FINANCIAL PROTECTION THROUGH COMMUNITY-BASED HEALTH INSURANCE IN RWANDA

by

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SUPERVISOR: PROF S P HUMAN

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DEDICATION

To my loving husband for his unconditional love, support and encouragement that made this effort worthwhile.

To my cherished sons and daughters Joel, Joanna, Jordan and Jovial, only God can reward you for your prayers, love, support and patience.

DECLARATION

STUDENT NUMBER 3733-468-9

I declare that **FINANCIAL PROTECTION THROUGH COMMUNITY-BASED HEALTH INSURANCE IN RWANDA** is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not been submitted before for any other degree at any other institution.

MUHONGERWA Diane	**12 November 2013**
……...	**…….**
Full names	**Date**

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ABSTRACT

Community-Based Health Insurance (CBHI) in Rwanda was promulgated as the best alternative to address the financial barriers for accessibility to health care services for the poor population and the informal sector. The purpose of this study was to investigate whether CBHI reduce Out-of-pocket health expenses for their members as compared to non-members and to what extent CBHI provide financial protection for the poorest population. This research based itself on secondary source of data primarily collected for a prospective quasi-experimental design which evaluated the impact of Performance-Based Financing. The primary study had reported on the Out-Of-Pocket expenses for health by members and non-members of CBHI; residing in a sample of 1961 households; in addition to their demographics and socio-economic characteristics. The findings indicate that insured individuals were about 2.6 times more likely to utilize health care services than respondents without health insurance. It is also worth noting that households with health insurance coverage were less likely to experience a catastrophic health expenditure than households without health insurance (aOR: 0.744; 95% CI:[0.586 - 0.945]), and that the effect of health insurance coverage was higher in people living in poor households than in people living in middle or richer households.

KEY CONCEPTS

Community-Based Health Insurance; Out-Of-Pocket expenditures; Catastrophic expenditure; Health service utilization.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER ONE

ORIENTATION TO THE STUDY

1.1 INTRODUCTION

User fees have been one of the significant barriers to health care for the poorest members of the developing countries. To increase use of health services, particularly among the poorest populations, Rwanda has established and gradually scaled-up Community-Based Health Insurance (CBHI) schemes since 1999. Available data suggest that the use of services such as maternal and child services have increased since the introduction of CBHI. However, this field has not been explored extensively, so as to authenticate whether such programs provide effective protection to their member households against catastrophic health expenditures or whether health insurance membership improves accessibility to health care, without increasing the burden of Out-Of-Pocket (OOP) health expenditures.

The purpose of this study is to investigate whether Community-Based Health Insurance (CBHI) reduces financial barriers to health care access in Rwanda, or not. The research questions to be addressed in this study, specifically, are: (1) Does Community-based Health Insurance reduces Out-Of-Pocket health expenses for insured members as compared to non-insured members? (2) To what extent does Community-Based Health Insurance provide financial protection for the poorest population?

1.2 BACKGROUND INFORMATION TO THE RESEARCH PROBLEM

1.2.1 Source of the research problem

Most developing countries face challenges of fulfilling health care needs for their low income populations. These challenges include decreasing budgetary support for health care services, inefficiency in public health provision, and low quality of public health services (World Bank, 1993). In some cases, it also involves imposition of user fees. All

these challenges point to a country's inability to meet health care needs of the poor. Rwanda is a landlocked, developing country, in the Great Lakes region of Africa, with a population estimated to be over 10 million in 2012. The country has one of the highest population densities in Africa with 360 inhabitants per square kilometer. The annual population growth rate is 2.8% with 45% of the population under 15 years of age. National Institute of Statistics of Rwanda (2000).

The Integrated Household Survey on Living Conditions (EICV II) of 2006 shows a decline in poverty, but Rwanda still has around 56.9% of the population living under the poverty line, more especially in the rural areas where 90% of the poor live. Thus Rwanda remains one of the poorest countries in the world. Given the health care challenges and the poverty levels in the country, the Rwandan healthcare system faces a double burden of poverty and inequity in the health system. The CBHI policy (2004) in Rwanda highlighted the need to address the problem of increasing financial barriers facing the population in rural areas, with 90% of people in the informal sector not able to access health care services. Rwandan government identified Community-Based Health Insurance (CBHI) as an alternative health scheme to enhance equitable access and better utilization of health care services. (Rwandan MOH, 2004).

1.2.2 Background to the Community-Based Health Insurance

Around 1.3 billion people, worldwide, lack access to effective and affordable health care because they cannot afford to pay or governments cannot afford to provide them with the necessary coverage. In addition, more than 150 million people, in 44 million households worldwide, face financial catastrophe as a direct result of having to pay for health care bill every year (WHO 2005). As a response to the health care crisis, different regions of developing countries, particularly in Sub-Saharan Africa, have seen the emergency of Community-Based Health Insurance (CBHI) schemes, over the last decade. Over the same period, the health system in Rwanda was centralized and health services were offered for free.

Most of Rwanda's infrastructure had been destroyed in the tragic events of the 1994 genocide. The sequential years were spent in rebuilding basic health care structures and strengthening human resources, in what was then largely an emergence phase. The health system is now in its development phase.

In 1996, as an alternative to improving financial sustainability of the social sectors, Rwanda reintroduced direct payment for health care services .This resulted in challenges of households' access to health services due to financial barriers. By 1999, utilization of primary health care services had dropped from 0.3 in 1997 to a national average of 0.2 annual consultations per capita. Schneider, P. & Diop, F. (2001). This prompted the Government of Rwanda to develop CBHI to ensure access to formal health system for the poor. In the beginning of 1999, the MOH in Rwanda, in collaboration with the local communities, and the technical support of Development Partners, such as USAID – PHR, started pilot prepayment schemes in three districts.

Rwanda is on record for having achieved high rates of coverage with a strong policy on subsidization for the poor people. This was a result of long periods of pilot phases followed by strong sensitization of the population by the local leaders (district mayors). Gradually, increase in enrolment rates were observed over the years; from 1998 to date. Studies show that population coverage by CBHI rose from 7.9% at the end of 1999 in the three pilot districts, to 85% in 2008 after the national roll out.

In a context where CBHI schemes were set up and enrolment rates increased, utilization of health care services would be expected to increase while out of pocket expenditure decreases (Rwanda Ministry of Health, 2004). According to M. Kagubare, (2005) success results of pilot experiences have been registered and CBHI has become popular. The need for their national scale up was expressed by both the community and the government. In Rwanda, like in other developing countries, the bigger section of the population is in the informal sector, particularly in rural and mostly poor areas. Poor

people are less likely to seek care when sick than those who are better off, partly because of their poor financial status.

Poor financial status and high health costs are expected to translate into even higher risks for the poor. MK Ransom *et al* argue however, that Community-Based Health Insurance can potentially protect people from health care costs and ensure solidarity through equitable pooling of risk between richer and poorer, and sick and healthy members (Ranson, MK. et al., 2007).

On the other hand, although CBHI is increasingly being presented as a best alternative to address financial barriers for accessibility to health care services for the rural population and for the informal sector, and despite that studies conducted in the past have indicated that CBHI has positively impacted on the utilization of healthcare services by the population in low income categories , certain scholars have suggested that several studies show CBHI's failure to reach the least well- off segments of the target population pointing to a challenge of social inclusion by CBHI schemes **(**Ekam, 2004).

Given the aforementioned debate, there is need for scientific based evidence to confirm or dismiss the positive effect of CBHI on catastrophic health expenditures. Further evidence is even more important given that Rwanda is reforming its health insurance systems, particularly the Community-Based Health Insurance schemes. CBHI reforms in the country are undertaken to achieve universal coverage.

1.2.3 Institutional and organizational context of CBHI in Rwanda

The development of the Community-Based Health Insurance (CBHI) scheme in the country, is a deliberate strategy of the Government of Rwanda, and was included in the Poverty Reduction Strategy document (PRSP and EDPRS 2008-2012). Community based health insurance schemes are also among the priority intervention areas in the Health Sector Policy (HSP); and the Health Sector Strategic Plan (HSSP); (PHR plus Project, 2006).

The Rwanda CBHI model was designed with the intention of providing an experiential base for eventual scale-up throughout the country. Given that scale-up was intended from the start, nationwide acceptability and replicability were key criteria for the organizational features of the "pilot" schemes. To ensure acceptability, schemes were designed using an interactive approach that involved local actors through local workshops; and central actors through national workshops. Final design features reflected a consensus of these actors. To ensure replicability, on the other hand, the schemes were built on local organizational relationships that exist in all Rwandan communities (Kelley, A.G., Diop F., Makinen M. 2006).

The "adaptation" phase that followed the pilot phase elaborated further the roles to be played by local actors at the level of cells, sectors, and administrative districts; in the context of the country's administrative decentralization. Proposed local innovations for improving scheme performance were judged on the basis of their replicability: if Rwanda; for instance; had not had a wide network of community banks (*banques populaires*), with at least one community bank in every commune, the community bank–CBHI partnership that started in Bungwe District would not have been adopted as an organizational feature; (Kelley, A.G., Diop F., Makinen M. 2006).

The initiation of the Community-Based Health Insurance (CBHI) in Rwanda marked a new beginning in health care provision since all of its members are entitled, by law, to health care, at all levels, of a comprehensive range of curative and preventive services

at all health facilities. The system operates through a referral mechanism. The primary health care level is the entry point if a member is to benefit from CBHI coverage. Depending on healthcare services required a member of a CBHI may be referred to the secondary health care level, through the referral system, by the primary health care service provider. The secondary health care service provider may, equally, refer a CBHI member to the tertiary health care level.

1.3 STATEMENT OF THE RESEARCH PROBLEM

According to the Households living condition survey (EICV 2005-2006), the unmet needs for healthcare for individuals in Rwanda is high, with over two thirds of people across quintiles reporting not seeking professional care when feeling sick. Unmet needs here refer to the ratio of need for healthcare to demand for healthcare; (Rwanda Institute of Statistics, 2000).

Community-Based Health Insurance in Rwanda, on the other hand, was scaled up at the national level in order to respond to health care service needs of the population, targeting rural poor people in the informal sector that constitutes 90% of the population.

Notwithstanding the scaling up, the Community-Based Health Insurance debate continues to revolve around the effect of the scheme in particular with respect to the extent to which set objectives increased healthcare utilization and reduced out of pocket expenditures. The ongoing debate is unfortunately, conducted against a background of limited empirical evidence. The Community-Based Health Insurance policy in Rwanda is at the same time under implementation, with reforms still ongoing, and the conclusions drawn at this stage of analysis may therefore not be utterly conclusive.

In Rwanda, the scale up of Community-Based Health Insurance at the national level was in response to low utilization of health services among the poorest population. It remains unclear, however, whether or not health insurance membership has improved accessibility to care without increasing the burden of Out-Of-Pocket (OOP) health expenditures among the targeted sections of the population.

1.4 AIM OF THE STUDY

1.4.1 Research purpose

The purpose of the study is to determine whether Community-Based Health Insurance (CBHI) in Rwanda is effective in addressing problems of catastrophic health expenditures. Evidence of Community based health insurance effect will be derived from statistical analyses of the Out-Of-Pocket health expenditures (OOPs) by CHBI members, in comparison to OOPs by non members; as well as statistical analyses of the variations of the effect of health insurance coverage on the incidence of catastrophic health expenditures, between income groups and other characteristics of households.

The aim of this study is therefore to investigate the extent to which CBHI provides financial protection to their members as opposed to nonmembers of CBHI; and to contribute to the CBHI body of knowledge. Specifically, the study will test the hypothesis that CBHI reduces the Out-Of-Pocket expenditures for the members; and test the hypothesis that the effect of CBHI coverage incidence on OOPs varies between income groups and other characteristics of households; seeking to emphasize that the aim of CHBI is to provide health insurance and financial protection to the population in informal sector; mainly the poor in rural areas; and not merely to introduce another insurance policy in the country.

In this study, achievements of the scheme as well as the constraints that may have hindered the full accomplishment of the study will also be alluded to.

1.4.2 Research objectives

The research objectives of the study are to determine the effect of the Community-Based Health Insurance (CBHI) coverage on the Out-Of-Pocket expenditures; to establish the relationship between the effects of health insurance coverage on the

incidence of catastrophic health expenditures, and to establish how insurance coverage varies between income groups and other characteristics of households.

Two hypotheses sustain the analysis of the study. Firstly, it is assumed that the ongoing Community Based Health Insurance (CBHI) scheme remains a better policy option, lowering the financial constraints for low income population in relation to health out-of-pocket expenditures. Thus, the incidence of catastrophic health expenditures is much higher among households which are not-insured, than among households which are insured.

Secondly, establishing Community based health insurance does not necessarily lead to effectiveness and efficiency within the schemes. Thus, the second hypothesis asserts that the effect of Community based health insurance incidence on OOPs varies between income groups and other characteristics of households.

1.5 SIGNIFICANCE OF THE STUDY

There have been various studies on Community-Based Health Insurance; despite which; the debate surrounding the exercise has continued to be heated and evasive. However, data from developing countries is limited. It is often grounded in a questionable analytic framework. Studies that have been conducted are, at the same time, limited by either, focus or by the period of study.

Previous studies have however, generally shown that Community-Based Health Insurance schemes have impacted positively on the utilization of the population in low income categories as a result of alleviating financial barriers to health care services access. There is still need, though, for more empirical evidence of their role in financial protection of poor populations against catastrophic expenditures for health care.

Scientific based evidence is even more important given that Rwanda is reforming its health insurance systems, particularly the Community-Based Health Insurance schemes

with a view to achieving more equity and sustainability. There is also insufficient literature on the long term impact of CBHI on the financial protection of its members.

The analysis envisaged in this study will be novel as the CBHI has muted significantly since pilot projects were examined. The study hopes to contribute to the body of knowledge of the role of CBHI, using evidence from Rwanda, focusing on the role of CBHI in financial protection of its members with a specification examination of how financial protection varies between income groups of households. The body of knowledge of the role of CBHI is also crucial for academic and policy formulation purposes.

1.6 DEFINITIONS OF KEY CONCEPTS

Community-Based Health Insurance

Community Based Health Insurance (CBHI) refers to non-profit type of health insurance for the informal sector, formed on the basis of an ethic of mutual aid and the collective pooling of health risks, in which members generally participate in the management of the scheme

Out-Of-Pocket expenditures for health care services

Out-Of-Pocket expenditures (OOPs) for health care services refers to fees paid by the user of health services directly to the provider at the time of service delivery and borne directly by the patient.

It is also referred to as:

Payment made by an individual patient directly to a health care provider, as distinct from payments made by a health insurance scheme or taken from government revenue.

Catastrophic expenditure

It is the expenditure which exceeds 40% of a household's capacity to pay for service provision

Health service utilization:

Health services utilization refers to the extent to which a given group uses a health service in a specified period. The use of the health care services can for example be measured using the volume of utilization over a period of time.

1.7 FOUNDATIONS OF THE STUDY

1.7.1 Theoretical Framework

Poor populations in developing countries are faced with uncertainty in case of illness and financial risks as a result of having to pay for health services whenever they fall sick despite their low income status. It is the pooling of resources to deal with this uncertainty that forms the theory of health insurance. Health insurance; such as Social Health Insurance (SHI); was developed first, in developed countries then trickled down to developing countries. It is popularly known as the "Bismarck Model" and generally perceived as "a financial protection mechanism for health care, through health risk sharing and fund pooling for a larger group of population mainly from the formal sector" WHO (2003).

One of the key principles on which Health Insurance is based is protection of insurance subscribers against the hazards of paying for medical care, which is usually unpredictable and often expensive; WHO, (2006). Non-insured members of society may well be faced with a fee-for-service system, the fact that they do not enjoy the protection benefits that insurance subscribers enjoy notwithstanding.

A fee-for-service system requires a sick patient to pay for his/her health care services when needed, upfront. This may well be at a time when the household is least able to pay, due to loss of income resulting from the illness. Consequently if a service is too expensive, the patient might delay or forego receiving essential treatment. In addition to jeopardizing his/her health, this can have a public health effect if an untreated illness progresses to a more contagious stage.

Health services should be paid for to ensure that service delivery remains effective and efficient. However, rather than relying on collecting user fees from sick individuals, it is possible to organize systems of prepayment so as to ensure that the required capital injections for the user fees are available, while at the same time dealing with the vulnerabilities of poor populations .

Collecting funds ahead of time has several advantages. It means individuals do not have high expenses when sick, during which time their income may be lower than usual. It also allows for pooling of funds so that there can be cross subsidies between the rich and the poor, and the healthy and the sick. These pooled funds can then be used to pay for services when people need them, thereby significantly increasing protection against the financial consequences of ill-health; (WHO, 2005).

Putting the need to pay for health services upfront, against the inability to do so on the part of the poor, results in failure to access health care services and risks sparking a cycle of illnesses more especially within the poor populations in the rural populations and the informal sector.

The World Health Organization observes that in the context where big proportions of population were in the informal sector, the health care crisis gave birth to many Community-Based Health Insurance (CBHI) initiatives in the hope of addressing health care related unmet needs (WHO, 2003). Rwanda, for instance, has four major types of health insurance; namely: 1) Social Health Insurance 2) Private Insurance 3) Facility

based health Insurance and 4) Community-Based Health Insurance. CBHI however covers about 90% of the total population; (Rwanda Ministry of Health, 2010).

1.8 RESEARCH DESIGN

This research will use secondary data in order to establish relationships necessary for prediction of measurable outcomes. A positivism paradigm will guide the study using quantitative analysis.

1.8.1 Study design

The data that will serve as a basis for this study was collected as a part of a large panel survey that evaluated the impact of Performance-Based Financing (PBF) for HIV/AIDs services in Rwanda conducted by the School of Public Health of Rwanda in collaboration with the Ministry of Health of Rwanda and the World Bank.

This evaluation took advantage of a prospective quasi-experimental design to determine the impact of the PBF for general health and HIV/AIDS services in Rwanda. The evaluation sample made use of the national expansion of the PBF program over 2006 and 2008 which paralleled the expansion of Community based health insurance (CBHI).

PBF and CBHI are two prominent reforms in the field of health financing to boost both the demand for and the supply of health services: Community-Based Health Insurance schemes, which reimburse partner health facilities based on contracts, were scaled-up nationally in early 2006; while Performance-Based Financing built on contracts between government and health authorities; and health care providers were scaled-up nationally in 2008. In 2005, districts which had a PBF scheme in their health facilities were identified. Districts that did not have PBF were phased into the program and assigned randomly to two stages: Phase I being treatment districts which began receiving PBF in 2006; and Phase II being control districts which began receiving PBF in 2008. Although not included in the PBF impact evaluation design, the areas that had PBF as of September 2005 were also included in the sample.

In this study, two waves of data were collected in 2006 constituting the baseline, and in 2008 by way of follow-up. The collected data reported on the Out-Of-Pocket (OOP)

expenses for health by members and by non-members of CBHI; residing in a sample of 1961 households; in addition to their demographics and socio-economic characteristics. This analysis based itself on data collected at the baseline only.

1.9 SCOPE AND LIMITATIONS OF THE STUDY

The study will investigate the role of community based health insurance in financial protection in Rwanda based on data collected in 2006. The major limitation of the study is that it will rely on raw data collected for a purpose different from that of the present study. This may increase bias because this secondary data was not meant to compare the two groups of our study thereby impacting on its validity. By controlling for PBF program and focusing on baseline survey, however, the data used will provide substantial evidence of trends of CBHI schemes development in Rwanda and their effects on health-related catastrophic expenditures.

1.10 STRUCTURE OF THE DISSERTATION

The study is organized in five parts: Chapter one is the orientation to the study. It introduces the Community-Based Health Insurance (CBHI) subject matter; provides background information about the research problem highlighting also the source of the research problem; and discusses the significance of the study. The chapter further sets out the research purpose and objectives; provides a definition of key terminologies; foundations of the study; research design and method; and draws a conclusion.

Chapter two will review the literature on CBHI. The Concept of CBHI, its main characteristics, goals, principles, as well as potential benefits and outcomes are discussed. It will, further, examine the role of CBHI focusing on financial protection and out of pocket health expenditures and concludes.

Chapter three is research design and method. It will discuss the research design followed, possible confounding variables and the problems encountered; and discuss

the research method used; justifying the research instruments used; and dwell on sampling; data collection and data analysis. It will also discuss the internal and external validity of the study following a pretesting of the instruments and then draw a conclusion.

Chapter four is analysis, presentation and description of the research findings. It will conduct data management and analysis specifying the exact procedures used in the analysis. It will also present research results; an overview of research findings and then draw a conclusion.

Chapter five is Conclusions and Recommendations. It will highlight the major findings of the study on the basis of the discussions in the preceding chapters; and draw general conclusions relating to the role of Community-Based Health Insurance in financial protection in Rwanda, specifically with regard to out of pocket expenditure and its incidence among income groups of the population. It further; will highlight the contribution of the study and limitations of the study and make an attempt at policy recommendation.

1.11 CONCLUSION

Community-Based Health Insurance in Rwanda was promulgated as the best alternative to address the financial barriers for accessibility to health care services for the rural population and the informal sector; and to address eventual problems as a result of health care expenditures. Documented evidence points to benefits from this Insurance scheme. The enrolment to the CBHI schemes increased from 7.9% in 1999, in the pilot phase, to 85% in 2008 after the national roll out. It is important however to continually look for evidence of its effects on expenditures for health care services and effects variations between socio-economic groups of households.

This study will attempt to find out the extent to which CBHI provides financial protection to their members as opposed to nonmembers; and the effects of CBHI variations between socio-economic groups among the households investigated.

The analysis to be undertaken will use secondary data collected from the Performance Based Financing (PBF) Impact survey in Rwanda of 2006-2008. Statistical data analysis will be undertaken to explore the relationship between CBHI membership and OOP expenditures; and the relationship between health insurance coverage on the incidence of catastrophic health expenditures and income groups and other characteristics of households.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter reviewed available literature on Community-Based Health Insurance (CBHI) schemes in the context of a dissertation of a limited scope. It focused on the concept of Community-Based Health Insurance, expounded on its genesis and effects of CBHI as a response to the problem, coverage in reference to geographical and target population. Partnership between stakeholders, the goals of CBHI's, main characteristic of CBHI and how it operates were also examined. The chapter attempted, in the process of these discussions, to identify gaps and areas of conflict existing in the subject matter; and then concluded.

2.2 THE CONCEPT OF COMMUNITY-BASED HEALTH INSURANCE (CBHI)

2.2.1 The Problem

Large sections of the population in developing countries can hardly meet their basic health needs. Indeed, one of the world's most urgent problems relates to the health status of its people and how to finance and provide health care for the 1.3 billion poor people who live in low- and middle-income countries. States in most developing countries face challenges of fulfilling health care needs of their poor populations. A central premise of the Africa review is that individuals in the informal sector of poor countries cannot access appropriate health care, particularly curative care, at the time of need partly because of lack of adequate insurance coverage,

Besides being unable to access appropriate health care, populations in developing countries are faced with obstacles emanating from the countries' high poverty levels. High poverty levels translate into decreasing budgetary support for health services,

which in turn translate into poor public health services. This has, in some instances, led to imposition of user fees, further complicating the already poor access to and utilization of health care services.

Due to the heavy financial burden that direct payments can impose on many households in low and middle-income countries, some households try to avoid seeking care but in so doing, ultimately incur even higher costs if the illness becomes severe requiring expensive health care. Those who need care but do not have ready cash may have to borrow from family, friends or other sources, possibly at high interest rates, or sell assets, such as livestock, thereby jeopardizing the livelihood of the household (D. McIntyre, ,2005) .

As a result of avoiding seeking health care due to implied financial burdens, there is a vicious cycle of poverty and disease. Indeed the World Health Organization estimates that every year some 100 million people become impoverished and a further 150 million face severe financial hardship as a result of health care payments (World Health Organization, 2005).

Health insurance is largely thought to be the panacea in circumstances that demand cushioning against financial hardships accruing from health care dues. Unfortunately, in low and medium income countries, most of the population does not benefit from formal insurance coverage because they are either self-employed or work in the informal sector, which makes expansion of formal health insurance, more difficult, (Bart J. 2008).

Social health protection aims at ensuring access to services without causing financial catastrophe for the individual or the household concerned such as those who could otherwise not afford the needed services. In general, a desired result of social health protection is that the insured are more likely to use the health services than the uninsured. This situation has resulted in many health system reforms, during the past two decades, including the introduction of user fees, which exacerbated the multiple challenges of the poor population in the informal sector, with direct consequences on the utilization of health services and on Out-Of-Pocket (OOP) payments.

The multiple challenges of the poor population in the informal sector, and their consequences on the utilization of health services and on Out-Of-Pocket payments beg the question: Given the abject poverty facing developing countries, how can they reconcile the objective of mobilization of domestic resources necessary for improving financial viability of health care services with that of access to health care services? This is probably the biggest challenge facing developing countries in the health system design.

2.2.2 The Response: Genesis and Effect

Developing countries are, faced by governance crises, political instability and severe economic constraints. These challenges manifest themselves in absence of government oversight in informal sector as well as mechanisms to provide social protection for the poor populations living in those areas. To mitigate the negative effects of environments such as these, there is need to introduce community involvement through Community-Based Health Insurance schemes; so as to offer financial protection mechanisms against the cost of illness while improving access to healthcare services.

According to the World Health Organization, there is a clear movement in favour of prepayment mechanisms, a movement strengthened by the 2005 World Health Assembly resolution encouraging the organization's Member States to favour social and other forms of health insurance, (McIntyre, D. 2005).

Community-Based Health Insurance (CBHI) schemes are indeed rooted within the local communities. They are supposed to be a response to the problems caused by the various barriers to the utilization of formal health care services, mainly financial, which poor populations are faced with mitigated by pooling financial resources and the risks of inability to access health services as a result of high Out-Of Pocket expenses.

Local civic, political, and religious leaders have also begun to address these barriers, together with their communities, majority of whom are in the rural informal sector. One response that is increasingly common, at the grassroots level, particularly in sub-Saharan Africa, is the development of Community-Based Health Insurance (CBHI) scheme, (Kelley A.G., Diop F., Makinen M., 2006).

In Rwanda , by law , every citizen has to be covered by some form of insurance scheme among the existing four major types of health insurance; namely: 1) Social Health Insurance 2) Private Insurance 3) Facility based health Insurance and 4) Community-Based Health Insurance, the later covering more than 90% of the population. According to Carrin et al, several terms have been used to refer to these CBHI's namely: micro-insurance, community health finance organizations, mutual health insurance schemes, pre-payment insurance organizations, voluntary informal sector health insurance, mutual health organizations, community health finance organizations, and community self-financing health organizations. They are further referred to as community-based health financing , which has evolved into an overarching term that covers a wide spectrum of health-financing instruments including micro insurance, community health funds, mutual health organizations, rural health insurance, revolving drug funds, and community involvement in user fee management ; all referring to community-based health financing (Preker A.S., Carrin G. and al. 2004). This study uses the name Community Based Health Insurance (CBHI).

In principle, resource mobilization for health care and financial protection which influences, *interalia,* utilization of health care services and out of pocket expenditures for the health care services underpins the reasons for setting up CBHI. In specific terms however, CBHI schemes have grown from different rationales. This may have been to help protect members against the cost of user fees associated with care in the public sector, as it was with the Community-Based Health Insurance scheme in Tanzania for example, or to provide risk pooling for the fees associated with the use of private sector providers, as in the Self-Employed Women's Association scheme in India. In general,

Community-Based Health Insurance (CBHI) is a form of voluntary health insurance that has become widespread in recent years in Africa and Asia. These schemes exist within localized communities, most often in rural areas: members make small payments to the scheme annually and in most cases it is done after the harvest period; the scheme covers the fees charged by local health services, (McIntyre, D. 2008).

CBHI addresses the dual role of financial protection and utilization of health services. As a result of their insurance function, CBHIs respond to the risk of members falling into poverty as a result of illness, through two mechanisms: First, sick members seek care earlier in their illnesses than the uninsured, resulting in efficiency gains in the consumption of health care services. Second, sick members pay small out-of-pocket co-payments at the health centers. Consequently, out-of-pocket payments are reduced significantly for CBHI members Furthermore, members of CBHI schemes are unlikely to borrow or get into debt in order to cover health care costs, (Bennett. S, 2005).

Community-Based Health Insurance provides a more effective, incremental first step in the transition towards improved financial protection against the cost of illness and better access to priority health services for the 1.3 billion poor people in low- and middle-income countries . While It is not a panacea for financing health care for rural and low-income workers in the informal sector, but rather one of the priority options that should be considered by low-income countries in expanding coverage for the poor. (Preker A.S., Carrin G. and al. (2002). and (2004) respectively).

Members of CBHIs are less likely to need to borrow or sell assets to cover health costs. They are also less vulnerable to social pressure to contribute to health financing requirements of others. Tabor (2005) and Ekman, B. (2004) indicate that where Community-Based Health Insurance schemes have been successfully introduced, they have reduced the amount that poor people pay in Out-Of-Pocket payments when they seek care and they have contributed to more frequent utilization of health services. According to Tabor (2005) there is ample evidence that prepayment and risk sharing through community involvement in health care financing, no matter how small,

increases access by poor populations to basic health services and protects them to a limited extent against the impoverishing effects of illness.

Xenia S. et al (2006), in a comparative analysis of 3 African countries ; Kenya, Senegal and South Africa, on the other hand, observe that the percentage of households with catastrophic expenditure is lower among the insured than the uninsured in all three countries, while the magnitude of the difference varies across countries. It has been observed however, that being covered by a social protection programme reduces a household's financial loss to some extent, but it does not fully ensure that the household is protected from facing catastrophic health expenditure.

There are remains, at the same time, mixed indications of the ability of CBHIs to offer financial protection for their members. According to (Ekman, B. 2004), cited in M Lagarde *et al. for instance,* while some studies and reviews have reported optimistic conclusions on the capacity of such schemes to provide financial protection even against catastrophic expenditures; others find this capacity more limited.

McIntyre, D. (2005) likewise argues that there is very limited empirical evidence about the ability of CBHI to generate sufficient revenue to improve access to health services and to ensure adequate financial protection for members. She argues further that these schemes tend to focus on rural areas and informal sector workers, whose income tends to be relatively low rendering their revenue-generating potential much lower than that of voluntary or mandatory insurance for formal sector employees. These arguments consequently raise important questions that relate to coverage and partnerships of CBHIs.

2.2.3 Coverage and Partnerships

The main strengths of Community-Based Health Insurance (CBHI) schemes are the extent of outreach penetration achieved through community participation, their contribution to financial protection against illness, and increase in access to health care by low-income rural and informal sector workers. CBHIs are a new and emerging social protection technology in many parts of the developing world and therefore track records are short. Empirical evidence upon which conclusions about impact and sustainability can be reached is consequently limited. There is clear evidence, however, that those in developing countries who have insurance have better health outcomes than those who don't; and generally CBHIs are reported to reduce the Out-Of-Pocket spending of their members while increasing the utilization of health care services, (Preker A.S., Carrin G. and al. 2002).

According to (Ekman, B. 2004), there is evidence that CBHI provides financial protection by reducing OOP spending and by increasing access to health care, as seen by increased rates of utilization of heath care; coverage rates are low and diminishing putting the implications of the findings of reduced OOP spending and increased utilization of healthcare services in doubt.

Preker *et al. (*2002), on their part, suggest that the poorest of the poor and socially excluded groups were, according to research, often not included in community-based initiatives for the financing of health care and that studies comparing the level of financial protection of scheme members with that of non-members found that belonging to some form of prepayment scheme reduced the financial burden of seeking health care. Studies, according to (Preker *et al*, 2002) further indicate that community financing did not eliminate the need for broader coverage for catastrophic health care expenditures.

The development of CBHI schemes was not systematic. Individual communities and organizations initiated schemes alone or with a development partner, and governments

had little strategic or leadership role. This impacted, negatively, on CBHI coverage. During the fairly long period of “experimentation” of CBHIs, many lessons about how to set up and operate CBHI schemes were learnt; and so were lessons about common pitfalls. A major lesson is the importance of developing an enabling environment for CBHI, components of which include adequate local technical assistance; and partnerships with local government, organizations, and financial institutions.

With the rise in the number of schemes and the concurrent increase in interest by governments and the international community in harnessing their potential, recent efforts have focused on rendering CBHIs more systematic and on scaling up to cover a larger share of the population. This new phase in CBHI development aims at maximizing the coverage of rural and informal sector populations by CBHI schemes within a given country and the role of government and its development partners is crucial, and must be coordinated and strategic, (Kelley A.G., Diop F., Makinen M. 2006).

Governments can contribute to the effectiveness and sustainability of community based health insurance schemes for rural, informal sector and poor populations through key policies involving the increased and well-targeted subsidies. This would boost the health insurance contributions of low- income populations especially the poorest who cannot afford to pay the premiums. Governments can also provide technical support to strengthen the management capacity of local schemes; as well as the establishment and strengthening of links with formal financing and provide networks (Preker A.S., Carrin G. and al. 2002).

Partnerships between Micro finance schemes, CBHI schemes and health care providers have boosted enrollment of the poor in the CBHI schemes and better collaboration with health centers. It has also opened opportunities for poor CBHI members to access larger microloans and finance income-generating activities. Through subsidies from the government and international aid, the NGOs and administrative districts are using those institutional bridges to finance the enrollment of the poorest thereby broadening their access to CBHI, (Yazbeck, 2009) and (PHR plus project, 2006).

2.3 GOALS OF COMMUNITY-BASED HEALTH INSURANCE

CBHI goals have been analyzed from a perspective of demand for health care services and supply of health services. The CBHIs are initiated for a variety of goals including the protection of the population in the informal sector mainly in the rural areas against financial barriers to access and use health care services. They are also expected to improve timely use of health care services especially for the low-income population who cannot afford to pay or for whom the payment of user fees can be a catastrophic expenditure. It is through pooling risks and solidarity mechanisms that CBHI schemes provide low income households access to primary health care and to some extent secondary health care. Generally health insurance enables its members to access quality health care.

CBHIs aim also to mobilize revenues for hospitals and other health care providers. This is accomplished by striking agreements with health service providers to improve drug and medical supply availability; improve cleanliness; be more responsive to clients; reduce waiting times; and focus more attention on health education and client awareness. By helping to improve beneficiary education, they foster health awareness and stimulate demand for improvements in community health conditions and for primary health care (Tabor S, 2005)

2.4 MAIN CHARACTERISTICS OF COMMUNITY-BASED HEALTH INSURANCE

Characteristics of CBHI schemes are largely community-based, voluntary and not-for-profit making (Ekman, 2004). The schemes are formed on the basis of a mutual aid objective, self-managed and operated by community-based organizations. They tend to be pro-poor and to strengthen the capacity of low-income population to meet their own health care needs. CBHIs are mainly introduced in the poor rural areas mostly around geographic entities that include villages and cities; professional bodies including cooperatives and trade unions; or around health care facilities. Their strengths lie on their contribution to financial protection against illness and increase access to health

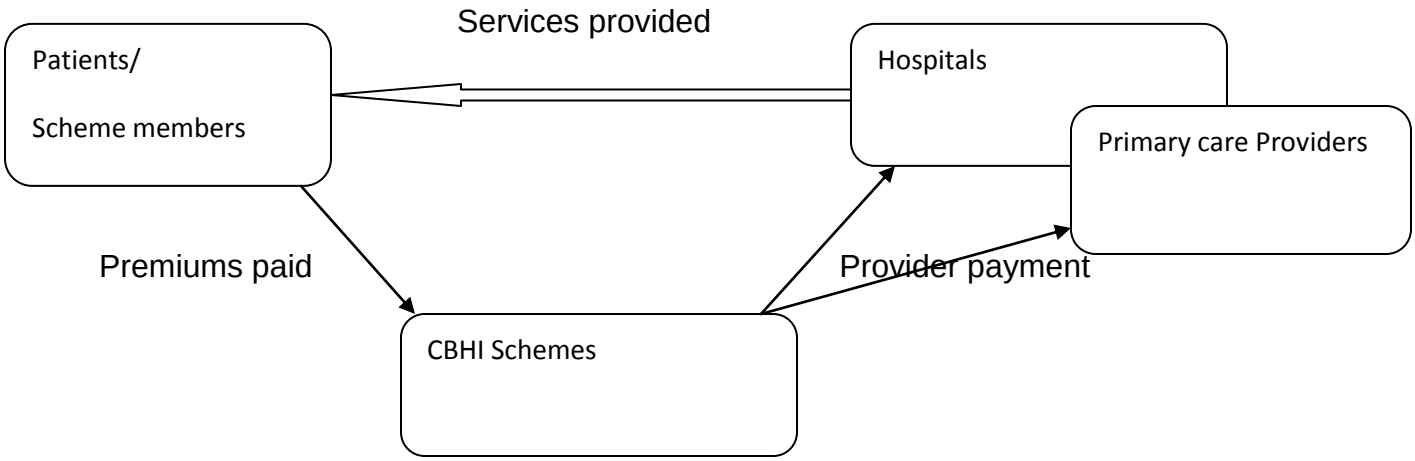
care by low-income workers in the rural and informal sector. They are also known to be strong in outreach penetration which is achieved through community participation (Tabor S. 2005)

The CBHIs are also designed to be accessible to their members. They are run and operated near their client base, simply because the poor or the rural population have neither the means nor the time to travel from their place of residence to distant insurance service centers.

CBHIs are characterized by their simplicity. They are designed to be simple and their procedures are not supposed to be complex because members are mainly from the informal sector who cannot cope with complicated procedures which are hard to understand. For many CBHIs the record keeping is generally manual. CBHI have low capacity of mobilizing revenues from poor communities as well as low management capacity. They are mainly dependent on external support. Such support may be provided from central and local government, donors, local and international NGOs, or cooperatives in many cases, they tend to complement the formal social health protection therefore complementing the public effort for health care accessibility by all population. (Tabor S. 2005).

2.5. HOW COMMUNITY-BASED HEALTH INSURANCE SCHEMES OPERATE

Members of the Community-Based Health Insurance (CBHI) pay their premiums into a CBHI fund; that serves to pool financial resources used to purchase healthcare services when needed. Out of the pooled funds, the CBHI pays healthcare providers for services which then the healthcare providers offer to CBHI members. Sara Bennett presents a basic model of this operation as follows:



Sara Bennett (2004). The role of Community-Based Health Insurance within the healthcare financing system: A framework for analysis. Health Policy and Planning; 19(3) 147-

2.6 CONCLUSION

Available literature indicates that Community-Based Health Insurance was identified as a panacea to financial barriers facing low income populations that are faced with a risk of failure to access health care services or fall into catastrophic health expenditures. CBHIs, besides providing their members the necessary coverage for the use of healthcare services improve timely use of healthcare services. It contributes to the improvement of quality of health care services and mobilization of resources for the health system.

The chapter briefly identified the interaction of the various actors within the CBHI system namely the CBHI schemes themselves, scheme members, and health care providers at different levels.

The literature indicates further that CBHI schemes are a response first and foremost rooted within the communities mainly in the rural and informal sector but also one that local civic, political and religious leaders have embraced in support of the communities.

Available literature indicates however, that poor and socially excluded groups may not be included in the CBHI initiatives; and the need for broader coverage for catastrophic

health care expenditures remains a challenge. Coverage rates have been argued to be low and diminishing in some cases. The need to further explore the role of CBHI in providing response to financial access and financial protection of poor population for their use of health care services therefore remains.

CHAPTER THREE

RESEARCH DESIGN AND METHOD

3.1 INTRODUCTION

To answer to the research questions on whether Community-Based Health Insurance reduces Out-Off Pocket (OOP) health expenses in their members as compared to non-members and to extent to which CBHI provide financial protection for the poorest population, this study relied on secondary sources of data from the Performance-Based Contracting (PBF) Impact survey conducted between 2006-2008 for general health and HIV/AIDS services in Rwanda, by the School of Public Health of Rwanda in collaboration with the Ministry of Health of Rwanda and the World Bank.

The data was primarily collected for the analysis of the impact of PBF on health care and on health care providers. Raw data on CBHI was also collected but not used by the researchers. The analysis of these data was undertaken to explore the relationship between CBHI membership and OOP expenditures; and the relationship between health insurance coverage on the incidence of catastrophic health expenditures and income groups and other characteristics of households.

It is against this background that this chapter describes the ways in which the study was undertaken and how data were collected. It focuses on the following sectors: research design, research method, population sampling, data collection, and validity of the study.

3.2 RESEARCH DESIGN

The research took advantage of a prospective quasi-experimental design to determine the impact of the PBF for general health and HIV/AIDS services in particular, in Rwanda, conducted by the School of Public Health of Rwanda in collaboration with the

Ministry of Health of Rwanda and the World Bank. It consequently, used secondary data in order to establish relationships necessary for predictions of measurable outcomes. A positivism paradigm guided the study by use of quantitative analysis.

3.3 RESEARCH METHODS

The data that served as basis for this study was collected as a part of a large panel survey that evaluated the impact of Performance-Based Contracting (PBF) for HIV/AIDs services in Rwanda conducted by the School of Public Health of Rwanda in collaboration with the Ministry of Health and the World Bank. The evaluation sample made use of the national expansion of the PBF program over 2006 and 2008 which paralleled the expansion of CBHI.

PBF and CBHI are two prominent reforms in the field of health financing to boost both the demand for and the supply of health services: Community-Based Health Insurance schemes, which reimburse partner health facilities based on contracts, were scaled-up nationally in early 2006; while Performance-Based Financing (PBF) built on contracts between government and health authorities and health care providers were scaled-up nationally in 2008. In 2005, districts which had a PBF scheme in their health facilities were identified. Districts that did not have PBF were phased into the program and assigned randomly to two stages: Phase I which dealt with treatment districts which began receiving PBF in 2006; and Phase II which control districts that began receiving PBF in 2008. Although not included in the PBF impact evaluation design, the areas that had PBF as of September 2005 were also included in the sample.

In this study, two waves of data were collected in 2006 –the baseline and in 2008 –the follow-up period. They reported on the Out-Of-Pocket (OOP) expenses for health by members and non-members of CBHI; residing in a sample of 1961 households; in addition to their demographics and socio-economic characteristics. The current analysis based itself on data collected only in 2006, the baseline year.

3.3.1 Sample selection

Health facilities were selected first and then households within the catchment area of the health facility selected as a second stage.

First, the task team identified facilities which initiated PBF prior to 2006. Second, it identified all ARV treatment facilities in Phase I and Phase II districts. This resulted in a sample size of 8 ARV sites in Phase I districts and 14 ARV sites in Phase II districts. In order to increase the sample size, the last step involved randomly selecting 10 facilities in Phase I districts which would begin PBF for HIV/AIDS services in 2006, and 4 facilities in Phase II districts which provide HIV/AIDS services. This resulted in a total sample of 64 facilities: 28 with PBF prior to 2006 (Phase 0), 18 in Phase I and 18 in Phase II.

Second, households within the selected health facility catchment areas were selected. Prior to baseline data collection, the evaluation team established that the household survey would be administered to a sample of 1500 HIV+ patients, and 500 HIV- patients. This sampling procedure was the first step in avoiding any stigma associated with being selected to participate in this study. Patients were randomly selected from patient lists at the 64 facilities included in the facility sample by a certified medical doctor under the direct management of the School of Public Health survey team.

The total baseline sample consists of 1,961 households and 7,494 individuals. Although the original sample size was 2000 households, some 39 households were dropped from the analysis as a result of missing information or incorrect coding. The sample was drawn as follows: 20% households in Phase 0 districts, 40% in Phase I and another 40% in Phase II.

Considering the sensitive nature of the data collected, the School of Public Health team assigned a trained medical doctor to the patient data collection in order to manage field work activities; maintain a high level of quality assurance and enforce the methods used to maintain confidentiality of patient information.

3.3.2 Data collection

As mentioned above, the study relied on secondary sources of data collected as a part of a large panel survey that evaluated the impact of paying primary health care providers for performance on HIV/AIDs services in Rwanda. The evaluation sample made use of the national expansion of the pay for performance program starting in 2006 which paralleled the expansion of CBHI scheme. In this study, two waves of data were collected in 2006 (baseline) and in 2008 (follow-up) and reported about the out-of-pocket expenses for health by members and non-members of CBHI scheme residing in a sample of 1961 households in addition to their demographics and socio-economic characteristics. The current analysis is based on the data collected at baseline only.

The School of Public Health team assigned a trained medical doctor to supervise the patient data collection sessions; maintain a high level of quality assurance and enforce the methods used to maintain confidentiality of patient information.

<u>The data collection approach and method</u>

In the PBF Impact survey, the households' surveys used structured questionnaires for data collection on socio-economic and demographic characteristics, and others including households' enrollment in insurance schemes, their health care services utilization, payments made for health care services and payments made for other basic needs such as housing and assets.

As stated above, the data was primarily collected for the analysis of the impact of PBF on health care and on health care providers. Raw data on CBHI was also collected but not used by the researchers. In the PBF Impact survey, data collection for baseline survey took place in 2006 while a follow up survey took place in 2008. We based our analysis on baseline (2006) data. With this baseline data of 2006, it was possible to have two comparison groups since in that period, CBHI schemes were not extended at national level; it made it possible also to exclude the effects of PBF.

The data was analyzed so as to reach the objectives of the study and to refute or confirm the hypotheses that guide the research. Secondary sources of data to be used for this research involve an analysis of data from the PBF Impact survey as well as a review of both published and unpublished materials to include *interalia* books, journals, conventions, official reports, press releases, statutes, internet sources and any other material related to health insurance specifically community based health insurance.

3.3.3 Data analysis

This study analyzed the role of CBHI in Rwanda with respect to financial protection. Statistical data analysis was undertaken to explore, the relationship between CBHI membership and Out-Of-Pocket expenditures (OOPs); and the relationship between health insurance coverage on the incidence of catastrophic health expenditures and income groups and other characteristics of households.

Data was analyzed using STATA 10.0 (Stata Corp, College Station, TX). The effect of CBHI was assessed by comparing the incidence of health-related catastrophic expenditures between households covered with CBHI and those with no coverage. The first set of analyses used the data to measure the effect of CBHI, comparing the average outcomes of individuals with CBHI to those without it. Statistical power was increased by using logistic regression models to condition on respondent's socio-demographic and economic characteristics. Relationships between variables were tested using chi-square, and person's moment correlation. All relationships were tested at 0.05 level of significance. Descriptive statistics such as mean and percentages were used to describe data in this study.

3.4 VARIABLES

Outcome variables:

The main outcome in this study is out-of-pocket health household expenditure. Health-related expenses were obtained with reference to health care received within four weeks prior to the interview.

Definition of Catastrophic Health Expenditures

Let the **capacity to pay** of household **h (C_h)**, be defined as effective income minus subsistence expenditures, where **effective income** of household **h** (EI_h) is proxied by **household consumption expenditure**, and **subsistence expenditure** of household **h** (SE_h) is proxied by **household food expenditure**. In other words, $C_h = EI_h - SE_h$.

In addition to this information, information on household health related out-of-pocket expenditures (OOP_h) is available.

The incidence of health-related out-of-pocket expenditures on households can be measured by the ratio (R_h) defined as follows:

$R_h = OOP_h / C_h = OOP_h / (EI_h - SE_h)$

To identify the occurrence of catastrophic health expenditures in household **h,** we need to define a **threshold** (a value of R_h) above which households are identified as having experienced catastrophic health expenditures. We define a variable (I_h) as follows:

$I_h = 0$ if $R_h < 40\%$

$= 1$ if $R_h \geq 40\%$

The binary variable (I_h) assesses the burden of catastrophic health expenditures at two levels. We used this binary variable for the empirical assessment of the incidence of catastrophic health expenditures.

Main independent variable:

Health insurance coverage: because the study aims to assess the effect of community health insurance scheme on out-of-pocket health expenditures, Community-Based Health Insurance coverage is the key control variable. This is a binary variable indicating whether the household was enrolled in CBHI or not.

Covariates:

Household assets index: this variable is used as a proxy for household income. Assets are measured as the value of owned houses, durables in the house, farm animals, farm equipment, and microenterprise equipment. The index is collapsed into quartiles of the asset distribution.

Individual socio-demographic characteristics: socio-demographic variables include the head of household's gender, age, education attainment, marital status, and the total number of family members.

3.5 DESIGN VALIDITY

The data base used in this study is from the PBF Impact survey. It had a well balanced sample at both the facility level and the household level. The validity of this sample was confirmed for the health facilities and households by performing difference in means tests between phase I and Phase II facilities on 225 key indicators; and by performing difference in means tests on key health facility outputs and health outcomes related to child and maternal health, as well as general socio-economic characteristics. The sample was besides being balanced, randomized. The processes have enhanced both internal and external validity.

3.6 ETHICAL CONSIDERATIONS

The PBF Impact survey jointly conducted by the Rwandan School of Public Health, the Ministry of Health and the World Bank, worked with a population that is vulnerable given that the majority are poor and illiterate. The team undertook to protect their well being; privacy and autonomy. The team also developed various methods to safeguard against possible threats to confidentiality. These undertakings are reflected in the letter of approval of conducting the survey by the ethical committee for the PBF impact survey.

3.7 SCOPE AND LIMITATIONS OF THE STUDY

The study investigated the role of Community-Based Health Insurance (CBHI) in financial protection in Rwanda based on data collected in 2006. The major limitation of the study is that it relied on raw data collected for a purpose different from that of the present study. This could increase bias impacting on validity, because this secondary data was not meant to compare the two groups of our study. However, by controlling for PBF program and focusing on baseline survey, the data which will be used will provide substantial evidence on trends of CBHI schemes development in Rwanda and their effects on health-related catastrophic expenditures.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 INTRODUCTION

This study set out to determine whether Community-Based Health Insurance (CBHI) in Rwanda is effective in addressing problems of catastrophic health expenditures. Evidence of CBHI effect is derived from statistical analyses of the Out-Of-Pocket health expenditures (OOPs) by CBHI members, in comparison to OOPs by non members; as well as statistical analyses of the variations of the effect of health insurance coverage on the incidence of catastrophic health expenditures, between income groups and other characteristics of households.

4.2 RESEARCH RESULTS

Tables 4.1.a. and 4.1.b. below present the characteristics of households and respondents to health care utilization respectively. Of 1489 households considered for this analysis, 1161 were covered with health insurance while 1161 had no health insurance coverage. Heads of households covered with health insurance tend to be older on average ($p<0.000$) and either married, divorced or widowed ($p=0.007$). The sample included more households with an HIV/AIDS patients than those without an HIV/AIDS patients ($p<0.000$). However, insured and non-insured households were comparable in terms of the gender of the head of the household, marital status of the head of the household and the number of children under 5 years old living in the households and the household-level wealth status.

A total of 1230 individuals with health insurance coverage and 328 individuals without health insurance coverage were surveyed in relation health service utilization. Samples of respondents with health insurance and without health insurance coverage were balanced in terms of gender, age, education attainment, marital status, HIV serological

status and household-level wealth status. However, respondents without health insurance coverage tended to live in households with more children under 5.

Table 4.1.a.: Households' characteristics

characteristic	all households (n=1489) number	%	insured households (n=1161) number	%	non-insured households (n=328) number	%	p
head of household characteristics							
Female	750	50.37	594	51.16	156	47.56	0.249
Age (yrs)							0.000
<=24	115	7.72	64	5.51	51	15.55	
25-34	391	26.26	304	26.18	87	26.52	
35-44	511	34.32	417	35.92	94	28.66	
45-54	317	21.29	255	21.96	62	18.90	
>=55	155	10.41	121	10.42	34	10.37	
mean age (yrs)	1489	40	1161	41	328	38	0.000
Education							0.068
No education	488	32.77	364	31.35	124	37.80	
primary	862	57.89	683	58.83	179	54.57	
secondary or higher	139	9.34	114	9.82	25	7.62	
Marital status							0.007
married	702	47.15	549	47.29	153	46.65	
divorced/widow	616	41.37	494	42.55	122	37.20	
never married	171	11.48	118	10.16	53	16.16	
household-level characteristics							
households with an HIV/AIDS patient	1,110	76.87	854	79.15	256	70.14	0.000
number of children under 5							0.614
none	941	64.36	704	64.41	237	64.23	
one	325	22.23	245	22.42	80	21.68	
two	165	11.29	124	11.34	41	11.11	
three or more	31	2.12	20	1.83	11	2.98	
Household Wealth index							0.360
poor	490	33.52	359	32.85	131	35.50	
middle	494	33.79	385	35.22	109	29.54	
rich	478	32.69	349	31.93	129	34.96	

Table 4.1.b.: characteristics of respondents to health care service utilization

characteristic	all respondents (n=1558) number	%	with health insurance (n=1230) number	%	without health insurance (n=328) number	%	p
individual characteristics							
Female	978	62.77	782	63.58	196	59.76	0.203
Age (yrs)							0.315
<=24	504	32.35	389	31.63	115	35.06	
25-34	335	21.50	271	22.03	64	19.51	
35-44	405	25.99	327	26.59	78	23.78	
45-54	227	14.57	180	14.63	47	14.33	
>=55	87	5.58	63	5.12	24	7.32	
mean age (yrs)	1558	31	1230	31	328	31	0.705
Education							0.052
No education	433	27.79	325	26.42	108	32.93	
primary	1019	65.40	817	66.42	202	61.59	
secondary or higher	106	6.80	88	7.15	18	5.49	
Marital status							0.640
married	593	38.06	475	38.62	118	35.98	
divorced/widow	433	27.79	341	27.72	92	28.05	
never married	532	34.15	414	33.66	118	35.98	
HIV/AIDS patients	1003	64.38	805	65.45	198	60.37	0.088
household-level characteristics							
number of children under 5							0.040
none	872	55.97	690	56.10	182	55.49	
one	383	24.58	309	25.12	74	22.56	
two	258	16.56	203	16.50	55	16.77	
three or more	45	2.89	28	2.28	17	5.18	
Household Wealth index							0.396
poor	496	31.84	401	32.60	95	28.96	
middle	508	32.61	400	32.52	108	32.93	
rich	554	35.56	429	34.88	125	38.11	

Unadjusted and adjusted odds ratios (OR) from logistic models of health service utilization by health insurance coverage are displayed in tables 4.2 through 4.5. Results indicate that insured individuals were about 2.6 times more likely to utilize health care services than respondents without health insurance (aOR:2.647, 95% CI: [1.896 - 3.695]). Among married respondents, insured individuals were 2.2 times more likely to utilize health service than non-insured (aOR: 2.166; 95% CI: [1.119 - 4.193]) while among unmarried respondents, insured individuals were about 2.8 times more likely to utilize health services than non-insured (aOR:2.836; 95%CI:[1.909 - 4.214]).

When performed the analysis by the serological status of the respondents, the results indicate that there was no significant difference in health service utilization among insured HIV/AIDS patients and patients without health insurance coverage whereas among respondents identified as HIV negative, insured individuals were 2.8 times more likely to utilize health services than non-insured (aOR: 3.766; 95% CI[2.407 - 5.894]).

While the effect of health insurance coverage was present across all levels of household wealth, it is worth noting that the effect of health insurance coverage was higher in people living in poor households (aOR:3.910; 95%CI:[2.146 - 7.126]) than in people living in middle (aOR: 2.176; 95% CI: [1.167 - 4.057]) or richer households (aOR: 2.291; 95% CI:[1.291 - 4.065]).

Table 4.2: estimated OR from a logistic model of Health service utilization among all respondents

	all respondents	
VARIABLES	unadj OR [95% CI]	aOR [95%CI]
Being Insured	2.638***[1.936 - 3.595]	2.647***[1.896 - 3.695]
Being female		1.393**[1.003 - 1.933]
Age in years (ref:<=24)		
25-34		0.691[0.348 - 1.371]
35-44		0.830[0.406 - 1.694]
45-54		0.982[0.440 - 2.194]
>=55		0.853[0.349 - 2.085]
Education (ref: none)		
primary		1.091[0.757 - 1.572]
secondary or higher		2.017*[0.886 - 4.588]
Marital status (ref: married)		
divorced/widow		0.629*[0.391 - 1.014]
never married		0.607[0.315 - 1.172]
Being an HIV patient		4.643***[3.121 - 6.907]
Number of children under 5		
one		0.833[0.568 - 1.221]
two		0.691*[0.455 - 1.051]
three or more		1.034[0.417 - 2.560]
Household Wealth index (ref: poor)		
middle		1.230[0.837 - 1.807]
rich		1.081[0.728 - 1.607]

95% CI in brackets

*** p<0.01, ** p<0.05, * p<0.1

Table 4.3: estimated OR from a logistic model of Health care utilization by marital status

	married		unmarried	
VARIABLES	unadj OR [95% CI]	aOR [95%CI]	unadj OR [95% CI]	aOR [95%CI]
Being Insured	2.131**[1.165 - 3.897]	2.166**[1.119 - 4.193]	2.842***[1.972 - 4.094]	2.836***[1.909 - 4.214]
Being female		0.948[0.498 - 1.802]		1.669**[1.127 - 2.473]
Age in years (ref:<=24)				
25-34		0.843[0.215 - 3.301]		0.767[0.372 - 1.583]
35-44		1.041[0.260 - 4.174]		0.740[0.373 - 1.468]
45-54		1.331[0.281 - 6.311]		0.792[0.351 - 1.788]
>=55		0.346[0.0707 - 1.694]		1.695[0.605 - 4.750]
Education (ref: none)				
primary		1.113[0.583 - 2.124]		1.101[0.701 - 1.730]
secondary or higher		6.310*[0.739 - 53.85]		1.667[0.653 - 4.258]
Being an HIV patient		5.493***[2.978 - 10.13]		4.517***[2.639 - 7.729]
Number of children under 5				
one		0.635[0.292 - 1.380]		0.873[0.554 - 1.375]
two		0.355***[0.164 - 0.771]		0.884[0.522 - 1.497]
three or more		0.361[0.0866 - 1.504]		1.530[0.465 - 5.035]
Household Wealth index (ref: poor)				
middle		0.758[0.360 - 1.596]		1.515*[0.954 - 2.406]
rich		0.944[0.414 - 2.156]		1.099[0.693 - 1.743]

95% CI in brackets

*** p<0.01, ** p<0.05, * p<0.1

Table 4.4: estimated OR from a logistic model of Health care utilization by whether the respondent is HIV infected

	HIV/AIDS patients		non HIV/AIDS patients	
	unadj OR [95% CI]	aOR [95%CI]	unadj OR [95% CI]	aOR [95%CI]
VARIABLES				
Being Insured	1.638*[0.941 - 2.850]	1.582[0.896 - 2.795]	3.536***[2.327 - 5.374]	3.766***[2.407 - 5.894]
Being female		1.427[0.794 - 2.566]		1.410[0.931 - 2.135]
Age in years (ref:<=24)				
25-34		1.091[0.389 - 3.059]		0.447[0.166 - 1.205]
35-44		0.650[0.235 - 1.794]		1.598[0.505 - 5.058]
45-54		0.831[0.265 - 2.602]		1.435[0.413 - 4.986]
>=55		0.971[0.208 - 4.528]		0.875[0.253 - 3.023]
Education (ref: none)				
primary		1.094[0.634 - 1.889]		1.058[0.636 - 1.758]
secondary or higher		3.188[0.719 - 14.13]		1.909[0.653 - 5.583]
Marital status (ref: married)				
divorced/widow		0.414***[0.216 - 0.796]		0.864[0.354 - 2.110]
never married		0.454[0.171 - 1.206]		0.747[0.285 - 1.955]
Number of children under 5				
one		0.710[0.368 - 1.370]		0.864[0.529 - 1.411]
two		0.271***[0.136 - 0.541]		1.000[0.584 - 1.713]
three or more		0.419[0.0878 - 2.000]		1.395[0.457 - 4.263]
Household Wealth index (ref: poor)				
middle		1.183[0.645 - 2.168]		1.251[0.751 - 2.084]
rich		1.245[0.632 - 2.455]		1.041[0.626 - 1.732]

95% CI in brackets

*** p<0.01, ** p<0.05, * p<0.1

Table 4.5: estimated OR from a logistic model of Health care utilization by household wealth level

	poor		middle		rich	
VARIABLES	unadj OR [95% CI]	aOR [95%CI]	unadj OR [95% CI]	aOR [95%CI]	unadj OR [95% CI]	aOR [95%CI]
Being Insured	3.391***[1.988 - 5.783]	3.910***[2.146 - 7.126]	2.057**[1.159 - 3.652]	2.176**[1.167 - 4.057]	2.629***[1.576 - 4.387]	2.291***[1.291 - 4.065]
Being female		0.844[0.463 - 1.539]		1.612[0.888 - 2.926]		2.108**[1.186 - 3.748]
Age in years (ref:<=24)						
25-34		0.412[0.140 - 1.208]		0.844[0.227 - 3.135]		1.287[0.357 - 4.642]
35-44		0.467[0.145 - 1.505]		1.537[0.391 - 6.044]		1.232[0.347 - 4.371]
45-54		0.480[0.117 - 1.960]		1.242[0.302 - 5.107]		2.340[0.540 - 10.14]
>=55		0.550[0.0980 - 3.088]		1.148[0.191 - 6.888]		1.209[0.291 - 5.025]
Education (ref: none)						
primary		1.522[0.823 - 2.815]		0.913[0.472 - 1.768]		0.771[0.380 - 1.566]
secondary or higher		2.229[0.461 - 10.78]		1.238[0.242 - 6.339]		1.865[0.526 - 6.622]
Marital status (ref: married)						
divorced/widow		0.435*[0.181 - 1.045]		0.999[0.415 - 2.408]		0.447*[0.192 - 1.036]
never married		0.265**[0.0946 - 0.744]		1.327[0.383 - 4.600]		0.809[0.236 - 2.776]
Being an HIV patient		5.969***[2.831 - 12.58]		4.609***[2.235 - 9.506]		4.862***[2.452 - 9.641]
Number of children under 5						
one		0.658[0.334 - 1.295]		1.435[0.683 - 3.013]		0.620[0.329 - 1.170]
two		0.576[0.270 - 1.226]		0.703[0.347 - 1.422]		0.841[0.394 - 1.797]
three or more		1.748[0.322 - 9.484]				0.263**[0.0698 - 0.990]

95% CI in brackets

*** p<0.01, ** p<0.05, * p<0.1

Tables 4.6 through 4.9 present unadjusted and adjusted odds ratios (OR) from logistic models of incidence of household catastrophic expenditure by health insurance coverage. Results indicate that, overall, households with health insurance coverage were less likely to experience a catastrophic health expenditure than households without health insurance (aOR: 0.744; 95% CI:[0.586 - 0.945]).

In households where the head of the household was not married, insured households were less likely to experience catastrophic health expenditures than non-insured ones (aOR: 0.756; 95% CI:[0.578 - 0.990]) whereas there was no significant effect of health insurance coverage on the incidence of catastrophic health expenditures in households where the head of the household was married. Similarly, catastrophic health expenditures were less likely to occur in insured households without HIV/AIDS patients(aOR: 0.0557; 95%CI: [0.0105 - 0.294]) than non-insured households without HIV/AIDS patients while that effect of health insurance was not apparent in households with an HIV/AIDS patient.

While insured households tend to be less likely to experience catastrophic health expenditure than non-insured households across levels of health, the differences were not significant.

Table 4.6: estimated OR from a logistic model of occurrence of catastrophic health expenditures

	all respondents	
VARIABLES	unadj OR [95% CI]	aOR [95%CI]
Head of household characteristics		
Being Insured	0.760**[0.602 - 0.960]	0.744**[0.586 - 0.945]
Being female		0.900[0.726 - 1.116]
Age in years (ref:<=24)		
25-34		0.944[0.560 - 1.590]
35-44		0.740[0.424 - 1.290]
45-54		0.535*[0.280 - 1.024]
>=55		0.616[0.295 - 1.287]
Education (ref: none)		
primary		0.867[0.669 - 1.124]
secondary or higher		1.005[0.629 - 1.605]
Marital status (ref: married)		
divorced/widow		1.135[0.786 - 1.637]
never married		0.748[0.443 - 1.264]
Household-level characteristics		
With an HIV/AIDS patient		1.302[0.895 - 1.894]
Number of children under 5		
one		0.846[0.666 - 1.076]
two		0.939[0.702 - 1.257]
three or more		0.239***[0.101 - 0.565]
Wealth index (ref: poor)		
middle		0.657***[0.513 - 0.841]
rich		0.596***[0.456 - 0.779]

95% CI in brackets

*** p<0.01, ** p<0.05, * p<0.1

Table 4.7: estimated OR from a logistic model of occurrence of catastrophic health expenditures by the head of household marital status

	married		unmarried	
VARIABLES	unadj OR [95% CI]	aOR [95%CI]	unadj OR [95% CI]	aOR [95%CI]
Head of household characteristics				
Being Insured	0.736[0.441 - 1.230]	0.744[0.434 - 1.273]	0.767**[0.591 - 0.996]	0.756**[0.578 - 0.990]
Being female		0.890[0.557 - 1.421]		0.902[0.707 - 1.151]
Age in years (ref:<=24)				
25-34		0.593[0.199 - 1.768]		1.215[0.787 - 1.877]
35-44		0.468[0.158 - 1.389]		0.991[0.610 - 1.608]
45-54		0.303*[0.0903 - 1.016]		0.956[0.500 - 1.829]
>=55		0.425[0.117 - 1.541]		0.808[0.347 - 1.879]
Education (ref: none)				
primary		1.202[0.724 - 1.995]		0.752*[0.555 - 1.018]
secondary or higher		0.900[0.366 - 2.210]		1.039[0.594 - 1.815]
Household-level characteristics				
With an HIV/AIDS patient		1.970*[0.921 - 4.217]		1.139[0.736 - 1.762]
Number of children under 5				
one		1.289[0.753 - 2.206]		0.774*[0.590 - 1.016]
two		1.477[0.825 - 2.647]		0.802[0.568 - 1.133]
three or more		0.191[0.0235 - 1.557]		0.274***[0.107 - 0.707]
Wealth index (ref: poor)				
middle		0.536**[0.309 - 0.930]		0.679***[0.513 - 0.898]
rich		0.590*[0.328 - 1.062]		0.584***[0.430 - 0.792]

95% CI in brackets

*** p<0.01, ** p<0.05, * p<0.1

Table 4.8: estimated OR from a logistic model of occurrence of catastrophic health expenditures by whether there is an HIV/AIDS patient in the household

	households with HIV/AIDS patients		household without HIV/AIDS patients	
VARIABLES	unadj OR [95% CI]	aOR [95%CI]	unadj OR [95% CI]	aOR [95%CI]
Head of household characteristics				
Being Insured	0.830[0.650 - 1.060]	0.817[0.635 - 1.050]	0.307***[0.141 - 0.671]	0.0557***[0.0105 - 0.294]
Being female		0.925[0.739 - 1.158]		0.400*[0.147 - 1.089]
Age in years (ref:<=24)				
25-34		0.762[0.438 - 1.327]		16.88**[1.107 - 257.6]
35-44		0.663[0.369 - 1.192]		3.219[0.108 - 96.19]
45-54		0.401***[0.202 - 0.797]		19.41*[0.617 - 610.8]
>=55		0.363**[0.158 - 0.836]		16.96*[0.760 - 378.3]
Education (ref: none)				
primary		0.873[0.663 - 1.149]		0.525[0.168 - 1.640]
secondary or higher		1.026[0.633 - 1.661]		0.565[0.0300 - 10.64]
Marital status (ref: married)				
divorced/widow		1.026[0.699 - 1.505]		5.927[0.693 - 50.73]
never married		0.590*[0.338 - 1.031]		18.26**[1.109 - 300.5]
Household-level characteristics				
Number of children under 5				
one		0.786*[0.611 - 1.012]		0.714[0.236 - 2.157]
two		0.955[0.706 - 1.291]		0.791[0.159 - 3.947]
three or more		0.273***[0.114 - 0.655]		
Wealth index (ref: poor)				
middle		0.796*[0.614 - 1.030]		0.00576***[0.000408 - 0.0813]
rich		0.648***[0.488 - 0.861]		0.0813***[0.0185 - 0.358]

95% CI in brackets

*** p<0.01, ** p<0.05, * p<0.1

Table 4.9: estimated OR from a logistic model of occurrence of catastrophic health expenditures by the level of household wealth

	poor		middle		rich	
VARIABLES	unadj OR [95% CI]	aOR [95%CI]	unadj OR [95% CI]	aOR [95%CI]	unadj OR [95% CI]	aOR [95%CI]
Head of household characteristics						
Being Insured	0.734[0.484 - 1.112]	0.779[0.504 - 1.205]	0.790[0.528 - 1.183]	0.780[0.505 - 1.205]	0.722[0.484 - 1.077]	0.732[0.483 - 1.110]
Being female		0.763[0.522 - 1.115]		0.895[0.606 - 1.321]		1.016[0.695 - 1.486]
Age in years (ref:<=24)						
25-34		1.055[0.410 - 2.716]		0.997[0.304 - 3.272]		0.744[0.344 - 1.608]
35-44		0.860[0.323 - 2.290]		0.821[0.251 - 2.684]		0.737[0.298 - 1.822]
45-54		0.908[0.293 - 2.814]		0.206**[0.0509 - 0.833]		0.716[0.248 - 2.067]
>=55		0.847[0.231 - 3.105]		0.467[0.0985 - 2.214]		0.485[0.146 - 1.608]
Education (ref: none)						
primary		1.020[0.653 - 1.591]		0.577**[0.365 - 0.912]		1.122[0.682 - 1.845]
secondary or higher		1.396[0.594 - 3.277]		0.771[0.306 - 1.939]		1.231[0.568 - 2.670]
Marital status (ref: married)						
divorced/widow		1.040[0.552 - 1.960]		1.385[0.695 - 2.761]		0.974[0.504 - 1.881]
never married		0.841[0.332 - 2.132]		0.728[0.229 - 2.314]		0.701[0.303 - 1.622]
Household-level characteristics						
With an HIV/AIDS patient		0.489**[0.277 - 0.861]		22.12***[2.986 - 163.9]		1.473[0.728 - 2.980]
Number of children under 5(ref: none)						
one		0.569***[0.370 - 0.872]		0.714[0.458 - 1.114]		1.276[0.845 - 1.928]
two		0.492***[0.291 - 0.831]		1.872**[1.153 - 3.038]		0.737[0.407 - 1.335]
three or more		0.961[0.331 - 2.783]				

95% CI in brackets

*** p<0.01, ** p<0.05, * p<0.1

4.3 DISCUSSION

4.3.1. Relationship between Health Seeking Behavior and insurance coverage

Unadjusted and adjusted odds ratios (OR) from logistic models of health service utilization by health insurance coverage was conducted. Results indicate that insured individuals were about 2.6 times more likely to utilize health care services than respondents without health insurance (2.647, 95% [1.896 - 3.695]). It is in line with the existing empirical evidence that Community-Based Health Insurance improves health services utilization and prevents catastrophic health care expenditures, but most of them are based on relatively small scale coverage programs (Chankova, Sulzbach, & Diop, 2008; Franco et al., 2008; Schneider & Hanson, 2006).

Financial accessibility is one of the most important barriers to access to health care for the poor. Very often, poor households forgo seeking for health care when they need it because they have to pay for them (Ahmed, Tomson, Petzold, & Kabir, 2005). Community-Based Health Insurance (CBHI) schemes also known as mutuelles are health financing strategies that can provide some form of financial protection, thus improve access to medical care in low-income countries (Bennett, 2004).

In Rwanda, more than 90% of the population is currently covered by the CBHI. Studies show that population coverage by CBHI rose from 7.9% (Schneider P. and Diop F, 2001) at the end of 1999 in the three pilot districts, to 85% in 2008 (Rwanda Ministry of Health, World Health Organization, 2008) after the national roll out.

In a context where CBHI schemes were set up and enrolment rates increased, utilization of health care services would be expected to increase while out of pocket expenditure decreases. Two recent papers provide insight of the effect of a nationwide CBHI scheme in Rwanda (Hong et al., 2011; Saksena, Antunes, Xu, Musango, & Carrin, 2011). Hong et al states that Rwanda still faces major hurdles in its effort to achieve universal access to health care for all but submits also that being insured may lift financial barriers. Saksena et al ,on their part, submit that CBHI in Rwanda has had a

strong positive impact on access to health care but hastens to add that the coverage has apparent limitations; without which CBHIs would improve the health of Rwandans even more. It is noteworthy however, that both papers were based on data collected when the program was still at its infancy stage with only a small proportion of the population enrolled in the CBHI scheme.

4.3.2 Health insurance coverage and marital status

Among married respondents, insured individuals were 2.2 times more likely to utilize health service than non-insured (2.166; 95% CI: [1.119 - 4.193]) while among unmarried respondents, insured individuals were about 2.8 times more likely to utilize health services than non-insured (2.836; 95% [1.909 - 4.214]). This might lead to thoughts on a positive effect of the marriage factor on the health care utilization.

4.3.3 Insurance coverage and households with HIV positive patients

When performed the analysis by the serological status of the respondents, the results indicate that there was no significant difference in health service utilization among insured HIV/AIDS patients and patients without health insurance coverage whereas among respondents identified as HIV negative, insured individuals were 2.8 times more likely to utilize health services than non-insured (3.766; 95% [2.407 - 5.894]). Some explanations on the absence of significant difference in health service utilization among insured HIV/AIDS patients and patients without health insurance may well be that treatment of HIV/AIDS epidemic is highly subsidized in Rwanda with also strong support from all health care providers including the Community Health Workers. According to the report given by Rwanda MOH; HIV prevalence is high among the individuals in high economic status unlike the ones with poor socio economic status. It is equally high among widows and divorced individuals who also, according to this study ,have a relatively low insurance coverage.

4.3.4 Insurance coverage and households' socio-economic status

While the effect of health insurance coverage was present across all levels of household wealth, it is worth noting that the effect of health insurance coverage was higher in people living in poor households (3.910; 95% [2.146 - 7.126]) than in people living in middle (aOR: 2.176; 95% CI: [1.167 - 4.057]) or richer households (2.291; 95% C[1.291 - 4.065]). This indicates that the poorest segments of the population are more in need of and therefore benefiting more of health insurance coverage than the wealthier ones.

Results indicate that, overall, households with health insurance coverage were less likely to experience a catastrophic health expenditure than households without health insurance (aOR: 0.744; 95% CI:[0.586 - 0.945]).

4.3.5 Insurance coverage and protection against catastrophic expenditure

In households where the head of the household was not married, insured households were less likely to experience catastrophic health expenditures than non-insured ones (0.756; 95% [0.578 - 0.990]) whereas there was no significant effect of health insurance coverage on the incidence of catastrophic health expenditures in households where the head of the household was married. Similarly, catastrophic health expenditures were less likely to occur in insured households without HIV/AIDS patients(0.0557; 95% [0.0105 - 0.294]) than non-insured households without HIV/AIDS patients while that effect of health insurance was not apparent in households with an HIV/AIDS patient.

While insured households tend to be less likely to experience catastrophic health expenditure than non-insured households across levels of health, the differences were not significant.

Results further indicate that, overall, households with health insurance coverage were less likely to experience a catastrophic health expenditure than households without health insurance (0.744; 95% [0.586 - 0.945]).

The findings of this study tallies well with (Tabor, 2005) and (Ekman, B. 2004) who have indicated that where Community Based Health Insurance schemes have been successfully introduced, they have reduced the amount that poor people pay in out-of-pocket payments when they seek care and they have contributed to more frequent utilization of health services. According to Tabor (2005) there is ample evidence that prepayment and risk sharing through community involvement in health care financing, no matter how small, increases access by poor populations to basic health services and protects them to a limited extent against the impoverishing effects of illness.

Members of CBHIs are less likely to need to borrow or sell assets to cover health costs. They are also less vulnerable to social pressure to contribute to health financing requirements of others. It is supported further with what Xenia S. et al (2006), found in a comparative analysis of 3 African countries (Kenya, Senegal and South Africa), they observed that the percentage of households with catastrophic expenditure is lower among the insured than the uninsured in all three countries, while the magnitude of the difference varies across countries.

It has been further observed that being covered by a social protection programme reduces a household's financial loss to some extent, but it does not fully ensure that the household is protected from facing catastrophic health expenditure. However other findings disapprove that CBHI cannot offer financial protection to its members. McIntyre, D. (2005) argues that there is very limited empirical evidence about the ability of CBHI to generate sufficient revenue to improve access to health services and to ensure adequate financial protection for members. She argues further that these schemes tend to focus on rural areas and informal sector workers, whose income tends to be relatively low rendering their revenue-generating potential much lower than that of voluntary or mandatory insurance for formal sector employees.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

The purpose of this study was to establish the extent to which Community-Based Health Insurance offers financial protection among its members by assessing the level of expenditure for and utilization of health care services across the board. Secondly it was meant to determine; whether the Community-Based Health Insurance has addressed the problem of catastrophic expenditures especially among individuals who have taken the health cover.

5.2 SUMMARY OF FINDINGS

1489 households were considered for this analysis, 1161 were covered with health insurance while 1161 were not covered. A minimum of 1558 respondents were sampled with 1230 have taken health insurance cover while 328 have not. Heads of households covered with health insurance tend to be older on average ($p<0.000$) and either married, divorced or widowed ($p=0.007$). The sample included more households with an HIV/AIDS patients than those without an HIV/AIDS patients ($p<0.000$). However, insured and non-insured households were comparable in terms of the gender of the head of the household, marital status of the head of the household and the number of children under 5 years old living in the households and the household-level wealth status.

A total of 1230 individuals with health insurance coverage and 328 individuals without health insurance coverage were surveyed in relation health service utilization. Samples of respondents with health insurance and without health insurance coverage were balanced in terms of gender, age, education attainment, marital status, HIV serological

status and household-level wealth status. However, respondents without health insurance coverage tended to live in households with more children under 5. Majority of the respondents both insured and uninsured had basic primary education level while a good number had no formal education. However a minority both insured and uninsured had completed secondary education. There was parity among individuals who were married, divorced or widowed whether insured or not insured. Most of the respondents who took a cover were either married or divorced. The never married individuals had poor uptake of insurance cover.

While it was observed that the poor and middle class individuals enrolled more in the health cover unlike their counter-parts in high socio-economic class. The insured are likely to utilize health care services unlike the uninsured. Among the married insured individuals are more likely to utilize health care services unlike the unmarried once. There was no significance difference among households in households with or without HIV/AIDS patients in terms of health utilization. Health insurance cover was high among the poor people than individuals living in rich and middle households. The study indicates that households with health insurance cover are less likely to experience catastrophic health expenditure than in households without an insurance cover. Catastrophic health expenditure was less likely to occur in insured households without HIV/AIDS patients.

5.3 CONCLUSIONS

This study has contributed to the existing knowledge on the roles of the Community-Based Health Insurance in providing protection by reducing Out-Of-Pocket expenditures for health and by increasing health service utilization. On the basis of the outlined findings the following conclusions were drawn:

1. Community-Based Health Insurance ensures increased utilization levels of health care services by its members as indicated in the findings: insured individuals are likely to use health care services unlike the uninsured, especially for the vulnerable households.

2. The Community-Based Health Insurance offers protection to its members against catastrophic health expenditure. Based on the results of this study it was found that households with insurance cover are less likely to experience catastrophic health expenditure, especially for the vulnerable households.

5.4 RECOMMENDATIONS

Tabor (2005) and Ekman (2004) indicate that where Community-Based Health Insurance schemes have been successfully introduced, they have reduced the amount that poor people pay in out-of-pocket payments when they seek care and they have contributed to more frequent utilization of health services. According to Tabor (2005) there is ample evidence that prepayment and risk sharing through community involvement in health care financing, no matter how small, increases access by poor populations to basic health services and protects them to a limited extent against the impoverishing effects of illness.

Rwanda identified Community-Based Health Insurance (CBHI) as the promising alternative health scheme in the context of the country's poverty, improving equitable access and better utilization of health care services.

Based on the results of this study, which show that CBHI offers financial protection to its members while increasing health services utilization, the subsequent recommendations are that:

1. The government should enhance promotion and strengthening of the Community-Based Health Insurance schemes coverage and sustainability, as they are proven to

provide health insurance coverage and subsequent financial protection mostly for the vulnerable population in the rural informal sector. .

2. Further analytical studies on Community-Based Health Insurance should be conducted for more evidence on the impact of CBHI on health care service utilization and financial protection both in the rural and urban settings.

3. As Rwanda is currently implementing reforms in Community-Based Health Insurance towards universal coverage, this learning process suggests for regular studies on the various effects of CBHI on households expenditures for health, in order to adopt necessary and timely adjustments.

5.5 CONTRIBUTION OF THE STUDY

This study will contribute to the body of knowledge necessary for policy makers and researchers in countries that have elected to implement or introduce the Community-Based Health Insurance, particularly in developing countries and in informal rural contexts where the majority of their poor populations live and yearn for an insurance policy that ensures they are financially protected and able to access affordable health services.

5.6 CONCLUDING REMARK

In Rwanda, like in other developing countries, the bigger section of the population is in the informal sector, particularly in rural and mostly poor areas. Poor people are less likely to seek care when sick than those who are better off, partly because of their poor financial standing.

According to the Households living condition survey (Rwanda Institute of Statistics EICV II 2006), the unmet needs for healthcare for individuals in Rwanda is high, with over two thirds of people across socio-economic quintiles reporting not seeking professional care

when feeling sick. The CBHI schemes were proved to be effective particularly in that context and Rwanda has deliberately introduced them.

This research has attempted to contribute to the existing evidence on CBHIs roles for effective financial protection to their member households against catastrophic health expenditures as compared to uninsured households, and the CBHI membership role in improving accessibility to health care services.

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Appendices/Annexures

ANNEXURE 1: DATA COLLECTION INSTRUMENT

SUGGESTED TITLE: Financial protection through Community-Based Health Insurance in Rwanda

Background

User fees have been one of the biggest barriers to health care for the poorest members of the low-income countries. To provide some forms of financial protection, Rwanda has implemented Community-Based Health Insurance (CBHI) schemes also known as “mutuelles”. Available literature reports mixed findings of whether such schemes provide effective protection to their members. The purpose of this study is to investigate the extent to which CBHI provides financial protection to their members as opposed to nonmembers of CBHI. Specifically, the research questions addressed in this study are: what is the effect of health insurance coverage on the incidence of catastrophic health expenditures? How does the effect of health insurance coverage on the incidence of catastrophic health expenditures vary between income groups and other characteristics of households?

Method

The data that will serve as basis for this analysis was collected as a part of a large panel survey that evaluated the impact of Performance-Based Financing (PBF) for health in Rwanda (PBF Impact Survey), jointly conducted by the Ministry of Health, the World Bank and the National University of Rwanda School of Public Health. Two waves of data were collected in 2006 (baseline) and in 2008 (follow-up) and reported about the Out-Of-Pocket expenses for health by members and non-members of CBHI residing in a sample of 2145 households in addition to their demographics and socio-economic characteristics.

Variables

Outcome:

The main outcome in this study is out-of-pocket health household expenditure, global and by items (medicines, medical consultations, diagnostic exams, hospitalization and other). Health-related expenses were obtained with reference to health care received within four weeks prior to the interview. To identify the occurrence of catastrophic health expenditures among households, a threshold will be defined above which households are identified as having experienced catastrophic health expenditures.

Main independent variable:

Health insurance coverage: because the study aims to assess the effect of community health insurance scheme on out-of-pocket health expenditures, community health insurance coverage is the key control variable. This will be a binary variable indicating whether the household was enrolled in mutuelles or not.

Covariates:

Household assets index: this variable will be used as a proxy for household income. Assets were measured as the value of owned houses, durables in the house, farm animals, farm equipment, and microenterprise equipment. The index will be collapsed into quartiles of the asset distribution.

PBF program: This was a binary variable indicating whether the household was located in the catchment area of a health facility with PBF or in the control group area.

Individual socio-demographic characteristics: socio-demographic variables include the head of household's gender, age, education attainment, marital status, and the total number of family members.

Time: this was a binary variable indicating the time of interview which could be either the baseline (2006) or the follow-up (2008).

DATA COLLECTION TOOL

Tables below present questions and corresponding coding options that will be used in this analysis.

Note that questions regarding all household members were posed to the head of the household or spouse.

- **A specific question to identify the Head of household was:**

Question	Response options
Question 106: What is (NAME)'s relationship with the head of the household?	Codes: 1 Head of household 2 Spouse / Co-spouses / rival 3 Son / Daughter 4 Father / Mother 5 Grandson / Granddaughter 6 Grandfather/ Grandmother 7 Brother / Sister 8 Uncle / Aunt 9 Cousin 10 Nephew / Niece 11 Step child 12 Foster child 30 Local Friend/Neighbor 31 Non-resident Friend 32 Other family members 33 Cleaning lady 34 Other Employee 35 Tenant/Renter 36 Son/Daughter IN LAW 37 Father/Mother IN LAW 96 Other (specify) -99 Don't Know

Health expenditures were measured by the means of the following questions:

Related question in PBF study	Value
General Health questionnaire on Households	
- Question 145a (Mutuelle 2): How much does the [NAME] pay for outpatient consultation?	Rwanda Francs
- Question 145c (Mutuelle 2): How much does [NAME] pay for outpatient medicine?	Rwanda Francs
- Question 146a (Mutuelle 2): How much does [NAME] pay for hospitalization?	Rwanda Francs
- Question 146c (Mutuelle 2): How much does [NAME] pay for hospital medicine?	Rwanda Francs
- Question 140 (Hospitalization): During [NAME]'s stay, how much was paid by the household to the health facility in total, including payments made by insurance?	Rwanda Francs
- Question 141 (Hospitalization): In addition to payments made by your household, were any payments made by (SOURCE)? 1Yes; 2No: (Mutuelle/ Government/Family/Other)	Rwanda Francs
- Question 411 (Adult Care): During your stay, how much did you pay to the health facility in total? Include payments made by the insurance?	Rwanda Francs
General Health questionnaire (2008) on Enfant	
- Questions 813a and 813b: when getting public (a) Private (b) medical care for (name) during the last 4 weeks, how much did you pay for: a. Medical consultation fees b. Any supplies or equipment c. All medicine prescribed d. Medicine that you bought yourself/ not prescribed e. Laboratory tests f. Other (specify___) WRITE "000000" IF NO PAYMENT MADE	Rwanda Francs

Independent variables were measured by the means of the following questions:

Variable	Related question in PBF study	Response options
Membership to a CBHI	**General Health questionnaire (2008) on Households**	
	Question 141a (Mutuelle): Is [NAME] a member of a health insurance?	1.yes 2.no -99. Don't know
	Question 141b (Mutuelle): [NAME] is a member of which insurance health	1. RAMA 2. Mutuelle (CBHI) 3. AAR 4. MMI 5. FARG Other
Gender	Question 102: Sex	Code : 1for M 2 for F
Age	Question 103a: How old is (NAME)? CHILDREN UNDER 12 MONTHS: WRITE 00 Don't know….-99	Years
	Question 103b: ONLY FOR CHILDREN UNDER 5 YEARS OLD Don't know -99	Months
	Question 104: Date of birth. (NAME) on what day, month and year was he/she born? For adults, ask them their IDs. For children below 12 years, ask to them their births certificates or vaccination cards.	DD-MM-YY
Education	Question 123: Has (NAME) ever attended school?	Code: 1 for yes 2 for No
	Question 124a (Education): What is the highest level of school (NAME) has attended?	EDUCATION LEVEL None……..0 Nursery……..1 Primary 6 years…….2 Primary 8 years……..3 Post-Primary/ CERAI..4 Secondary……..5 Tertiary/university…..6 D.K……..-99

Residence	Question 201: Type of habitat	Code: 1 Village 2 Old settlement type/isolated residence 3 modern/ cadastral building 4 Slum areas 96 Other (specify)
Housing	Question 202: Type of house	Code: 1 An isolated house with one household 2 A building standing alone occupied by many households 3 A multi-story building 4 Many houses confined together and occupied by many household 5 Many houses confined together and occupied by one household 96 Other (specify)
Water sources	Question 212: What is the main source of drinking water for the members of your household?	Code: 1 From Electrogaz 2 Open well in a dwelling 3 water drawn from a dam 4 River/stream / pond 5 Protected well in yard 6 Unprotected well in yard 7 Tap water / bought from another source 8 Public water borehole 96 Other(specify)
Toilet	Question 219: What kind of toilet facilities does your household have?	Code: 1 Flush VIP toilet 2 Protected pit Latrine 3 Traditional toilet, open 4 Traditional toilet, not open (revised from baseline) 5 No facility/bush, forest

		96 Others (specify)
Building material	Question 220: What are the main materials that were used in building the outside of the house?	Code: 1 Blocks of sand (mud/soil) 2 Wood without cement 3 Wood and cement 4 Wood and plaster 5 Bricks (burned) 6 Blocks of cement 7 Stones 8 Polythene sheeting 96 Others (specify)
Roofing material	Question 221: What are the main roofing materials for your house?	Code: 1 Thatched with grass 2 Iron sheets 3 Block cement 4 Tiles 96 Others (specify)
Agriculture equipment	Question 249: Does any one of you in the household posess agricultural equipment below:…….?	Code: 1 Yes 2 No
	Question 251: How many (TOOL) do you have ?	1 Hoe/spade 2 Slasher 3 Hand axe; …; 7 Wheel barrow 8 Bucket; …; 13 Tractor; …
Household assets	Question 256: How many (ITEM) does your family own	1 Complete sofa set; …; 4 Radio; 6 Television; …; 18 A bed; …; 23 Car; …; 27 A bicycle

ANNEXURE 2: AUTHORIZATION TO USE THE PBF DATABASE

REPUBLIC OF RWANDA

Date 02/04/2010

MINISTRY OF HEALTH
Po Box 84 KIGALI
Tel: (250) 2525577253, 2525576853

To whom it may concern:
Authorization to use PBF Impact survey database.

This is to confirm that Mrs. Diane Muhongerwa; a Health Economist working with the World Health Organisation in Rwanda; participated in a training workshop on the use of the Performance-Based Financing (PBF) Impact Survey data, organized by the Ministry of Health in collaboration with the School of Public Health and World Bank in Rwanda, over the period 22 March 2010 to 2 April 2010.

Mrs. Diane Muhongerwa, like the other Rwandan researchers that participated in the workshop, was introduced to the database and authorized to use it for their research in the context of strengthening the capacity of Rwandan researchers and putting to maximum use the database into which the Government of Rwanda heavily invested.

Sincerely,

Dr Richard SEZIBERA
Minister of Health