings. Also presented in this chapter are the study limitations, recommendations as well as the significance of the study to the country's health authorities, research institutions and general population.

### **6.2 STUDY LIMITATIONS**

The following were the major limitations of the study;

1. Study setting not representative: Because patients interviewed were from one facility in one region there is limited generalizability of the findings to other parts of the country.
2. Costs to patients not exhaustive: While the direct out-of-pocket costs of buying the medicines could be established, these were a small fraction of the total costs incurred by patients and their families in their efforts to access treatment for their conditions.

### **6.3 RECOMMENDATIONS**

Based on the findings analyzed in chapter 4 and further discussed in chapter 5 the following recommendations are made;

1. MOH policy developers should review current pharmaceutical policy to accommodate strategies by which to improve access to health care and medicines for patients with chronic conditions.
2. Policies used to treat communicable and transmittable diseases should be implemented at small scale for NCD's to assess its impact in improving availability of medicines for non - communicable conditions in health facilities
3. Ministry of Health should develop a framework for regulating medicine prices both in private and public sector in order to reduce the financial burden borne by patients when buying medicines from private pharmacies.



4. Further research on coping strategies for patients with NCD's should be conducted on a larger population of the country in order to ascertain how patients are coping with the burden of out-of-pocket expenditure when accessing healthcare services.

#### **6.4 SIGNIFICANCE OF THE STUDY**

This study reinforced the role of the first Standard Treatment Guidelines and Essential Medicines Lists launched in 2012 in regulating prescription of medicines and ensuring availability of essential medicines in the country. Moreover, the study highlighted the current gaps especially at the central medical stores that directly result in stock-out of chronic conditions medicines in public health facilities. This is a new body of knowledge that would help the Ministry of Health develop evidence based strategies to improve medicines supply chain management system in the country.

#### **6.5 CONCLUSION**

The MOH is depending on user fees from patients for health care financing mechanisms. Many families in the country could find this a challenge, as 63% of the country's population already lives below the poverty line. MOH policy developers should review how best access to health care can be improved and availability of medicines for chronic conditions in healthcare facilities in order to provide financial protection to patients. The issue of paying user fees for patients with chronic conditions to access healthcare services should also be reviewed by policy developers as some patients with chronic conditions will not access healthcare when not feeling sick because of financial limitations whilst increasing the risk of complications from their conditions. Policies used to treat communicable and transmittable diseases should be implemented at small scale for NCD's to assess its impact in improving availability of medicines for non -communicable conditions in health facilities of Swaziland.

Results in this study have shown that patients averagely were paying 10 times to 50 times more to access medicines for their conditions in private pharmacies than when they were accessing

them in a public health facility. This brings more financial constraints to the patients and can cause a lot of incompletion to treatment and more complications of their conditions which are more expensive to treat. This situation calls for urgent attention for the Ministry of Health to work on the issue of medicines price regulation in order to reduce the challenges by having affordable medicines whether in public or private health facilities and a strong drug policy to strengthen availability of essential medicines in health facilities.

MOH achieved one of its Pharmaceutical Strategic Plan goals by having the first Standard Treatment Guidelines and Essential Medicines Lists launched in 2012. In order to achieve safe prescribing and availability of medicines in health facilities, MOH has to enforce prescribing using the STG's by prescribers and availability of medicines listed in the EML in all health facilities by having a drug policy that will enforce procurement of quality medicines according to the EML. This has been evident to improve availability of medicines in health facilities and provide good management of chronic conditions, reduce complications of diseases in patients in other low income countries like India (Chaudhury et al., 2005). This study also showed improved availability of essential medicines at facilities, though not 100% availability at all times. The stock out periods needs to be addressed at CMS level. Further investigation is required as to whether this is an issue of financial resources or poor logistics skills.

95% of the interviewed patients had no health insurance to pay for their medicines in the event their medicines were out of stock in the facility. The MOH should also look into issues of financing healthcare with a form of health insurance for certain conditions and certain age groups in order to reduce catastrophic situations, morbidity and mortality and improve the quality of life of the country population.

Research on coping strategies for patients with NCD's should be further done on a larger population of the country in order to have access to more information on how these patients

are coping with the burden of out-of-pocket expenditure on medicines for their conditions, how they finance the out-of-pocket expenditure and necessities they end up losing in efforts to access medicines for their health conditions. This will assist MOH policy developers to do a good analysis of the situation and develop finance mechanisms that will improve access to health care for patients and a strong drug policy to improve medicine availability in public health facilities for chronic conditions.

## REFERENCES

- Alwan A., Armstrong T., Bettcher D., Branca F., Chisholm D., Ezzati M., ..., Wild C. (2011). Global status report on non-communicable diseases 2010. Geneva, Switzerland: World Health Organization. [http://www.who.int/nmh/publications/ncd\\_report\\_full\\_en.pdf](http://www.who.int/nmh/publications/ncd_report_full_en.pdf) Accessed on 29 August 2014
- Bhojani U., Devadasan R., Munegowda C., Devadasan N., Kolsteren P., & Criel B. (2012). Out-of-pocket health care payment on chronic conditions for impoverished urban poor in Bangladesh, India. *BMC Public Health*, 12: 990. <http://www.biomedcentral.com/1471-2458/12/990>
- Bloom D.E., Cafiero E.T., Jané-Llopis E., Abrahams-Gessel S., Bloom L.R., Fathima S., & Weinstein, C. (2011). The global economic burden of non-communicable diseases. Geneva: World Economic Forum. [http://www3.weforum.org/docs/WEF\\_Harvard\\_HE\\_GlobalEconomicBurdenNonCommunicableDiseases\\_2011.pdf](http://www3.weforum.org/docs/WEF_Harvard_HE_GlobalEconomicBurdenNonCommunicableDiseases_2011.pdf) Accessed 27 August 2014
- Cameron A., Ewen M., Ross-Degan D., Ball D., & Laing R. (2009). Medicine prices and affordability in 36 developing and middle-income countries: a secondary analysis. *The Lancet*, (373): 240 – 249.
- Central Statistical Office (CSO) [Swaziland], and Macro International Inc. (2008). Swaziland Demographic and Health Survey 2006-07. Mbabane, Swaziland: Central Statistical Office and Macro International Inc.
- Chaudhury R., Sharma S., Parameswar R., Gupta U., Tekur U., & Bapna J. (2005). Quality medicines for the poor: experience of the Delhi programme on rational use of drugs. *Health and Policy Planning*, 20 (2): 124 -136, viewed 18 July 2012, <http://heapol.oxfordjournals.org>.

- Fuster V. & Kelly B. (2010). Promoting cardiovascular health in the developing world: a critical challenge to achieve global health. Washington DC: The National Academies Press.
- Gertler P. & Gruber J. (2002). Insuring consumption against illness. *The American Economic Review*, 92 (1) 51- 70.
- Gilson L. (2002). The lessons of user fee experience in Africa. *Health Policy and Planning*, 112, 273 – 285.
- Hannan C. (2009). Women, gender, equality and diabetes. *International Journal of Gynecology and Obstetrics*, 104: 54 – 57.
- Hogerzeil H. (1995). Promoting rational prescribing: an international perspective. *Clinical Pharmacology*. 39(1): 1- 16.
- Kangwana B., Njogu J., Wasunna B., Kedenge V., Memusi N., Goodman C.,..., & Snow, R. (2009). Malaria drug shortages in Kenya: a major failure to provide access to effective treatment. *The American Journal of Tropical Medicine and Hygiene*, 80 (5): 737-738.
- Knud J. & Kaare C. (2008). Are men seeking medical advice too late? Contacts to general practitioners and hospital admissions in Denmark 2005. *Journal of Public Health*. 30(1), 111-113. 10.1093/pubmed/fdm072
- Leive A. & Xu K. (2008). Coping with out-of-pocket health payments: empirical evidence from 15 African countries. *Bulletin of the World Health Organization*. 86:849–856.
- Mayer-Foulkes D. (2011). A survey of macro damages from non-communicable chronic diseases: another challenge for global governance. *Global Economy Journal*, 11(1).
- McIntyre D., Thiede M., Dahlgren G., & Whitehead M. (2006). What are the economic consequences for households of illness and of paying for health care in low- and middle-income country contexts? *Social Science Med.*, 62 (4): 858 – 865.
- Ministry of Health. (2011). National pharmaceutical policy. Mbabane, Swaziland: Ministry of Health. <http://apps.who.int/medicinedocs/documents/s19028en.pdf> Accessed 27 August 2014

- Murphy A., Mahal A., Richardson E., & Moran A. (2013). The economic burden of chronic disease care faced by households in Ukraine. Published online 2013, May doi. 10.1186/147-9276-12-38. <http://www.equityhealthj.com/content/12/1/38>.
- National Institutes of Health. (2014). What is asthma? National Heart, Lung and Blood Institute. <http://www.nhlbi.nih.gov/health/health-topics/topics/asthma/> accessed on 27 August 2014
- Partners for Prevention. (2007). Preventive care: a national profile on use, disparities, and health benefits. Washington DC, United States: National Commission on Prevention Priorities. <http://www.prevent.org/data/files/initiatives/ncpppreventivecarereport.pdf> Accessed on 27 August 2014.
- Piette J., Heisler M., & Wagner T. (2004). Problems paying out-of-pocket medication costs among older adults with diabetes. *Diabetes Care*, 27: 384–391.
- Smith-Spangler C., Bhattacharya J., & Goldhaber-Fiebert J. (2012). Diabetes, its treatment and catastrophic medical spending in 35 developing countries. *Diabetes Care*, 35: 319- 326
- Syhakhang L., Soukaloun D., Tomson G., & Wahlström R. (2011) Provider performance in treating poor patients - factors influencing prescribing practices in Lao PDR: a cross-sectional study. *BMC Health Service Research*, 11 (3): 1-7.
- United Nations Population Division. (2011). World population prospects: the 2010 revision. Retrieved August 24, 2014 from <http://esa.un.org/wpp/Other-Information/faq.htm>
- Uplekar M., Pathania V., & Raviglione M. (2001) Private practitioners and public health: weak links in tuberculosis control. *The Lancet*, 358: 912 – 916.
- Van Damme W., Van Leemput L., Harderman W., & Messeen B. (2004). Out-of-pocket health expenditure and debt in poor households: evidence from Cambodia. *Tropical Medicine and International Health*, 273 – 280, viewed 28 August 2012.
- Whitehead M., Dahlgren G., & Evans T. (2001). Equity and health sector reforms: can low-income countries escape the medical poverty trap? *The Lancet*, 358: 833-36.

- World Health Organization. (2005). Preventing chronic diseases: a vital investment. WHO global report. Geneva: World Health Organization.
- World Health Organization. (2009). World health statistics. Geneva: World Health Organization.  
[http://www.who.int/whosis/whostat/EN\\_WHS09](http://www.who.int/whosis/whostat/EN_WHS09) Accessed on 29 August 2014
- World Health Organization. (2010). Global strategy to reduce the harmful use of alcohol. Geneva: World Health Organization.  
[http://www.who.int/substance\\_abuse/msbalcstragegy.pdf](http://www.who.int/substance_abuse/msbalcstragegy.pdf) Accessed on 29 August 2014
- World Health Organization. (2013). A global brief on Hypertension: silent killer, global public health crisis. Geneva: World Health Organization  
[http://apps.who.int/iris/bitstream/10665/79059/1/WHO\\_DCO\\_WHD\\_2013.2\\_eng.pdf](http://apps.who.int/iris/bitstream/10665/79059/1/WHO_DCO_WHD_2013.2_eng.pdf)  
Accessed 29 August 2014
- Xu K., Evans B., Aguilar- Rivera A., Musgrove P., & Evans T. (2007) Protecting households from catastrophic health spending. *The Lancet*, 26(4): 972 – 983.
- Xu K., Evans D., Kwabata K., Zeramdini R., Klavus J., & Murray C. (2003). Household catastrophic health expenditure: a multi-country analysis. *The Lancet*, 362: 111-117.

## ANNEXURE 1: PATIENT QUESTIONNAIRE

### Questionnaire Forms: Coding Sheet

Name of Hospital..... Raleigh Fitkin Memorial Hospital

(9999 is for missing data)

#### SECTION A: DEMOGRAPHIC CHARACTERISTICS

1. Age..... (years)

18 – 24	= 1	
25 -34	= 2	
35 – 49	= 3	
50 – 64	= 4	
65+	= 5	
Declined to answer		9999
  
2. Gender

Male	= 1	
Female	= 2	
  
3. Educational level:

Primary level	= 1	
Secondary level	= 2	
Tertiary level	= 3	
Never	= 4	
  
4. Marital status:

Single	= 1	
Married	= 2	
Divorced	= 3	
Widowed	= 4	



5. Occupation:
- Unemployed = 1
  - Employed = 2
  - Self Employed = 3
  - Pensioned = 4

6. Religion:
- Christianity = 1
  - Muslim = 2
  - Hindu = 3
  - Other..... = 4

**SECTION B: SOCIO ECONOMIC STATUS (SE)**

1. Area of Residence:
- Urban = 1
  - Rural = 2
  - Semi – Urban = 3

2. Monthly income (family):
- < E500 = 1
  - E501-E1000 = 2
  - E1001-E2000 = 3
  - E2001 – E5000 = 4
  - > E5000 = 5

### SECTION C: HEALTH STATUS OF CLIENT: (HS)

1. What condition have you been diagnosed with?

Hypertension = 1

Asthma = 2

Diabetes = 3

Other = 4

2. How long have you been diagnosed with your condition?

6 months – 1 year = 1

1 year – 2 years = 2

≥ 2 years = 3

3. How often do you come to this facility to refill your medications?

Every month = 1

Once in 2 months = 2

Only when feeling sick = 3

4. If they answer once in 2 months or when feeling sick ask that:

What are the contributing factors that make you to come in these intervals as your condition needs to be reviewed every month?

Money for transport to the facility = 1

I do not see the reason to come every month = 2

No one told me to come on a monthly basis = 3

Money for paying for consultation in the facility = 4

**SECTION D: AVAILABILITY OF MEDICINES IN THE DISPENSARY (AMD)**

1. When coming to collect your monthly medications in the pharmacy do you always get all the prescribed medicines?

Yes = 1

No = 2

Sometimes = 3

2. How many times in the past 6 months when coming to collect your medications in the dispensary you did not get everything that was prescribed by the doctor?

Once = 1

Two times = 2

More than three times = 3

Not sure = 4

3. How many times in the past 6 months did you come back to the facility and still find that the same medication/s is still out of stock?

Once = 1

Two times = 2

More than three times = 3

Not sure = 4

4. (a) Did you receive all your prescribed medications today?

Yes = 1

No = 2

4. (b)

Check and list the medication the patient received versus prescribed. Calculate the percentage of medicines received today.

-----	-----
-----	-----
-----	-----
-----	-----

5. What did the dispensing personnel explain to you about the medicine/s that is / are not available in the dispensary?
- To return to the doctor to be given another medication = 1
- To go and buy the medicine in the chemist = 2
6. In the event you have to go and buy the medication in the chemist, how soon do you buy your medication?
- As soon as I leave the facility = 1
- Whenever after getting money = 2
- When I go to town as there are no chemists close to the community = 3
- When I get paid = 4
- When I feel sick = 5
7. On average, how much has your medication cost you when you buy it at the chemist in the event it is out of stock in the facility in the past 6 months?
- Less than E100 = 1
- Between E100 – 300 = 2
- Between E301 – E500 = 3
- Above E500 = 4
8. Do you have a healthcare insurance cover that you use to buy your medication with incase it is out of stock in the facility?
- Yes = 1
- No = 2
9. How much do you pay averagely per month for your health insurance cover?
- Less than E1000 = 1
- More than E1000 = 2
- Not Sure, because it is paid by spouse/family = 3
- Not applicable = 4
- Declined to answer = 9999

10. Do you or your family buy medicines for other members of your family? If so, how many?

1 = 1

2 = 2

3 = 3

More than 5 = 4

None = 5

11. Anything that you would like to add on the issue of the cost of your medication that are not available in the health facility

-----  
-----  
-----

**SECTION E: PATIENT - DOCTOR OR HEALTH PERSONNEL COMMUNICATION: (COMM)**

1. Has the doctor, nurse or dispensing personnel explained to you the consequences of not taking your medication regularly.

Yes = 1

No = 2

2. Have you been hospitalized because of not taking your medication due to out of stock of your medication in the facility or not affording to buy the medication out-of-pocket in the past 6 months?

Yes = 1

No = 2

3. If yes, for how long were you hospitalized?

< 3 days = 1

≥ 3 days = 2

Other ----- = 3

4. Have you ever missed coming to the health facilities for your appointments due to lack of funds?

Yes = 1

No = 2

5. After the health personnel has told you to buy your out of stock medication in the chemist, have you ever told her/him that you cannot afford to buy the medication because of limited funds and if no, why not?

Yes	=1
No, because I thought that there is nothing that he/she can do	= 2
No, because I felt it will embarrass me	= 3
No, because I felt it was unnecessary	= 4

**THANK YOU FOR YOUR TIME**

**ANNEXURE 2: CENTRAL MEDICAL STORES DATA COLLECTION SHEET**

The medicines to be used for data collection from Central Medical Stores has been chosen based on the fact that these are medicines in the Swaziland Essential Medicines List and Standard Treatment Guidelines that are currently part of the treatment used for the three selected conditions (hypertension, diabetes and asthma).

Medication: How many days has each of these medications been out of stock in the past 12 months? What has been its turnaround time to the facility (RFM hospital) from the date of receipt at CMS?

(a) Captopril 25mg tablets

Days Out of Stock

\_\_\_\_\_ Days

Turnaround time to facility after date of receipt

\_\_\_\_\_ Days

\_\_\_\_\_ Months

(b) Hydrochlorothiazide 25mg tablets

Days Out of Stock

\_\_\_\_\_ Days

Turnaround time to facility after date of receipt

\_\_\_\_\_ Days

\_\_\_\_\_ Months

(c) Enalapril 20mg tablets

Days Out of Stock

\_\_\_\_\_ Days

Turnaround time to facility after date of receipt

\_\_\_\_\_ Days

\_\_\_\_\_ Months

(d) Glibenclamide 5mg tablets

Days Out of Stock

\_\_\_\_\_ Days

Turnaround time to facility after date of receipt

\_\_\_\_\_ Days

\_\_\_\_\_ Months

(e) Metformin 500mg tablets

Days Out of Stock

\_\_\_\_\_ Days

Turnaround time to facility after date of receipt

\_\_\_\_\_ Days

\_\_\_\_\_ Months

(f) Insulin (Actraphane)

Days Out of Stock

\_\_\_\_\_ Days

Turnaround time to facility after date of receipt

\_\_\_\_\_ Days

\_\_\_\_\_ Months

(g) Salbutamol spray:

Days Out of Stock \_\_\_\_\_ Days

Turnaround time to facility after date of receipt

\_\_\_\_\_ Days

\_\_\_\_\_ Months



(h) Beclomethasone spray

Days Out of Stock

\_\_\_\_\_ Days

Turnaround time to facility after date of receipt

\_\_\_\_\_ Days

\_\_\_\_\_ Months

(i) Salbutamol 4mg tablets

Days Out of Stock

\_\_\_\_\_ Days

Turnaround time to facility after date of receipt

\_\_\_\_\_ Days

\_\_\_\_\_ Months

(j) Nifedipine 20mg slow release tablets

Days Out of Stock

\_\_\_\_\_ Days

Turnaround time to facility after date of receipt

\_\_\_\_\_ Days

\_\_\_\_\_ Month

### ANNEXURE 3: PATIENT DATA COLLECTION SHEET

The screenshot displays a Microsoft Excel spreadsheet titled "Data Entry Sheet [Read-Only] - Microsoft Excel". The ribbon includes File, Home, Insert, Page Layout, Formulas, Data, Review, and View. The Home ribbon is active, showing options for Clipboard, Font, Alignment, Number, Styles, Cells, and Editing. The spreadsheet grid shows a header row (row 1) with the following columns: Patient\_ID, Age, Gender, Ed\_level, Marital\_St, Occ, Religion, SE\_1, SE\_2, HS\_1, HS\_2, HS\_3, HS\_4, AMD\_1, AMD\_2, AMD\_3, AMD\_4 (a), AMD\_4 (b), AMD\_5, AMD\_6, AMD\_7, AMD\_8, AMD\_9, AMD\_10, AMD\_11, COMM\_1, COMM\_2, COMM\_3, COMM\_4, and COMM\_5. The rows are numbered 1 through 16. The status bar at the bottom indicates "Ready" and "40%" zoom.

Patient_ID	Age	Gender	Ed_level	Marital_St	Occ	Religion	SE_1	SE_2	HS_1	HS_2	HS_3	HS_4	AMD_1	AMD_2	AMD_3	AMD_4 (a)	AMD_4 (b)	AMD_5	AMD_6	AMD_7	AMD_8	AMD_9	AMD_10	AMD_11	COMM_1	COMM_2	COMM_3	COMM_4	COMM_5	
H00001																														
H00002																														
H00003																														
H00004																														
H00005																														
H00006																														
H00007																														
H00008																														
H00009																														
H00010																														
H00011																														
H00012																														
H00013																														
H00014																														
H00015																														

**ANNEXURE 4: CENTRAL MEDICAL STORES DATA SHEET**

MEDICINES	OS	TT
Captopril 25 mg tablets	1	1
Hydrochlorthiazide 25 mg tablets	5	9999
Enalapril 20 mg tablets	2	1
Nifedipine Slow Release 20 mg tablets	5	1
Glibenclamide 5 mg tablets	3	2
Metformin 500 mg tablets	2	1
Insulin -Actraphane	1	1
Salbutamol 4 mg tablets	4	1
Salbutamol spray	2	2
Beclomethasone spray	3	1
OS - for Out Of Stock		
TT - for Time Taken To Return To Facility		

## ANNEXURE 5: UNIVERSITY RESEARCH ETHICS COMMITTEE APPROVAL LETTER



22 August 2013

Ms Kholwe Shabangu 200100042  
School of Health Sciences – Pharmaceutical Services  
Westville Campus

Protocol reference number: HSS/0620/013M  
Project title: Investigating medicines availability at Raleigh Fitkin Memorial Hospital, Manzini, Swaziland and the impact on patient out pocket payment

Dear Ms Shabangu

**Full Approval – Expedited**

This letter serves to notify you that your application in connection with the above has now been granted full approval.

Any alterations to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach/Methods must be reviewed and approved through an amendment /modification prior to its implementation. Please quote the above reference number for all queries relating to this study. Please note: Research data should be securely stored in the discipline/department for a period of 5 years.

Best wishes for the successful completion of your research protocol

Yours faithfully

Dr Sheneka Singh (Deputy Chair)

/pk

cc Supervisor: Professor Fatima Suleman  
cc Academic Leader Research: Prof J van Heerden  
cc School Administrator: Ms P Nene

Humanities & Social Sciences Research Ethics Committee

Dr Sheneka Singh (Acting Chair)

Westville Campus, Govan Mbeki Building

Postal Address: Private Bag X54001, Durban, 4000, South Africa

Telephone: +27 (0)31 260 3587/8350/4557 Facsimile: +27 (0)31 260 4609 Email: [ahmbap@ukzn.ac.za](mailto:ahmbap@ukzn.ac.za) / [ahymam@ukzn.ac.za](mailto:ahymam@ukzn.ac.za) / [mohuna@ukzn.ac.za](mailto:mohuna@ukzn.ac.za)

Website: [www.ukzn.ac.za](http://www.ukzn.ac.za)

Founding Campuses: Edgewood Howard College Medical School Pietermaritzburg Westville

INSPIRING GREATNESS



**ANNEXURE 6: MINISTRY OF HEALTH SCIENTIFIC AND ETHICS COMMITTEE APPROVAL LETTER**

Telegrams:  
Telex:  
Telephone: (+268 404 2431)  
Fax: (+268 404 2092)



MINISTRY OF HEALTH  
P.O. BOX 5  
MBABANE  
SWAZILAND

**THE KINGDOM OF SWAZILAND**

**FROM:** The Chairman  
Scientific and Ethics Committee  
Ministry of Health  
P. O. Box 5  
Mbabane

**TO:** Kholiwe Shabangu  
Principal Investigator  
Student researcher

**DATE:** 05<sup>th</sup> August 2013

**REF:** MH/599C/ FWA 000 15267

Investigating Medicines availability at Raleigh Fitkin Memorial Hospital, Manzini, Swaziland and the impact on patient out of pocket payment

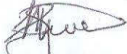
The committee thanks you for your submission to the Swaziland Scientific and Ethics Committee. An expedited review was conducted.

**In view of the importance of the study and the fact that the study is in accordance with ethical and scientific standards, the committee therefore grants you authority to conduct the study. You are requested to adhere to the specific topic and inform the committee through the chairperson of any changes that might occur in the duration of the study which are not in this present arrangement.**

The committee requests that you ensure that you submit the findings of this study (Electronic and hard copy) to the Secretariat of the SEC committee.

***The committee further requests that you add the SEC Secretariat as a point of contact if there are any questions about the study on 24047712/24045469.***

The committee wishes you the best and is eagerly awaiting findings of the study to inform proper planning and programming to use for analysis

  
**Dr S.M. Zwane**  
DIRECTOR OF HEALTH SERVICES  
(THE CHAIRMAN)  
cc: SEC members



**ANNEXURE 7: RFMH AUTHORIZATION LETTER**



CHURCH OF THE NAZARENE

**Raleigh Fitkin  
Memorial Hospital**

P.O. Box 14,  
Manzini, Swaziland  
Southern Africa.  
Phone: Manzini  
(09268) 2505 2211  
Fax: (09268) 2505 5077  
Telex: 2356 WD

24 July 2013

Kholiwe Shabangu  
University of Kwazulu Natal  
Durban  
South Africa

Dear Madam

**RE: AUTHORIZATION TO CARRY OUT A RESEARCH IN THE HOSPITAL**

Your application on the fore mentioned endeavors has been duly considered and Authorization granted on the following conditions please;

- a). That confidentiality is strictly observed
- b). That the hospital receives a copy of the report on the proposed research.

Again thank you for considering the Institution for such a task and wishing you all The best.

Sincerely yours

A handwritten signature in black ink, appearing to read "L. Dlamini".

**Leonard S. Dlamini (Mr.)**  
HOSPITAL ADMINISTRATOR

CC: Chief Medical Officer  
Matron 1

**ANNEXURE 8: PATIENT CONSENT FORM**

CONSENT FORM

I ..... (full names of participant) hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project. I was given the opportunity to ask questions and clarification was given to my satisfaction. I also understand that my participation is completely voluntary, that I reserve the right to withdraw from participating any time I feel like. I understand that I was provided the choice to have the interview recorded or not.

SIGNATURE OF PARTICIPANT

DATE

.....