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ASSESSING OUT OF POCKET COSTS AND THE INCIDENCE OF CATASTROPHIC EXPENDITURES AMONG CHRONIC DISEASE HOUSEHOLDS IN KENYA

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MBA HCM/089955

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STRATHMORE BUSINESS SCHOOL

MAY 2018

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Julian Ngolo

2018

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ABSTRACT

Universal Health Coverage (UHC) is among the global goals pursued by the Kenyan government. Currently, the country faces the burden of communicable diseases, chronic diseases and non-communicable diseases. To develop policies that ensure access to needed healthcare services and financial protection for all, examining out of pocket costs and the incidence of catastrophic health expenditures among households with chronic disease in Kenya is an important research and policy question. Descriptive analysis was done on secondary data from Kenya Household Expenditure and Utilization Survey (KHHEUS), 2013 consisting of 33,675 households. Out of these households, 8284 households reported having at least one member with a chronic disease. Catastrophic health expenditures was examined by obtaining the proportion of households that incurred out of pocket expenditures that exceeded 40% of a households' non-food expenditure. The incidence of catastrophic health expenditures among chronic disease households was 8.1% and this increased to 13.5% when transport costs were considered. In addition, payments for outpatient services was the greatest driver of total out of pocket costs among chronic disease households and payment for drugs took the largest share of these costs. Variations in out of pocket costs incurred were noted with the richest quintiles and urban households incurring highest direct healthcare costs while the poorest quintiles and rural households incurred highest costs on transport. These results are important in policy making and designing health financing schemes.

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LIST OF ABBREVIATIONS

UHC	Universal Health Coverage
SDGs	Sustainable Development Goals
LMICs	Lower and middle income-countries
NCDs	Non-communicable diseases
WHO	World Health Organization
UN	United Nations
GDP	Gross Domestic Profit
THE	Total Health Expenditure
CHE	Catastrophic Health Expenditure
OOP	Out of pocket costs
NHIF	National Hospital Insurance Fund
ADA	American Diabetes Association
USD	US Dollars
KHHEUS	Kenya Household Expenditure and Utilization Survey

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DEFINATION OF TERMS

1. Universal health coverage

Refers to all people receiving the quality health services that they need and utilization of the services does not push them into financial hardships (WHO, 2010).

2. Non-communicable diseases (chronic diseases)

These are diseases that occur over a long duration, of slow progression and are as a result of a combination of genetic, physiological, environmental and behavioral factors. The major types of NCDs are cardiovascular diseases, hypertension, cancers, chronic respiratory diseases and diabetes.

3. Communicable diseases (Infectious diseases)

These are diseases caused by microorganisms either bacteria, parasites, viruses or fungi and can be spread from one person to another.

4. Out of pocket costs

Direct payments made by individuals to healthcare providers at the time of utilization of healthcare services net of premiums.

5. Catastrophic health expenditure

Out of pocket payments for healthcare that are large relative to resources available to a household resulting in disruption of the living standards. A popular approach has been to define health care cost as catastrophic if it exceeds some fraction of households' income or total expenditure in a given period, usually one year (WHO uses 40% threshold)

6. Dissaving strategies

Financial weakening of a household by sale of assets or uptake of loans in order to finance health related expenditures.

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CHAPTER 1: INTRODUCTION

1.1 Background

Universal Health Coverage (UHC) is among the Sustainable Development Goals pursued by global leaders to end poverty (UN, 2017). The aim of UHC is that all people have access to services that they need and utilization of the services does not push them to financial hardships (WHO, 2010). While countries have used different strategies to attain UHC, consensus exists that out of pocket system of payment is the most regressive form of health financing and offers no financial protection to households (McIntyre et al., 2005). When households get into financial hardship due to healthcare costs, these costs are said to be catastrophic. Out of pocket costs for such households are financed through various coping and dissaving strategies such as borrowing or sale of assets (Leive& Xu, 2008). Globally, it is estimated that about 150 million people incur catastrophic health expenditures every year while 100 million are pushed into poverty annually due to out of pocket costs (WHO, 2010).

Studies done in various countries have demonstrated that out of pocket payments are a hindrance to UHC (Falkingham, 2004 ; Doorslaer et al., 2006).

Kenya is working towards attaining UHC. Despite healthcare reforms since independence, out of pocket payment for healthcare is still high at 27 % (Ministry of Health, 2017). Currently, Kenya faces the burden of both communicable diseases and rising non-communicable and chronic diseases. The Global burden of disease report projected that by 2020, non-communicable diseases will be a leading cause of mortality in developing countries (Murray &Lopez, 1996). According to the Economic survey 2017, cancer and heart diseases were among the top ten leading causes of mortality in Kenya (Kenya National Bureau of Statistics, 2017). The existence of risk factors for NCDs and the prevalence of these factors among the Kenyan population has been well established in the STEPs survey (Ministry of Health, 2015). Various studies have identified chronic disease as a factor contributing to catastrophic health expenditure and impoverishment (Barasa et al., 2017; Choi, 2016; Li et al., 2012). However, research on the effect of chronic diseases to household welfare in low and middle income countries (LMICs) is scarce.

1.2 Problem Statement

While healthcare is a human right in Kenya established under the constitution, not everyone is able to access the needed services (The Republic of Kenya, 2010). The burden of NCD and chronic disease has been rising in Kenya with NCDs accounting for 50% of total hospital admissions and 55% of hospital deaths (Ministry of Health, 2015). Non-communicable and chronic diseases require costly and prolonged treatment which may limit access and push households into financial hardship. While studies have shown that existence of a chronic disease predisposes a household to financial hardship, information regarding direct healthcare costs and direct non-healthcare costs incurred by households with chronic disease is limited in developing countries (Simon et al., 2002). In order to work towards attaining SDGs and UHC, information on economic effects of non-communicable and chronic diseases among households is important for reforms, policy making and future planning.

1.3 Research justification

The government of Kenya is committed towards attaining the Sustainable Development Goals which aim at ending poverty. SDG 3.8, aims at attaining universal coverage for all (UN, 2015). It is evident that the government has been working towards this goal since independence from the healthcare reforms on abolition of user fee post-independence (Mwabu, 1995). Currently, healthcare is a human right established under article 43 of the new constitution (The Republic of Kenya, 2010). However, financial barrier is a major challenge to access needed health services in Kenya. The government is working to ensure access of health services to all and utilization of services does not result in catastrophic finances.

Currently, there is low insurance coverage at 17 % with high out of pocket spending for healthcare in Kenya resulting in households being pushed to poverty (Chuma & Maina, 2012; Ministry of health, 2017). Studies have shown that presence of a chronic illness is a factor contributing to catastrophic health expenditure in a household. This also varies depending on the type of NCDs (Mahal et al., 2010). With the epidemiological transition, the burden of non-communicable diseases in developing nations has been rising. In Kenya, cancer was among the top three leading causes of mortalities in 2017 (Kenya National Bureau of Statistics, 2017).

As the burden of chronic diseases continues to rise, households with a chronic disease are at risk of incurring more catastrophic health expenses and impoverishment as a result of healthcare costs. This poses a challenge to the nation's goal of attaining universal health coverage and ending poverty. While studies have shown existence of inequity in healthcare spending as a result of chronic disease, it is clear that the socioeconomic gap will continue to widen among such groups. For such households, access to healthcare will be a dream due to lack of resources resulting in poor health outcomes.

This study aims to examine out of pocket costs and the incidence of catastrophic expenditure attributed to chronic disease.

1.4 Research aim and objectives

To examine out of pocket costs and the incidence of catastrophic healthcare expenditures in households where at least one member has a chronic disease.

1.4.1 Specific objectives

1. To examine out of pocket costs associated with chronic diseases in Kenya.
2. To examine the incidence of catastrophic healthcare expenditure among households where at least one member has a chronic illness in Kenya.
3. To examine the coping and dissaving strategies for households where at least one member has a chronic illness in Kenya

1.5 Research questions

This study seeks to answer the following questions:

1. What is the level and constitution of out of pocket costs among households with chronic diseases in Kenya?
2. What is the incidence of catastrophic healthcare expenditures among households with chronic diseases in Kenya?
3. What coping strategies and dissavings do households where at least a member has a chronic disease use when required to incur out-of-pocket costs to access healthcare services?

1.6 Significance of the study

Every year, about 150 million people incur catastrophic health expenditures and 100 million are pushed into poverty globally as a result of out of pocket payments for healthcare (WHO, 2010).Various studies have demonstrated that presence of a chronic disease is among the factors leading households to incur catastrophic health expenditures (Choi et al., 2016; Li et al., 2012; Barasa et al., 2017). As the burden of NCDs and chronic disease continues to rise, information on the economic effects of NCDs and chronic disease is important. The information generated from this study will be important in developing policies in health financing to ensure financial protection for households with chronic disease, reviewing and designing packages by financing schemes on coverage of chronic diseases and evaluation of the country's future plans and priorities.

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CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter presents an overview on UHC which is the foundation of this thesis. It reviews the pathway to UHC by various countries both internationally and locally bringing out the link between health financing and UHC. The health financing landscape and reforms in Kenya are explored in detail. Also, empirical literature on out of pocket payments, catastrophic health expenditures, coping strategies and chronic disease burden is reviewed. A brief summary on the current findings regarding economic impact of chronic diseases to households is presented. The link between catastrophic health expenditures and out of pocket payments for healthcare costs despite undertaking various coping strategies among households with chronic diseases is demonstrated using a conceptual framework.

2.2 Overview of Universal Health Coverage

According to WHO, Universal health coverage (UHC) refers to 'all people receiving the health services they need, including health initiatives designed to promote better health, prevent illness, and to provide treatment, rehabilitation, and palliative care of sufficient quality to be effective while at the same time ensuring that the use of these services does not expose the user to financial hardship'
(World Health Organization, 2015). UHC is a goal pursued by both developing and developed countries. On September 2015, world leaders adopted the Sustainable Development Goals agenda for 2030 aimed at ending poverty, protecting the planet and ensuring prosperity (UN, 2017). Among the seventeen goals adopted is goal 3.8 which focuses on achieving universal health coverage and financial protection. The definition of UHC by WHO embodies three goals which include equity in service, quality and financial protection for all. UHC is embedded in the WHO health systems framework which aims at improved health, responsiveness, social and financial risk protection and improved efficiency (World Health Organization, 2007). Financial risk protection is the degree to which households are protected from financial hardships when ill.

2.2.1 Experience of various countries-international and regional.

The pathway to UHC has differed for various countries depending on the context (World Health Organization, 2015). Studies reveal that countries that used mandatory prepayment systems in form of contributory or non-contributory payments made faster progress towards universal health coverage (McIntyre, 2012). While Costa Rica attained universal health through a combination of mandatory contribution from employers and employees together with general government revenues, countries like Sri Lanka and Brazil relied on tax funding to attain universal coverage (World Health Organization, 2015). Most countries including Germany, Austria and Luxembourg implemented mandatory systems in the formal sector at onset with informal sector later on voluntary basis (Carrin&James, 2004). Limitations regarding such systems have been documented including reduction in tax resource for public funding as civil servants comprise majority of tax payers. Also, this may result in creation of a two tier system since those covered may oppose extension to other groups due to fear of reduction in benefit package (Kutzin, 2001).

Ghana and Rwanda however implemented mandatory systems for both formal and informal sectors from outset. In Ghana, funds were collected through different pools and organized into a single pool. Formal sector contributions were deducted through a social security scheme at 2.5%, informal sector contributions through subsidies to districts and other contributions via sales tax, general tax and donor funding (McIntyre, 2012). Many countries have employed a mix of financing strategies towards the goal of UHC. Studies however reveal that multiple financing mechanisms could result in fragmentation of risk, vulnerability to adverse selection and inability to offer financial protection to the poor.

2.2.2 Health financing as a link to UHC

According to the WHO health financing report 2010, developing countries need to modify their health financing systems in order to move towards the goal of UHC (WHO, 2010). The framework for assessment of any financing system should be based on the key functions that any financing mechanism must perform. These include: revenue generation, prepayment and pooling in order to spread risks and reduce inefficiency and inequity in resource use (Kutzin, 2001). Despite current consensus in favour of prepayments, revenue generation by out of pocket payments in form of user fees, cost sharing and direct payment for medicines are predominant in developing countries.

Studies done reveal that out of pocket systems are a hindrance to UHC as they result in reduced access to health services, limited utilization and impoverishment (Falkingham, 2004). A study done in Asia assessed measures of poverty in 11 countries by calculating total household resources with and without out of pocket payments. It was revealed that the overall prevalence of absolute poverty increased by 14% when out of pocket payments were taken into account. The level of poverty was higher in Bangladesh, China, India, Nepal and Vietnam where more than 60% of healthcare costs were paid by out of pocket (Doorslaer et al., 2006). Similar studies done in 15 African countries revealed that out of pocket payments occurred most in low income groups and was financed by borrowing or selling of assets (Leive& Xu, 2008). A study done in four countries on coping strategies revealed there is an association between cost-income ratio and presence or level of dissaving and coping strategy (Madan J et al., 2015). Many countries have removed some or all user fees as a result of these effects of out of pocket payments. Among them are South Africa, Uganda and Zambia (McIntyre, 2012). In Madagascar, a study evaluating pilot fee exemption interventions was done and revealed an increase in utilization of health services by 65% for all clients (Garchitorena et al., 2017). In Uganda, assessment was done on health service utilization in 10 districts before and after discontinuation of cost sharing. While use of all services increased, challenges such as low staff morale, increased work load and drug shortage were evident. Therefore while removing out of pocket payments is important, sustainability of activities funded by this money should be considered and other sources explored (Burnham et al., 2004).

2.2.3 Health financing in Kenya

Kenya has a mixed system of health financing with various sources of funding (Chuma & Okungu, 2011). The total health spending in 2015/16 accounted for 5.2% of the GDP. The health sector is financed by the following institutions: government (33% of THE in 2015/16), donors (22% of THE), corporations (11% of THE) and households (32% of THE) (Ministry of Health, 2017). Finances generated from households is through out of pocket showing there is inadequate financial protection. Out of pocket payments for healthcare accounted for 27 %(of THE in 2015/16). The incidence of Catastrophic Health Expenditure (CHE) is estimated at 4.52% with 453,470 individuals being pushed into poverty annually (Barasa et al., 2017).

Various schemes exist in Kenya to allow for prepayment and risk pooling such as social insurance schemes through National Hospital Insurance Fund (NHIF), community based insurance schemes and private insurances. While the government expenditure on health increased from 6.1% in 2012/13 to 6.8% in 2015/16, spending on preventive care is still minimal at 16.2% of Current Health Expenditure (Ministry of Health, 2017).

2.2.4 Health reforms in Kenya

The goal towards UHC started following independence. Post-colonial period, user fees were abolished until 1988. Healthcare during this period was funded through general taxation. In 1989, due to poor financial controls and inadequate budget, Kenya yielded to pressure from the World Bank and International monetary fund and reintroduced user fee (Mwabu, 1995). This was suspended in 1990 due to social justice concerns. In 1991, user fee was introduced in phases as a result of budgetary constraints and remained until 2007 when user fee were removed in all dispensaries. The government's interest in a social health insurance scheme has been clear. In 2004, the proposed bill reached parliament but the president recommended amendments (Carrin et al., 2007). Following President Uhuru coming to power in 2013, he declared free maternity care in public hospitals. While Kenya is working towards health reforms with a goal of attaining universal coverage, various challenges still exists in the health system especially with human resource (Okungu et al., 2017) and the burden of both communicable and non-communicable diseases.

2.3 Empirical Review

2.3.1 Experience of out of payments in Kenya

In 2017, out of pocket payments for healthcare costs was reported at 27% (Ministry of Health, 2017). Such payments are the most regressive form of financing and they offer no financial protection to families (McIntyre et al., 2005). In countries where out of pocket payments is less than 15% of the total health expenditures, very few households suffer catastrophic health expenditure. Consensus therefore exists that countries can attain UHC by relying on prepayments and not out of pocket payments (WHO, 2010). Studies on out of pocket payments have been done in various places in Kenya. Early studies include an assessment on utilization of services following introduction of user fees and discontinuation between 1989 and 1990 in Kibwezi.

It was found that service utilization increased following removal of user fees. The households mainly affected were the poor (Mbugua et al., 1995). A similar study on the cost burden and coping strategies was done in the Coastal area among rural and urban communities. Findings revealed that despite the low direct costs of less than 5% of monthly expenditure, households had to seek cheaper alternatives to manage this cost burden. In rural areas, people failed to seek medical care due to cash shortages (Chuma et al., 2007). To meet such challenges of financial barrier of access, policy reforms such as exemptions to user fees were implemented for special groups. A study done in 8 district hospitals in Kenya revealed that 78% of care givers paid user fees for inpatient pediatric admissions despite exemption policy for under 5 years (Barasa et al., 2012). In all these studies, catastrophic healthcare expenses occurred as a result of out of pocket payments.

2.3.2 Catastrophic health expenditure (CHE)

Out of pocket payments for healthcare that are equal or greater than 40% of the household non-subsistence income is termed as catastrophic expenditure (Xu K. , 2005). WHO has noted that when out of pocket payments are less than 15% of the total health expenditure, very few households experience catastrophic expenditures. Globally, it is estimated that about 150 million people suffer catastrophic health expenditure every year while 100 million are pushed into poverty as a result of out of pocket payments (WHO, 2010). Various studies have been done on catastrophic health expenditure both internationally and locally. A study was done by Xu to examine the extent of catastrophic health expenditures in 59 countries (Xu e. a., 2003). Household survey data was used and catastrophic expenditure considered as household income contributions to healthcare that exceeded 40% of income after subsistence needs were met. The findings revealed existence of variations in the level of catastrophic payments between countries. Conditions facilitating catastrophic payments included availability of services required, payment system, low capacity to pay and lack of prepayment. There was need to reduce reliance on out of pocket payments. A study done in China on the fourth National health survey data found variations in catastrophic health expenditure with catastrophic health expenditure being more common in the rural China than urban region. The factors associated with catastrophic health expenditure included hospitalization of a family member, elderly, chronic illness and poverty (Li et al., 2012).

It was clear that healthcare needs, service utilization and economic status were determinants of catastrophic health expenditure. Similar findings were revealed from studies in South Korea and Nepal (Choi et al., 2016).

In Africa, a study done using data from Harmonized Nigeria Living standard survey assessed determinants of impoverishment. The findings showed lack of insurance, large household size, socioeconomic status, type of illness, health facility, education of household head and location as the major determinants (Aregbeshola & Khan, 2017). In Ghana, catastrophic expenditure was more among the poor. In Zambia, a study done on user fee removal revealed that about 10% of population suffered CHE. This was highest among rural population and was attributed to transport costs.

There were inequalities in the incidence of CHE with regards to geographical and socioeconomic status (Akazili, et al., 2017).

From the studies above, it's evident that catastrophic health expenditure exists in both developing and developed nations. Similar findings have been noted in studies conducted in Kenya. One study revealed that the incidence of CHE in Kenya was highest among the poor households and was as a result of outpatient services rather than inpatient services (Chuma & Maina, 2012). A study by Barasa revealed that incidence of catastrophic expenditure increased when transport costs were considered. The incidence of CHE is estimated at 4.52% in Kenya. Factors associated with CHE were similar to those found in other studies hence the need to prioritize vulnerable groups (Barasa et al., 2017). In all these studies done, it has been found that presence of a chronic disease is a factor predisposing households to catastrophic expenditure and impoverishment.

2.3.3 Chronic disease burden in Africa and internationally

Globally, non-communicable diseases including cardiovascular diseases, cancers, chronic respiratory diseases, mental diseases and diabetes are the leading cause of death. In 2012, chronic diseases accounted for 68% of the world deaths (WHO, 2014). 40% of the deaths were premature and occurred in low and middle-income countries. According to Global Burden Disease report, chronic diseases were a leading cause of death in developed countries in 1990s and communicable diseases accounted for mortalities in developing countries.

While communicable diseases are still the leading cause of death in developing countries today, projections show chronic diseases will take over by 2020 (Murray &Lopez, 1996). In Kenya, the burden of chronic disease has been increasing. According to the economic survey 2017, cancer was the third leading cause of death (Kenya National Bureau of Statistics, 2017). It is evident that chronic diseases are a priority in both developed and developing nations. Among the sustainable development goals is target 3.4 which aims at reducing premature deaths from chronic diseases by a third (UN, 2017).

2.3.4 The economic impact of chronic diseases to households

Globally, chronic diseases pose substantial economic burden to all nations. Various studies have been done worldwide on the costs attributed to specific chronic diseases and chronic diseases in general. Households with chronic disease face the burden of both direct costs and indirect costs. In United States, the total economic cost of diagnosed diabetes in 2012 was $ 245billion, this is a 41% increase from 2007. Direct costs in form of inpatient care, medication and supplies formed the larger component of medical costs for diabetic patients. Indirect costs were as a result of absenteeism, reduced productivity, disability and loss of productivity (ADA, 2012). A study done in four countries including Argentina, India, China and Tanzania on out of pocket costs attributed to cardiovascular diseases showed variations in out of pocket payments for cardiovascular disease patients in all the countries. In China, out of pocket costs for cardiovascular diseases were high among low income group. This was similar for the incidence of catastrophic expenses. In Argentina, out of pocket payment was the same in all groups but increased among high income population. However, in all the four countries, patients with cardiovascular disease faced high costs of healthcare and risk of catastrophic expenses as a result of lack of a prepayment system (Huffman et al., 2011) . The expenditure on non-communicable diseases was found to be 27.7% of the total household expenditure in a study in Vietnam. The impact of out of pocket payments for chronic disease on households' resources has been reported in various other countries (WHO, 2011).

In Africa, studies have been done on economic impact of chronic diseases. A study done in Malawi on data from household health survey showed that despite a policy on free health services, more than 60% of 298 individuals incurred out of pocket expenses. Chronic diseases took up to 22% of monthly per capita income.

The increased cost in medical care for chronic diseases was higher among the poor population (Wang et al., 2015). Similar studies have been done in Sudan and Kenya. A study in Kilifi found that about 5% and 5.7% of the household income was spent on chronic illness in rural and urban areas respectively (Chuma & Maina, 2012). The burden was higher among the poor quintiles. A study done by Mwai on KHHEUS, 2007 found that NCDs reduced household income by 28.64% while communicable diseases reduced it by 13.63% (Mwai, 2014).

2.3.5 Catastrophic health care spending attributed to chronic diseases

Due to substantial amount of out of pocket payments for costs associated with chronic diseases, households are at risk of catastrophic health expenditures (WHO, 2011). Studies assessing catastrophic healthcare spending have found that presence of a chronic disease is a determinant of households incurring catastrophic expenditure (Choi et al., 2016; Li et al., 2012; Barasa et al., 2017). In Georgia, a study done on 2859 households showed that 11.7% of households incurred catastrophic health expenditures. This was more likely among households with members having a chronic illness (Gotsadze et al., 2005). Similar findings were noted in a study in rural China. The rate of CHE was 23.48% among households with hypertension, 34.01% among households with hypertension and other chronic diseases and only 13.33% for households without any chronic disease (Si et al., 2017). In Vietnam, the socioeconomic inequality in catastrophic health expenditure and impoverishment was assessed among households with chronic diseases. It was found that poor households were at a higher risk of catastrophic health expenditures than the rich. Presence of a member suffering from a chronic disease predisposed the household to CHE (Kien et al., 2016). While it's evident that chronic disease predisposes households to CHE and this risk is higher among the poor population, the type of chronic disease also influences the probability of incurring CHE. In a study done in India, the probability of incurring CHE was 160% higher for a cancer patient and 30% higher for a person with cardiovascular disease than for a patient with a communicable disease (Mahal et al., 2010).

CHE attributed to chronic diseases in African countries has been studied. In 35 developing countries, a study done concerning diabetic patients found that diabetic patients incurred more out of pocket spending than non-diabetic patients. They were at a higher risk of incurring catastrophic expenses. Despite having insurance, they still faced higher risk of CHE and lack of medication (Smith-Spangler et al., 2012).

2.4 Summary of literature review

Studies above have demonstrated that out of pocket payments are a hindrance towards the goal of UHC. With the epidemiological shift, the burden of non-communicable diseases continues to rise in developing countries. It is evident that chronic diseases pose a huge financial burden on both developing and developed nations with increased inequalities in terms of health expenditure amongst those households with a chronic disease compared to those without. There are variations in the costs attributed to chronic diseases in various countries depending on geographical location, rural vs. urban regions, poor populations and presence of complications. When compared to communicable diseases, the cost of chronic disease has been found to be higher in some studies.

The presence of a chronic disease is among the factors contributing to catastrophic health expenditure. Fewer studies have examined out of pocket costs attributed to chronic diseases and a comparison with the cost of communicable diseases in the Kenyan context. Also, the incidence of catastrophic health expenditure attributed to chronic diseases and coping strategies undertaken by households with chronic diseases in Kenya.

2.5. Conceptual Framework

Nature of illness **Out of pocket Costs** **Outcome**

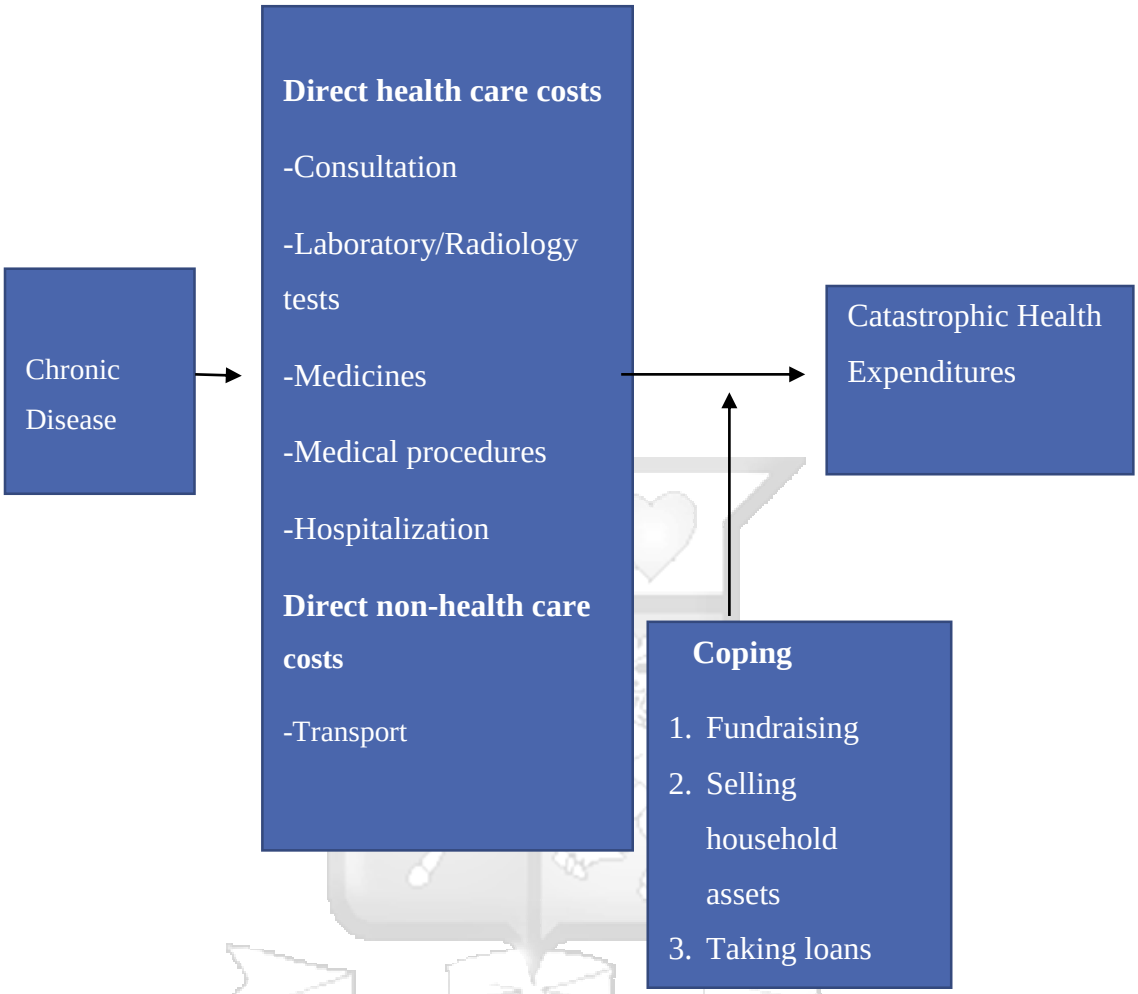

Figure 2. 1: Conceptual framework for the analysis of economic impact of NCDs on households (modified from McIntyre et al)

The conceptual framework above shows the link between healthcare costs incurred by households with a member having a chronic disease and likelihood of incurring catastrophic health expenditures. In the process of seeking care, households with chronic disease incur direct healthcare costs and direct non-healthcare costs. When these costs are too high (above 40% of the households non-food expenditure), the household suffers catastrophic health expenditures. Some households try to mitigate effects of healthcare costs by either selling assets, taking loans or borrowing. These coping strategies can occur either before going into financial hardship or after facing the hardship in order to meet healthcare costs and gain needed services.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents an understanding on Kenya as the study setting and its various counties as sample population for this research. It also presents a brief description on the research design used, data sources, data collection method expounding on the type of data that was used and how analysis of the data was undertaken to generate attained results. Issues regarding ensuring validity, reliability and ethical considerations of this research are explored.

3.2 Study Setting

Kenya is a lower to middle income country located in East Africa. It has a population of about 45.4 million with majority of the citizens residing in rural areas. The GDP expanded by 5.8% in 2016 with an average inflation rate of 6.3% (Kenya National Bureau of Statistics, 2017). The country had a per capita expenditure of USD 78.6 in 2015/2016 and a poverty index of 47.8% (Ministry of Health, 2017). In 2010, Kenya adopted a devolved system of governance with establishment of 47 counties. The health sector is among the functions that were devolved from the central government. Health care is a right established under article 43 of the Constitution (The Republic of Kenya, 2010). Kenya has a pluralistic system with health provision from both public and private sectors. Healthcare is delivered through a four tier system consisting of community health services, primary care, county referral services and national referral services (Ministry of Health, 2011).

3.3 Research design and data sources

This study analyzed secondary data from the Kenya Household Expenditure and Utilization Survey 2013, KHHEUS. This is the most current expenditure and utilization survey in the country. This survey collects data on sociodemographic characteristics, healthcare spending, household expenditure, outpatient and inpatient attendance at individual level over four weeks and twelve months recall period respectively. The 2013 KHHEUS had a sample of 33,675 households drawn from 1347 clusters. The sampling involved multistage sampling design with the KHHEUS sample being drawn from a master sample developed by the Kenya National Bureau of Statistics. 40% of the clusters were drawn from urban residence while 60% from rural residence. Out of the 47 counties in Kenya, the three counties that had not been updated into the master sample include Mandera, Wajir and Garisa.

3.4 Data collection

Quantitative data was extracted from the Kenya Household Expenditure and Utilization Survey (KHHEUS) based on a questionnaire. This included data on presence of a chronic disease among household members, payment by individual members for various outpatient services in the past four weeks, payment for various inpatient services over one year, transport costs incurred while seeking care, sources of funds for care sought and household expenditure incurred. Extracted data was then entered into a spreadsheet and prepared for analysis.

3.5 Data analysis

The initial data had 152,566 individual observations. This data was cleaned and classified into households' data using a formula in R-software to get 29,151 completed households data. Out of these, exclusion of households who did not report existence of any member with a chronic disease was done. 8284 households reported having at least one member with a chronic disease. Data was then analyzed in steps.

i) Examining the level and constitution of out-of-pocket costs

In order to calculate out of pocket costs, payments made by private health insurance, community health insurance, other schemes, waived payments and borrowing without repayment were excluded. This study examined both direct healthcare costs and direct non-healthcare costs. Direct healthcare costs are those costs that were paid directly to healthcare providers to access healthcare services. The direct healthcare costs collected by the KHHES 2013 were 1) registration costs, 2) medicine costs, 3) consultant costs, 4) diagnostic tests costs, and 5) medical check-up costs. Direct non-healthcare costs are non-health costs incurred in - order to access healthcare. In the KHHEUS 2013, the indirect costs collected were transport costs to access healthcare services.

Descriptive analysis was carried out by computing the means and medians of each of the direct and indirect costs, as well as that of total direct and indirect costs incurred to access outpatient, and inpatient care. In addition, the shares/proportion of each of the direct and indirect cost to the total household costs was computed, as well as for inpatient and outpatient care. All costs were annualized. Specifically, given that outpatient costs were collected with a recall period of 4 week, they were multiplied by 13 to obtain annual outpatient costs. Inpatient costs were collected with a recall period of 12 months.

ii) Measuring the incidence of catastrophic expenditures.

Catastrophic expenditure (CHE) is the level of out of pocket costs for healthcare that is too high and pushes households to financial difficulties. Two variables used in the measurement are out of pocket payments and measurement of households' resources in terms of income, expenditure or consumption (O'Donnel et al., 2007). In order to avoid various limitations in different approaches to measurement of CHE, WHO researchers have defined catastrophic payments with respect to health payments as a share of non-subsistence spending rather than health payments budget share. While no consensus exists regarding the threshold for catastrophic expenditure, this study used the WHO threshold of 40% i.e. out of pocket payments for healthcare that exceeded 40% of a households' expenditure net of subsistence spending (Xu et al., 2003).

To compute the incidence of catastrophic expenditure, annual out of pocket costs obtained in i) were divided by total household non-food expenditure to obtain each households share of out of pocket costs (out of pocket costs as a proportion of non-food expenditure).

$$\textit{Share of out of pocket costs} = \frac{\textit{Out of pocket costs}}{\textit{Household Expenditure (Net of food expenditure)}}$$

Next, the proportion of households whose share of out of pocket costs exceeded the catastrophic threshold (40 percent of non-food expenditure) was divided by the total number of chronic disease households in the sample to obtain the proportion of households that incurred catastrophic expenditure (CHE).

$$\textit{Incidence of CHE} = \frac{\textit{number of households with OOP exceeding catastrophic threshold}}{\textit{Number of chronic disease households in the sample}}$$

iii) To examine dissavings and coping strategies.

The KHHEUS 2013 reported on the following coping and dissavings strategies 1) fundraising, 2) selling household assets, and 3) taking loans to pay healthcare expenditures. Descriptive statistics was carried out by computing means and proportions for each of these strategies to examine their contributions to payment of OOP among households where at least 1 member has a chronic ailment.

3.6 Research quality-validity and reliability

The KHHEUS, 2013 was carried out by the Kenya National Bureau of Statistics in partnership with the Ministry of Health and USAID. This survey tracks health spending in the country and data collected is used in developing National Health Accounts. The 2013 survey was done in 44 counties with clusters consisting of 60% rural residents and 40% urban residents as depicted by the countrys' population. Training, pretesting and refining of questionnaire was done to ensure information collected was relevant to policy making and emerging healthcare issues. Study supervisors and team coordinators ensured data quality control through inspection visits to the field, preliminary editing by county statistical officers and verification for consistency. This ensured data collected was valid and reliable.

3.7 Ethical considerations

This study did not seek ethical clearance as secondary data that is publicly available was used.

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CHAPTER 4: RESULTS

4.1 Introduction

This chapter presents detailed information on the results obtained from this research. A summary on the characteristics of the household data analyzed is presented. Descriptive analysis on the level and constitution of out of pocket payments shown. This demonstrates the contribution of direct healthcare and direct non-healthcare costs to out of pocket payments. The incidence of catastrophic health expenditures is demonstrated with variations according to regions and socioeconomic quintiles. Finally, description of various dissaving and coping strategies among chronic disease households and the contribution of these strategies to healthcare costs is shown.

4.2 Summary on the characteristics of the household data

The total number of completed household results was 29,151 households. Out of these households, 8284 households (28.4%) reported having at least one member with a chronic disease. Table 4.1 presents a summary on the characteristics of households in the survey. Households in the poorest quintiles formed the highest proportion of chronic disease households (23.2%), followed by middle quintile (21.4%), second quintile (20.9%), fourth quintile (20.7%) and the least burden was in richest quintile (13.8%). The number of households reporting a chronic disease was highest among households in rural region (63.2%) compared to households in the urban region (36.8%).

Table 4. 1: A summary on the characteristics of the household data.

HOUSEHOLD DATA CHARACTERISTICS		
Total number of households		29151
Number of chronic disease households		8284(28.4%)
Socioeconomic quintiles	Poorest	1919(23.2)%
	Second	1732(20.9)%
	Middle	1771(21.4)%
	Fourth	1718(20.7)%
	Richest	1144(13.8)%
Region	Rural	5237(63.2)%
	Urban	3047(36.8)%

4.3 Level of out of pocket costs among households with chronic diseases.

Table 4.2 presents estimates of the median (with IQR) household out of pocket spending in a year among households with chronic diseases. On average, households with chronic diseases spent KES 4020 (IQR, 1300-11440) annually on total healthcare costs (outpatient services, inpatient services and transport cost). The average annual OOP payments for outpatient services was KES 4160 (IQR, 1300-13000) and KES 2800 (IQR, 1175-7617.5) for inpatient services. In addition, they incurred an annual average of KES 2340 (IQR, 800-5400) on transport to and from a health facility to seek outpatient and/or inpatient care.

Table 4. 2: Household median (with IQR) annual OOP costs (in Kenya shillings) to access healthcare among chronic disease households (n=8284).

		Outpatient	Inpatient	Inpatient & Outpatient costs	Transport	Total healthcare costs
Socio-economic quintiles	Poorest	2990(910-8515)	2000(1000-5775)	3120(977.5-8628.75)	2600(1040-7150)	4082(1300-10400)
	Second	3250(1040-9750)	2600(1300-5050)	3250(1040-9880)	2340(1040-5200)	3900(1488.5-10400)
	Middle	3900(1170-11700)	2550(977.5-7662.5)	4095(1267.5-11700)	2600(1040-5342.5)	4082.5(1300-10920)
	Fourth	5850(1690-17680)	3500(1200-9080)	5720(1805-18112.5)	2600(780-5395)	4566.5(1300-13520)
	Richest	7800(2242.5-23400)	4930(1662.5-19500)	7800(2600-26000)	1400(542.5-4420)	3900(1162-13650)
Region	Rural	3900(1040-11700)	2800(1200-7700)	3900(1170-11860)	2600(1040-6500)	4550(1350-11700)
	Urban	5200(1560-15600)	2800(1075-7280)	5200(1560-15600)	1560(650-4491)	3510(1300-10920)
	All	4160(1300-13000)	2800(1175-7617.5)	4330(1300-13260)	2340(800-5400)	4020(1300-11440)

The median annual OOP for outpatient services and inpatient services was highest among the richest quintile at KES 7800 (IQR, 2242.5-23400) and KES 4930 (IQR, 1662.5-19500) respectively. The richest quintile also incurred the lowest amount of OOP on transport costs at KES 1400 (IQR, 542.5-4420).

On the contrary, households in poorest quintiles had the least OOP spending on outpatient services KES 2990 (IQR, 910-8515) and inpatient services KES 2000 (IQR, 1000-5775) while spending the highest amounts on transport costs KES 2600 (IQR, 1040-7150).

The median annual OOP health spending for outpatient services was highest among chronic disease households in urban region KES 5200 (IQR, 1560-15600). Households in rural region spent an average of KES 3900 (IQR, 1040-11700) annually on outpatient services. The household spending on inpatient services was comparable for both urban and rural residence at KES 2800 (IQR, 1075-7280) and KES 2800 (IQR, 1200-7700) respectively. On the contrary, households in rural areas spent highest on transport KES 2600 (IQR, 1040-6500) compared to chronic disease households in urban areas KES 1560 (IQR, 650-4491)

4.3.1 Constitution of out of pocket costs

Figure 4.1 gives a representation of the share of out of pocket costs among chronic disease households. Payments for outpatient services was the greatest driver for out of pocket costs among chronic disease households (56.6% of total OOP costs), followed by transport costs to and from the health facility (39.4%) and the least was inpatient spending (4%).

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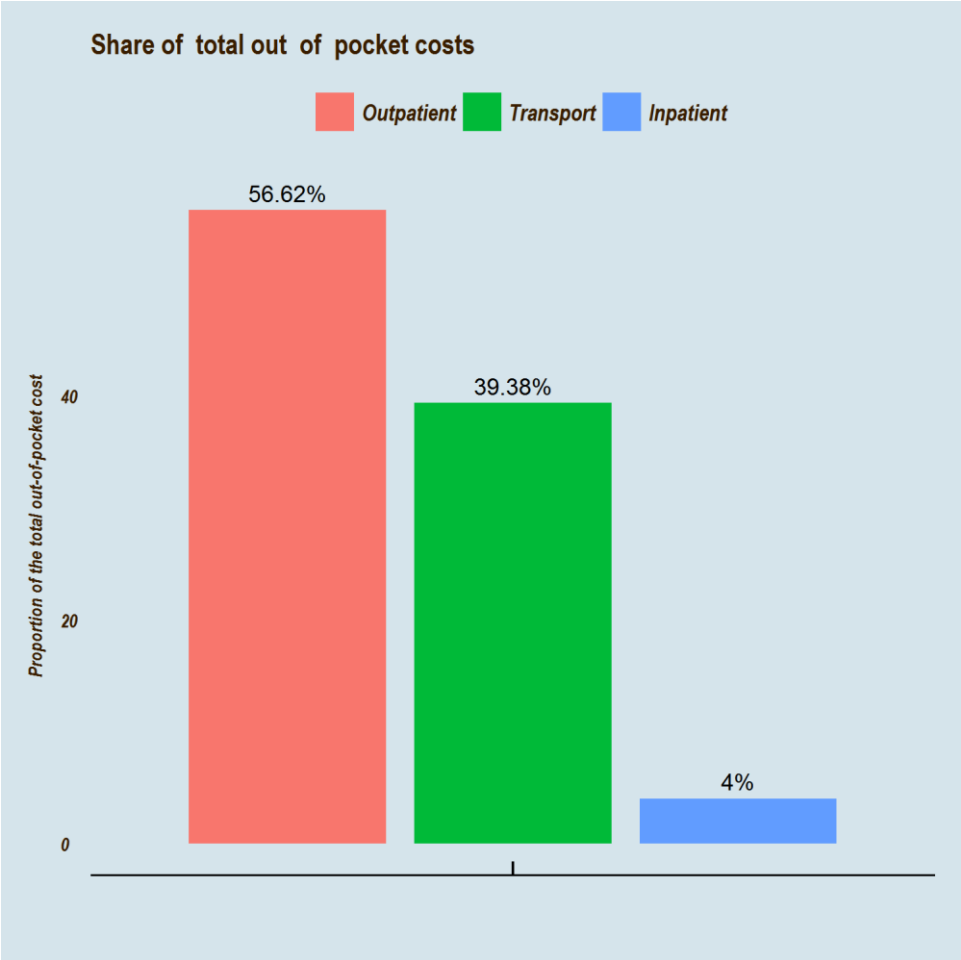

Figure 4. 1: Share of out of pocket costs

Among outpatient costs, direct healthcare costs took the largest share (59.7%) while direct non-healthcare costs in form of transport costs to and from the facility formed 40.3% of the total outpatient OOP costs. Figure 4.2 presents the share of outpatient OOP costs.

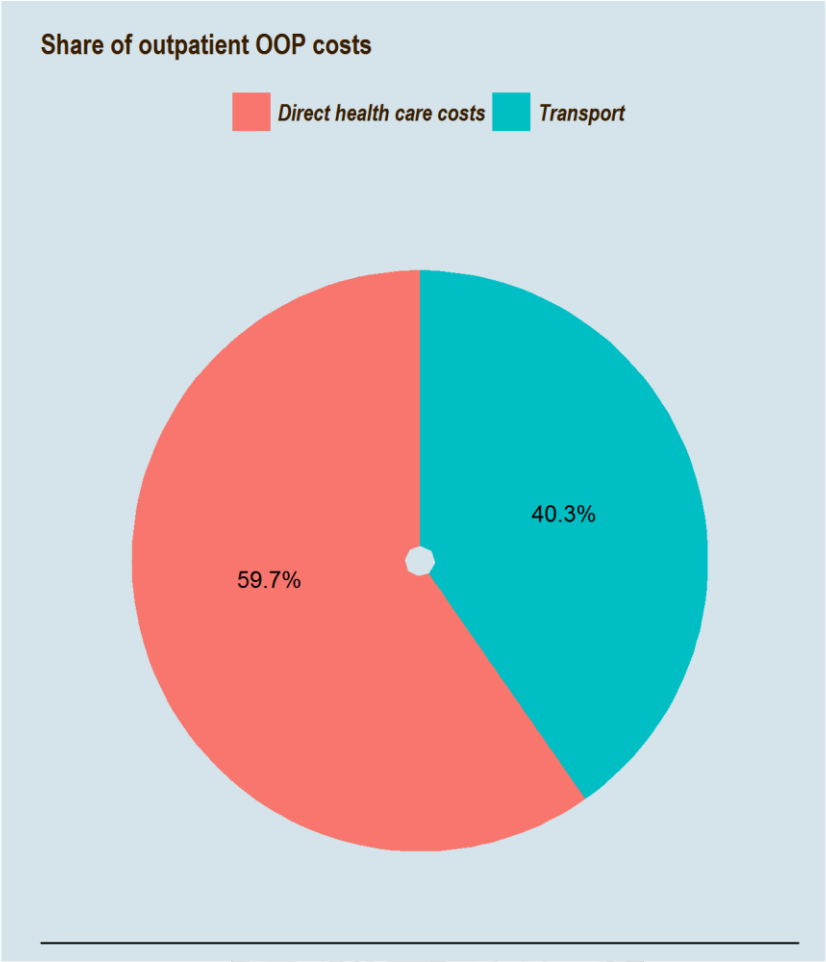

Figure 4. 2: Share of outpatient out of pocket costs

The greatest driver of direct healthcare costs during outpatient visits was payment for drugs (29.6% of total outpatient OOP costs), followed by registration (16%), diagnostic tests (6.6%), consultation (2.7%), medical check-up (1.9%) and other services (1.3%). Figure 4.3 presents proportions of the constituents of direct health care cost for outpatient services.

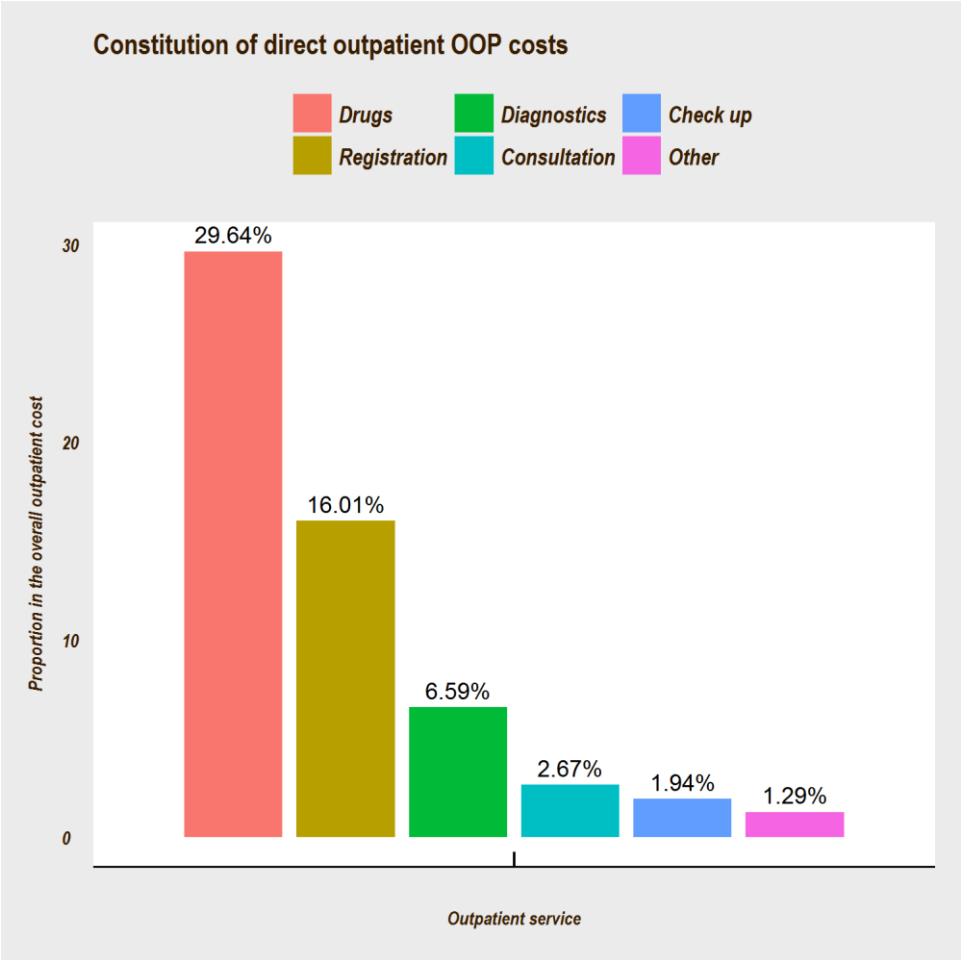

Figure 4. 3: Proportions of the constituents of direct healthcare costs for outpatient services

Direct healthcare costs took the largest share of total inpatient OOP costs (79.8%) while direct non-healthcare costs in form of transport took (20.2%). Figure 4.4 presents the share of inpatient OOP costs.

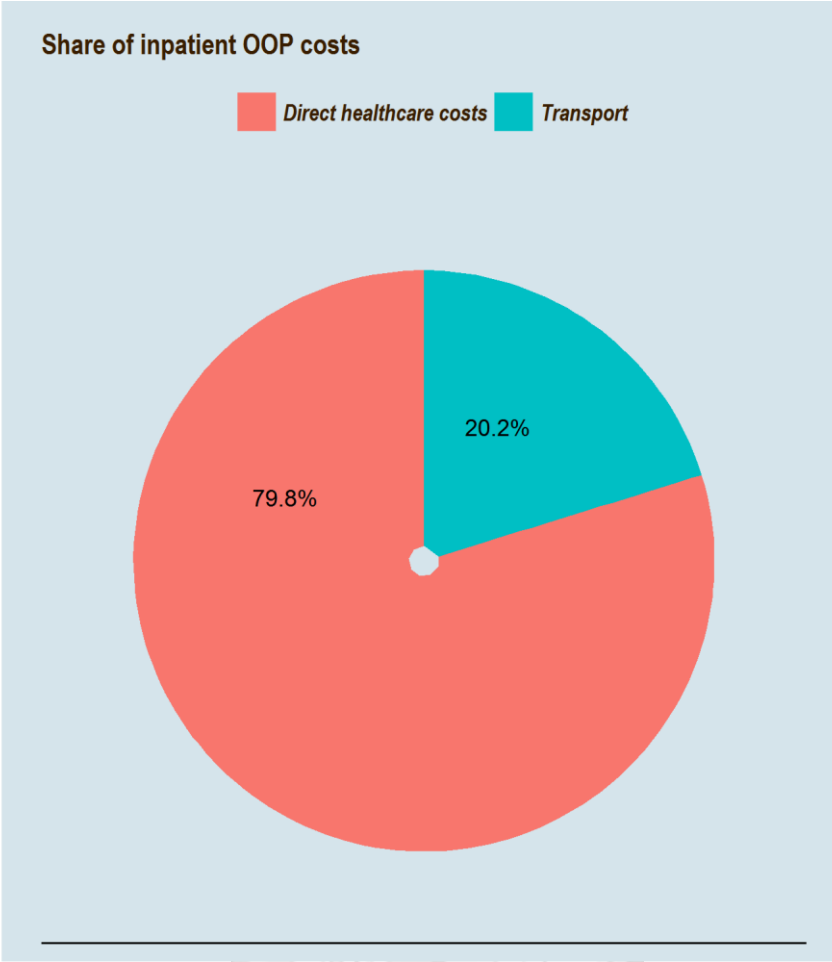

Figure 4. 4: Share of inpatient out of pocket costs

Out of direct healthcare costs for inpatient services, registration fees during inpatient visits was the greatest driver of the costs (21.2%), followed by payment for drugs (17.2%), accommodation (9.7%), surgical procedures (8.3%), other services (5.8%), diagnostic tests (2.9%) and least was consultation fees (1.9%). Figure 4.5 presents proportions of the constituents of direct healthcare cost for inpatient services.

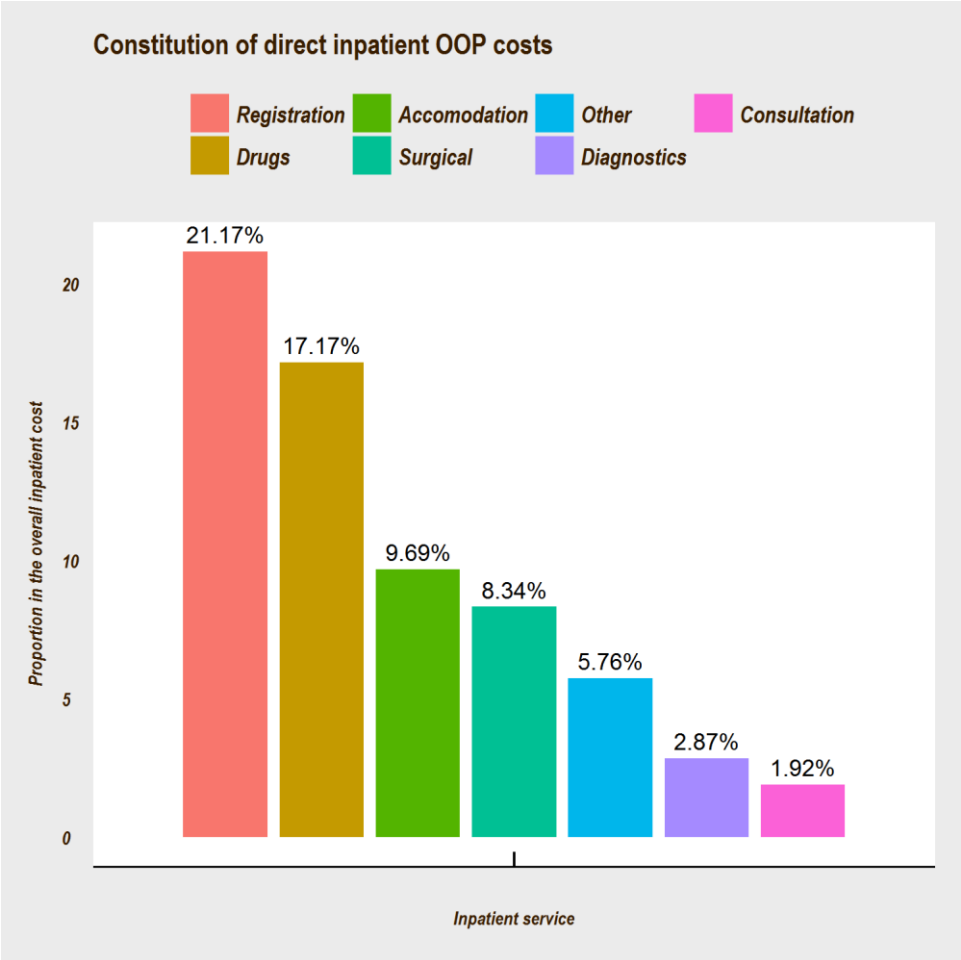

Figure 4. 5: Proportions of the constituents of direct healthcare costs for inpatient services

Table 4.3 presents estimates of the median (with IQR) annual spending by households on both inpatient and outpatient services. Households with chronic diseases incurred higher costs for services offered during outpatient visits compared to costs incurred during inpatient care. On average, households spent KES 780 (IQR, 390-2340) annually on registration fees during outpatient visit compared to KES 200 (IQR, 50-1650) during inpatient visits. The median annual outpatient cost attributed to payment for drugs was KES 3900 (IQR, 1300-11050) and KES 1400 (IQR, 500-3000) on payment for drugs during inpatient visits. Similarly, households spent an average of KES 2600 (IQR, 1300-8352.5) on consultation during outpatient visits and KES 475 (IQR, 162.5-1000) during inpatient visits, KES 2600 (IQR, 1300-6500) on payment for diagnostic tests during outpatient visits compared to KES 500 (IQR, 280-1400) during inpatient visits.

Households seeking inpatient care incurred additional costs on accommodation services at an annual average of KES 750 (IQR, 300-18750) and surgical operation KES 3000 (IQR, 1000-13275).

Table 4. 3: Median annual spending (with IQR) on outpatient and inpatient services by chronic disease households.

	Service	Median(IQR) cost in KSHs
Outpatient	Registration	780(390-2340)
	Drugs	3900(1300-11050)
	Consultation	2600(1300-8352.5)
	Diagnostics	2600(1300-6500)
	Check up	2600(1300-6500)
	Other	2470(1040-6500)
Inpatient	Registration	200(50-1650)
	Drugs	1400(500-3000)
	Consultation	475(162.5-1000)
	Surgical	3000(1000-13275)
	Diagnostics	500(280-1400)
	Accommodation	750(300-1875)
	Other	2000(500-5000)

4.4 Incidence of catastrophic healthcare expenditure

Figure 4.6 presents estimates of the proportion of households OOP to total non-food expenditure according to socioeconomic quintiles. On average, chronic disease households spent 40% of their non-food expenditures on payments for OOP costs to access healthcare services (direct healthcare services and indirect healthcare in form of transport costs). Poor households spent the greatest proportion (48%) while richest households spent the least of their non-food expenditure to access healthcare (11%). Households in the second and middle socioeconomic quintiles spent 37% and 30% respectively. In addition, chronic disease households in the rural region spent a larger share of their non-food expenditure on health (50%) compared to households in urban region (30%).

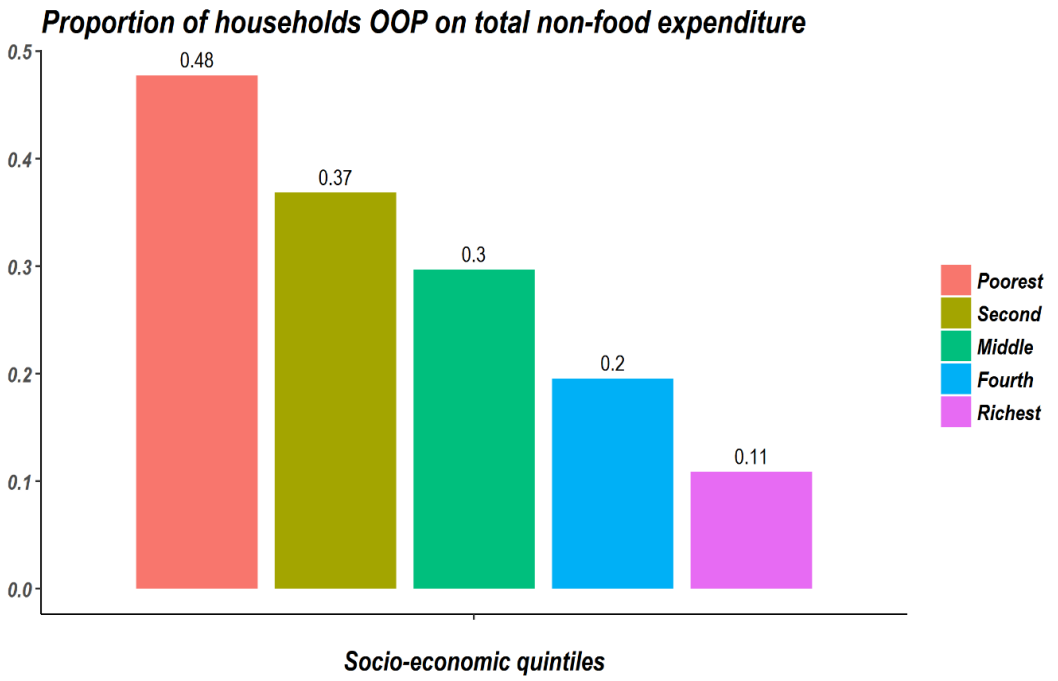

Figure 4. 6: Proportion of household OOP healthcare payments to non-food expenditure according to socioeconomic quintiles

The overall incidence of catastrophic health expenditures among chronic disease households was 8.1% i.e. 671 households spent at least 40% or more of their non-food budget on OOP payments for healthcare when only direct healthcare costs were considered (OOP payments for inpatient and outpatient services). This incidence increased to 13.5% (1118 households) when both direct healthcare and direct non-healthcare costs in form of transport were considered.

Table 4.4 gives estimates of the incidence of catastrophic health expenditures among chronic disease households according to social economic status and region. The incidence of CHE was highest among poor quintiles at 18.5%% (16.78-20.24) and lowest among the richest quintiles at 6.3% (5.03-7.85). Chronic disease households in the rural region had a higher catastrophic incidence of 15.3 % (14.33-16.28) than households in the urban region 9.7% (8.71-10.82).

Table 4. 4: Incidence of CHE (with 95% CI) according to socioeconomic quintiles and regions.

		Incidence [95% CI]
Social-economic quintiles	Poorest	18.5% [16.78-20.24]
	Second	15.3% [13.68-17.07]
	Middle	12.9% [11.45-14.57]
	Fourth	10.2% [8.9-11.77]
	Richest	6.3% [5.03-7.85]
Region	Rural	15.3% [14.33-16.28]
	Urban	9.7% [8.71-10.82]
	All	13.5% [12.72-14.21]

4.5 Dissavings and coping strategies

Chronic disease households undertook various coping strategies when faced with healthcare costs during outpatient and inpatient visits.

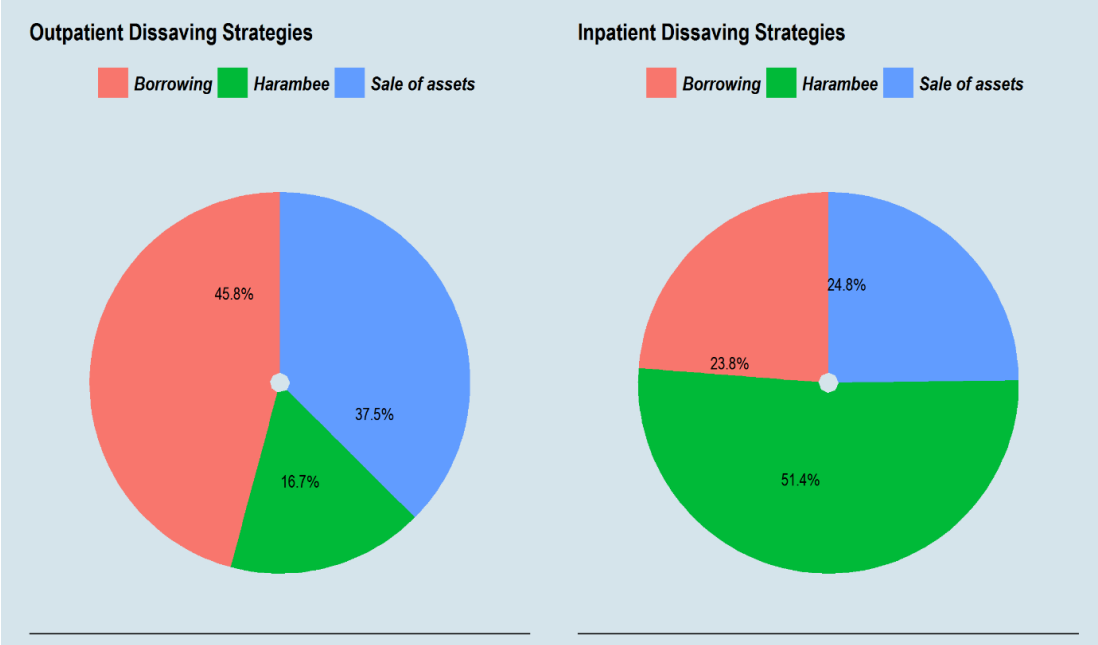

Figure 4. 7: Proportion of dissaving and coping strategies to the total annual inpatient and outpatient costs

Out of the total annual outpatient healthcare costs contributed through dissaving strategies, borrowing took the largest share of total annual outpatient costs (45.8%), followed by sale of assets (37.5%) and the least was fundraising (16.7%).

For inpatient costs, fundraising took the greatest proportion of total annual inpatient contribution (51.4%), followed by sale of assets (24.8%) and the least was contribution from borrowing (23.8%).

Table 4. 5: Total annual dissaving contribution (in KES) and proportions to total outpatient and inpatient costs

Service	Coping Strategies	Total Annual Contribution	Median(IQR)	Share of the total cost Median(IQR) %
Outpatient	Harambee	1500785	1755(0-5200)	3.6(0-17.1)
	Borrowing	4113460	9100(3900-31200)	37.5(13.7-66.7)
	Sale of assets	3361800	9295(3900-30875)	40(30.4-72.65)
Inpatient	Harambee	1327000	18500(6325-54400)	42.65(38.475-66.675)
	Borrowing	613303	3000(1110-10000)	31.4(12.425-54.725)
	Sale of assets	640090	5000(2500-10800)	51.7(25.4-70.1)

Overall, funds raised from sale of assets contributed most to a households total outpatient healthcare cost at 40% (IQR, 30.4-72.65) while fundraising contributions took the least share of a households total outpatient healthcare costs incurred at 3.6% (IQR, 0-17.1).

Chronic disease households who undertook coping or dissaving strategies received a median amount of KES 1755 (IQR, 0-5200) annually from fundraising to finance outpatient costs, KES 9100 (IQR, 3900-31200) through borrowing and KES 9295 (IQR, 3900-30875) from selling assets.

Among chronic disease households that experienced catastrophic healthcare expenditures, 9.56% undertook fundraising, borrowing or sale of assets to finance outpatient healthcare costs.

On average, sale of assets contributed 51.7% (IQR, 25.4-70.1) of total household inpatient health care cost annually while borrowing offered the least funds at 31.4% (IQR, 12.425-54.725). Chronic disease households that undertook dissaving strategies to finance inpatient healthcare costs received a median amount of KES 18500 (IQR, 6325-54400) annually from fundraising to finance inpatient costs, KES 3000 (IQR, 1110-10000) through borrowing and KES 5000 (IQR, 2500-10800) from sale of assets.

Among chronic disease households who experienced catastrophic expenditures, 3.34% undertook fundraising, borrowing or sale of assets to finance total inpatient healthcare costs.

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CHAPTER 5: DISCUSSION AND RECOMMENDATIONS

5.1 Discussion

The study presents an analysis on the economic burden of healthcare to chronic disease households in Kenya. There have been limited studies on catastrophic health expenditures among chronic disease households in our set up. However various studies have identified that presence of a chronic disease is among the factors predisposing households to catastrophic health expenditures (Barasa et al., 2017; Choi et al., 2016; Li et al., 2012).

This study confirms that households with at least one member having a chronic disease are at a greater risk of incurring CHE compared to those households without a member having a chronic disease. The incidence of catastrophic health expenditure among chronic disease households in Kenya was found to be 8.1% in this study. This is almost twice (4.52%) the incidence of CHE in the general population according to recent studies that used similar methodology. When transport cost was included among out of pocket expenses incurred during seeking care, this incidence rose to 13.5% compared to 6.58% in the general population (Barasa et al., 2017). Similar findings have been revealed in studies outside Kenya. In China, the incidence of CHE among households with hypertension was 23.48% and 13.33% among households with no chronic disease (Si et al., 2017).

The contribution of transport cost to households incurring CHE has been established in other settings. In Ghana, the incidence of CHE was greater among rural population and was attributed to transport costs (Akazili, et al., 2017).

There was intra-country variability in the incidence of catastrophic health expenditures across regions and socioeconomic status as confirmed by other studies within and internationally (Huffman et al., 2011; Chuma & Maina, 2012). Poor households and those in the rural region had a greater incidence of CHE while the richest and urban households had the lowest incidence of CHE. In Vietnam, there were socioeconomic inequalities in the incidence of CHE with the poor households being affected most than the rich (Kien et al., 2016).While chronic disease affects both the poor and the rich, it is evident that the economic burden attributed to chronic disease is likely to affect mostly the poor and rural populations in Kenya.

There were variations in healthcare payments for inpatient and outpatient services with payments for outpatient services taking the largest proportion of out of pocket payments (56.6% of out of pocket costs). Similar findings have been reported in studies within Kenya among the general population (Barasa et al., 2017).

Payments for drugs was the greatest driver of costs for chronic disease households at outpatient level. Studies done among both chronic disease households and households without chronic disease have reported similar findings (Barasa et al., 2017; Chuma et al., 2007; ADA, 2012).

There were variations in amount paid for direct healthcare costs according to socioeconomic quintiles and region with the richest spending the highest on outpatient and inpatient services while the poorest spent most on transport. Also, payment for outpatient was high in urban areas compared to rural areas. This has been documented in other studies (Chuma & Maina, 2012; Yardim et al., 2014).

This study showed that most chronic disease households borrowed to meet outpatient costs while fundraising was undertaken to meet inpatient costs. At household level, sale of assets contributed most to total health care costs compared to other strategies. Similar studies done in other countries have shown variability in the form of distress financing to deal with healthcare costs depending on type of costs incurred (Huffman et al., 2011; Madan J et al., 2015).

5.2 Conclusion

It is evident from this study that households with chronic diseases in Kenya are at a greater risk of incurring CHE compared to the general population. Therefore, chronic disease households deserve prioritization when designing a health financing policy. There exist inequalities in distribution of this risk with poor households and those in rural regions being most affected. While many discussions and studies on UHC have focused on payments made for direct healthcare services at the health facility level, contribution of transport cost towards incurring CHE was great among poor households. The major contributor of out of pocket costs for households with chronic disease was payment for outpatient services and payment for drugs was the greatest driver of cost at this level. Various coping strategies were used by households with chronic disease at inpatient and outpatient level such as fundraising and borrowing and this could be attributed to the magnitude of the cost at these levels.

5.3 Recommendations

The Kenya Strategy for prevention and control of NCD 2015-2020 together with recommendations from the STEPS survey (Ministry of Health, 2015) provide a detailed roadmap towards reducing and combating the NCD burden in Kenya (Ministry of Health, 2015). From this research, further emphasis goes to the following:

In order to attain UHC; when designing a health financing policy, prioritization should be given to chronic disease households among other special groups since they are at a greater risk of incurring financial hardships as a result of healthcare costs. Among chronic disease households, the poorest households and those households in the rural region should be given highest priority to ensure adequate financial protection.

Policy makers ought to consider transport costs in addition to direct healthcare costs to access care when reviewing health financing policy for chronic disease households. Transport vouchers can be granted to enable households meet the cost. Issues of geographical access, distribution of healthcare workers/specialists and state of roads in various counties making services inaccessible to chronic disease patients need to be addressed.

A policy on removal of user fee in public health facility will have greater improvement towards access of health services and financial protection for households with chronic disease since outpatient costs were the greatest driver of out of pocket costs. Majority of households in this survey reported having sought outpatient care in public hospitals. Additionally, when designing a prepaid system consideration should be based on the need for health services and not ability to pay as purchasing power differs across socioeconomic quintiles and regions.

NHIF and other health financing schemes packages ought to review coverage packages for chronic diseases to ensure effective coverage of outpatient services and drugs since these services take greatest share of out of pocket costs according to this study. While some schemes have set extremely high premiums for coverage of members with chronic disease making them unaffordable to many people, others have equal allocation for all direct healthcare services limiting access to important services like drugs.

Cost of drugs for various chronic diseases should be reviewed and controlled effectively by the government. The ministry of health ought to disseminate recommended treatment guidelines for chronic diseases effectively; train clinicians and conduct frequent inspection to ensure these guidelines are implemented. This may enable us to reduce costs at facility level.

Greater efforts ought to be made in terms of preventive measures such as community education and awareness on the complications and economic burden of NCDs. The burden of inpatient costs to a household with chronic disease in Kenya is extensive such that the household had to fundraise to meet the costs. While outpatient costs took the largest proportion of OOP, it is evident that measures ought to be taken by policy makers to minimize medical complications of chronic disease which will reduce inpatient costs that drive households into distress financing such as fundraising or sale of assets as an only alternative.

5.4 Limitations

This study used the Kenya Household Expenditure and Utilization Survey data of 2013. This data may seem outdated but it is the most current data that presents a detailed review on expenditures in the country. This study assessed reported costs incurred but could not capture those who did not seek care hence did not incur any cost because they could not afford to pay. Also, it was based on individual reporting which is based on recall that may result in some errors.

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APPENDICES

APPENDIX 1: QUESTIONNAIRE TOOL (KHHEUS, 2013)

APPENDIX 1: RESEARCH INSTRUMENT- QUESTIONNAIRE (ADAPTED FROM THE KHHEUS QUESTIONNAIRE, 2013)

1. Does <name> have any of the following chronic health condition* *(If yes indicate accordingly)*
A) Hypertension B) Diabetes C) Cardiac disorders D) Arthritis E) HIV/AIDS F) Ulcers G) Gout H) Cancer I) other chronic health condition (Please specify) Interviewer-*at least 3months and can recur

2. How much money did<name> spend on treatment/services received? (Outpatient visits in the past four weeks)
1. Registration card 2. Drugs/vaccines (including outside purchase) 3. Consultation 4. Diagnostic tests (X-ray and laboratory tests) 5. Medical check up 6. Other (specify) 7. Overall* 8. Don't know (enter 9999) *Enter overall estimate (7) only if detail not remembered

3. Where did<name>get funds to pay for the above services (outpatient services) and how much was paid from each source? (Record all that apply)
Source of funds 1. Had own cash. 2. Was given money by friends, family and relatives (no repayment expected) 3. Harambee contribution. 4. Borrowed money. 5. Community health insurance (paid directly to provider or reimbursed to patient after services was rendered) 6. Sold household assets. 7. Waived/exempted. 8. Reimbursed by well-wisher 9. Given opportunity to pay later (credit), 10. Others, 98. Don't know (enter 00)

4. How much did<name>spend on transport to and from the health provider in KES? For those who walked, please estimate the cost. Enter 99999-for those who don't know.

5. If yes to Q59 (Inpatient visits), how much did<name> spend on the following?
1. Registration/ card 2. Drugs/vaccines (including outside purchase) 3. Consultation 4. Surgical operation 5. Diagnostic tests (X-ray and laboratory tests) 6. Daily bed rate/Accommodation 6. Other (specify) 7. Overall* 8. Don't know (enter 99999) *Enter overall estimate (7) only if detail not remembered

6. Where did<name>get funds to pay for the above services (inpatient services) and how much was paid from each source? (Record all that apply)
1. Had cash available. 2. Was given money by friends, family and relatives (no repayment expected) 3. Harambee contribution. 4. Borrowed money. 5. Community health insurance (paid directly to provider or reimbursed to patient after services was rendered) 6. Private health insurance (paid directly to provider or reimbursed to patient after services was rendered) 7. NHIF (paid directly to provider or reimbursed to patient after services was rendered) 8. Sold household assets. 9. Waived/exempted. 10. Reimbursed by well-wisher 11. Given opportunity to pay later (credit) 98. Don't know (enter 99999)

7. How much did<name>spend on transport to the health provider (one way to seek inpatient services) in KES? Enter 99999 if they don't know.

8. How much did your household spend in the last 7 days on the following foods and beverages?
Oils and fat Cereals (including maize grains, maize and wheat flour, beans, rice etc.) Livestock / Poultry produce e.g. Milk and eggs Fish Meat including (/liver,"matumbo", chicken, pork etc.) Sugar and beverage (tea, coffee etc.) Bread Spices i.e. curry powder Vegetables, carrots Fruits Roots (sweet potatoes, yams, arrow roots etc.) Soft drinks-sodas, juices, etc. Beer/ Wines/Miraa (includes wines, beers, spirits, "muratina"/ "karubu"/ "mnazi" etc. Soaps and detergents Meals (Kiosk, restaurant, road side vendors) TOTAL AMOUNT IN KES

9. How much did your household spend in **last one month** on the following?
Cosmetic Soap and detergent Hair dressing and barber Rent Electricity Water Kerosene/paraffin Telephone bills/airtime Transport Charcoal Firewood Cooking gas Salaries/wages Remittances (In cash and kind) Sanitary towels Others TOTAL AMOUNT IN KES

10. How much did your household spend in the last **one year** on the following?

Education (registration, uniforms, books, tuition, exam fees) Maintenance and repairs including car and buildings etc. Clothing and footwear. Wedding/dowry including contributions/harambees for the same to other households (HHs). Funerals including contributions/harambees for the same to other HHs. Capital expenditures including cars, plots etc. Others (specify). TOTAL AMOUNT IN KES