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FINANCIAL PROTECTION AGAINST CATASTROPHIC HEALTH EXPENDITURES AMONG GHANAIAN HOUSEHOLDS

BY

LOIS AKUA OWUSU-SEKYERE

(10443653)

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DECLARATION

I do hereby declare that this work is the result of my own research and has not been presented by anyone for academic award in this or any other university. All references used in the work have been fully acknowledged.

I bear sole responsibility for any shortcomings.

Name	Signature	Date
LOIS AKUA OWUSU-SEKYERE (10443653)	……	.....

CERTIFICATION

We hereby certify that this thesis was supervised in accordance with procedures laid down by the University of Ghana.

....

PROF. JOSHUA Y. ABOR **DATE**

(1ST SUPERVISOR)

....

DR. PATRICK O. ASUMING **DATE**

(2NDSUPERVISOR)

DEDICATION

This work is dedicated to the LORD GOD Almighty for His divine wisdom and strength given me to go throughout the course this research.

Also, to my parents, Dr. and Mrs. Owusu-Sekyere for their generous support, to David Tetteh who has stood beside me even in hard times and to Rev. and Mrs. Asare for their dedication and love.

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ABSTRACT

Out-of-pocket payments for healthcare in low and middle income countries have potentially catastrophic consequences for vulnerable households. These can lead to vicious cycles of impoverishment and debt. Ghana introduced the National Health Insurance Scheme (NHIS) to protect Ghanaian residents from the financial consequences of health and illness shocks.

This thesis contributes to the discussion on the economic consequences of high Out-of-Pocket (OOP) payments for health care. The sixth round of the Ghana Living Standards Survey, collected over the period between August 2012 and August 2013 from a nationally representative sample of 16,772 households was used as the main data set. A probit model was used to predict enrollment in NHIS. Also, catastrophic health expenditures (defined as out-of-pocket health expenditures exceeding set thresholds and causing economic suffering to the household) were further adjusted by concentration indices that indicate whether the distribution of these payments are different between the rich and the poor. Health Expenditures are deemed Catastrophic when they go beyond the set threshold at which the livelihood of a household is adversely affected causing them to become poor or poorer. The catastrophic expenditures were then regressed on a number of household socio-economic factors to determine factors that predict the incurrence of such expenditures.

The analyses showed that only 1.1% of Ghanaian households incurred catastrophic health expenditures. On average, these payments have low intensity of 0.001% (in excess of the catastrophic threshold – 10% of household expenditure being the proportion beyond which a household may become impoverished or deeper impoverished by out-of-pocket health expenditures). The regression results showed that households that have insurance coverage are found to be 2.4 percentage points less likely to incur catastrophic health expenditures than

households without health insurance. However, the burden of such payments is found to be heavier on poorer households.

Thus, NHIS was found to offer some financial protection against catastrophic health expenditures among Ghanaian households. Education on the indispensability of the NHIS to sustenance of livelihood should be intensified among the poor and the very poor in Ghana,

Keywords:

Catastrophic health expenditure, health insurance, impoverishment, Ghana

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND TO THE STUDY

The payments made by households to obtain health care could pose a great financial burden if its magnitude relative to a measure of household resources is high. The nature, in this regard, of health payments made by Ghanaian households is the focus of this thesis. In the year of Ghana's independence, Osagyefo Dr. Kwame Nkrumah, the first president instituted free health care policy where by all Ghanaians received medical attention free of charge until the year 1966. With the introduction of a cost recovery program beginning in 1969, fees were introduced into the health delivery sector. By the year 1985, the "Cash and Carry" system, whereby all residents were required to make payment before they receive healthcare, came into full implementation (Arhin-tenkorang, 2001; Blanchet, Fink, & Osei-Akoto, 2012). In 1995, a study ordered by the government was carried out to assess the feasibility of establishing a National Health Insurance Scheme (NHIS) in Ghana. However, in 1997, President Jerry John Rawlings, acting after the advice by the IMF/World Bank slashed the share of national budget spent on health care from 10 to 1.3%. Eventually, an NHIS law was passed in 2003 and was successfully rolled out in 2005. The National Health Insurance Act 650, 2003 states clearly the objective of the NHIS is to offer financial protection to Ghanaian residents against health shocks which are defined as unpredictable illnesses that diminish health status (Akazili, Garshong, Aikins, Gyapong, & McIntyre, 2012).

This thesis is concerned with contributing to the discussion of financial burdens of households brought about by disease and injury. This work adds to the debate by presenting evidence of the

occurrence and intensities of catastrophic payments among households in Ghana. The distribution of these payments between the poorest households and the more well-to-do or better-off is an important aspect of the discussion that is presented in this work. Further, the role of the NHIS in offering financial protection against health expenditures that are detrimental to the financial soundness of household is also included in this work.

Equity in health care system has received much attention over the decades, prompting debates on whether access to health care should be according to ability to pay or need for care. In 2010 for instance, member states of the World Health Assembly were encouraged to "aim for affordable universal coverage and access for all citizens on the basis of equity and solidarity" through the World Health Report on universal coverage for health care (Moreno Serra & Smith, 2012). Universal coverage basically proposes that health care be financed according to ability to pay while access and distribution of health care be according to need for health care. There has also been a development of analytical methods that reveal the incidence of health care financing; whether progressive, regressive or proportional. They also analyze the incidence of health care benefit by assessing the monetary value of health care services receive by socio-economic groups; whether it is pro-poor or pro-rich.

The standards of living of households are adversely affected as efforts are made to contain the impact of financial stress brought on by health or illness shocks. However Out-Of-Pocket (OOP) payment for health care is found the be the dominant financing mechanism for health care in most developing countries across the globe (Xu et al., 2003). Efforts have been centered on creating awareness on the need to reduce and possibly eradicate the incidences of catastrophic OOP payments in poor communities in developing countries (Chatterjee & Gilliam, 2009; Damme, Leemput, Por, Hardeman, & Meessen, 2004; Hwang, Weller, Ireys, & Anderson, 2001).

The most popular remedy that has been employed by developed and developing countries alike in the fight against OOP payments has been the introduction and promotion of health insurance schemes (Macha et al., 2012).

The nature and purpose of health insurance ideally should offer protection against health shocks that can be detrimental to the future economic welfare of households. This is because of the risk-pooling property of insurance packages, so that even a little provision set aside as premium payments become the ticket to enjoy protection against illness shocks. Even so, enrolment has seen low records in most developing countries(Jutting, 2001; Gobah & Liang, 2011).

1.2 PROBLEM STATEMENT

During the commemoration of the 10th anniversary of the Scheme in September 2013 the Ghana National Health Insurance Authority (GNHIA) indicated that cumulatively, the NHIS has had 22 million people subscribing since its establishment in 2003 but only 9 million remained active subscribers. As at October 2013, a report released by the Universal Access to Health Care Campaign Coalition stated that in spite of progressive efforts by the GNHIS since its inception in 2003, Ghana is still far from achieving universal coverage (Garshong &Akazili, 2015). It provides evidence of 15 million people who make up 65% of Ghana's population still paying OOP for health care.

Paying OOP health care poses financial risks of health shocks for the household. The utility for life presupposes that the future economic welfare of the household may be sacrificed to afford good health. The coping mechanisms employed which include cutting back basic-need

expenditures, selling off assets, borrowing or simply suffering the consequences of ill-health have both short and long term consequences for the economic welfare of households (Flores, Krishnakumar, O'Donnell, & Van Doorslaer, 2008; Gotsadze, Zoidze, & Rukhadze, 2009; Somkotra & Lagrada, 2008; Xu et al., 2007).

Many academic writings have investigated the nature of impact that national health insurance schemes have on the problem of catastrophic OOP payments (Ekman, 2004; Axelson et al., 2009; Spaan et al., 2012; Chankova, Sulzbach & Diop, 2008). Health insurance has even been found to in some cases, due to its design and lapses in functioning increase the financial risks of its members. With or without health insurance catastrophic health expenditures may be incurred (Gertler & Gruber, 2002; Wagstaff & Lindelow, 2008).

The opportunity to escape the poverty trade through investing in human capital may be lost if there is a wide incidence and high intensities of catastrophic health expenditures in the country (Van Doorslaer et al., 2007).

1.3 RESEARCH OBJECTIVES

The objectives of this research are to:

I. Examine incidence and intensity of catastrophic payments for health care among Ghanaian households
II. Predict characteristics of households that enroll unto the NHIS and identify the effect of NHIS on Catastrophic Health Expenditures.
III. Determine whether catastrophic payments are regressive or progressive.

IV. Identify the characteristic features of households that incur catastrophic expenditures for health care.

1.4 RESEARCH QUESTIONS

In this study, we subsequently seek to answer the following questions;

I. What is the incidence and intensity of catastrophic health expenditures among Ghanaian households?

II. What characterizes households that are enrolled unto the NHIS and what effect does NHIS have on the incidence and intensity of Catastrophic Health Expenditures?

III. Are catastrophic payments for health care regressive or progressive?

IV. Which characteristics are associated with the likelihood of household incurring catastrophic health expenditure?

V. Does the NHIS reduce the incidence of catastrophic health expenditures?

1.5 SIGNIFICANCE OF THE STUDY

The significance of this study lies in its role of identifying health expenditures that are out-of-pocket for households as a major determining factor of household.

Secondly, it is my expectation that shedding some light on the constrained ability of the GNHIS to reach the poorest households who are most adversely affected by catastrophic health payments

will inspire a redirection of public health expenditure and public education on health insurance in Ghana.

Thirdly, knowledge of characteristics associated with such households which are most at risk of suffering catastrophic health expenditures may provide informed interventions that can create solutions.

Lastly, investigating the effects of catastrophic health expenditures and its incidence or otherwise even among NHIS holders may advise reformation of the services and drugs listed under the NHIS at least for the most financially vulnerable households.

1.6 SCOPE THE STUDY

The study covers households across Ghana. The sample is distributed over all the ten regions and is fairly representative of the Ghanaian population.

1.7 RESEARCH ORGANIZATION

Chapter one covers the introduction which sets out the background and motivation for the research. It also gives a brief insight into the significance and scope of the study as well as its organization.

Chapter two offers an overview and trends in Ghana's health care financing.

In Chapter three, we conduct an in-depth review of literature on catastrophic health expenditures. This helps in identifying the research gap which the research attempts to fill.

Chapter four includes methodology and data collection for the study.

Chapter five covers an analysis of findings and discussion of results.

In Chapter six, we summaries our study, draw conclusions from our findings and subsequently make recommendations.

CHAPTER TWO

OVERVIEW OF HEALTH CARE FINANCING IN GHANA

2.1 INTRODUCTION

This chapter provides a quick summary of the nature and history of health care financing in Ghana. There is also an overview of the developmental trend of health care financing in Ghana, the state and challenges of financial protection against the impoverishing effects of out-of-pocket payments in Ghana.

2.2 TREND OF HEALTH CARE FINANCING IN GHANA

Health care in Ghana was made free of charge for all citizens after the country attained independence in 1957. However, along the line, a host of economic shocks that necessitated high amounts of medical spending made this approach too expensive to sustain, which led to the introduction of nominal payments under the Structural Adjustment Programs which begun in 1983 (Asenso-Okyere et al., 1997). Along the line, in 1985, user fees or what is popularly known as the "cash and carry" was introduced (Gobah & Zhang, 2011; Mills et al., 2012). Under the cash and carry system, everyone in Ghana was required to make payment for every time they had to access health care services. Patients bore the cost of drugs and some medical consumables while the government took care of other health costs like consultation fees, salaries and emoluments for health care workers in public health facilities. It is however important to note that even under this system, the aged above 70 years and children under five years were exempt from payment (Asenso-Otchere et al., 1997). This policy lasted until 2004, within which time it

erected high financial barriers to health care access for majority of the Ghanaian populace (Witter & Garshong, 2009).

2.2.1 Inception of Health Insurance in Ghana

In an attempt to salvage the worsening situation, Community-based Mutual Health Insurance Schemes were introduced in the 1990s. By the year 2000, Ghana recorded high OOP health expenditures, leading to very low utilization of health services as would be expected of a low income country. This was the motivation for which the National Health Insurance Scheme was introduced in 2003. The National Health Insurance Scheme was set up in line with a main policy framework which was known as the Ghana Poverty Reduction Strategy (GPRS) which was implemented in the same year, 2003. The sole aim of the NHIS was to offer financial protection so that the poor would be able to access decent health care as against the cash and carry system that erected serious barriers to access. Apart from increasing access, the establishment of the scheme was aimed at improving upon the quality of products, services and health care in general. There is little surprise that the establishment of the scheme receive immense applause especially among the more vulnerable income groups (Adamba, 2010).

The NHIS has been seen as one of the best social intervention programs in the history of Ghana's existence as an independent country (Owusu-Sekyere & Chiaraah, 2014).

2.2.2 The National Health Insurance Act

The Ghana National Health Insurance Scheme (GNHIS) came into existence by the establishment of an Act of Parliament in 2003 (Act 650) which was later amended by NHI Act,

2008 (Act 753) to correct the inconsistencies and the legal ambiguities in the Act 650 (Owusu-Seyere & Chiaraah, 2014). Under the scheme, there is the District-Wide Mutual Health Insurance Scheme, the Private Mutual Health Insurance Scheme and then the Private Commercial Health Insurance Scheme. The year 2012 saw a new NHIS Act 2012 (Act 852) to replace the first two Acts. This was done to cater for the changing developmental trends within the health sector while putting in efforts to solidify the gains that had been made ten years down the line after its implementation. In this new act, enrolment onto the NHIS was made legally mandatory for all Ghanaian citizens. The revisions also included a unification of NHIS with District offices, exemptions from premium payments by the mentally derailed, an inclusion of relevant family planning packages, the enforcement of a 10% expenditure cap on non-core NHIS activities and lastly a composition of board oversight committees for Scheme Operations, Private Health Insurance Schemes and Fund Management (Sulzbach, Garshong & Owusu-Banahene, 2005).

2.2.3 Funding of the Ghana National Health Insurance Scheme

Three major funding models were combined in the GNHIS – the Beveridgean (National Health Insurance levy, 2.5% Value Added Tax), the Bismarckian (2.5% deduction from contributions made by workers as contributions to the Social Security and National Insurance Trust - SSNIT) and the graduated informal sector premium based on ability to pay. The first two sources are reported to account for more than 90% of all inflows to the Scheme. The 2.5% value added tax is placed on most goods and services. However goods and services that are regarded as basic and largely consumed by the poor are exempted from this tax bracket. The informal sector premium payments are scheme-specific and directly based on ability to pay. Apart from the above listed

sources, the rest of the funds are accrued from investments made by the National Health Insurance Council (NHIC), additional funds that are approved by the parliament of the government of Ghana and international donor funds directed to the scheme (NHIA, 2010).

The NHIS registers members on an individual basis instead of household level. Interestingly, enrolment unto the NHIS is compulsory and mandated by law for all residents of the country. Act 852 directs that employers have the responsibility of ensuring that all their employees complete registration under the NHIS. Members who are 70 years and above as well as those below the age of 18 years are exempt from payment of premiums, while members of ages 18 to 69 pay premiums decided by the District Mutual Health Insurance Scheme (DMHIS) and approved by the NHIA. Premium-paying adults would normally pay an annual premium between GHS7.20 (USD1.82) and GHS48.00 (USD12.11) according to the Socio-economic status of the individual. The difficulty, however is in determining which socio-economic class one belongs to. Therefore, what happens in practice is the DMHIS sets a flat fee for its own district. Formal workers whose NHIS premium are deducted from their salaries are exempt from paying at the DMHIS albeit they have to go through the actual registration process to be considered as members of the scheme (NHIA, 2008).

2.2.4 Operation of the GNHIS

In a bid to make the NHIS more affordable and accessible to all, each district is divided into Health Insurance Communities so that Health Insurance can be brought to the door step of all Ghanaians. These communities are defined as any group of adults who live in the same geographical areas and converge to register and vote at specifically pre-determined polling

station or stations in the area. Under this arrangement, a health insurance committee is formed in each health insurance community to oversee the collection of contributions and supervise its deposit in the District Health Insurance Fund (NHIA, 2008).

2.2.5 GNHIS Benefits Package

The minimum pre-defined benefit package for all Ghanaian residents under the NHIS covers health care costs for 95% of all diseases in Ghana. Even so, all district- wide schemes are afforded the liberty to compose their own lists of treatable diseases under the condition of approval by the National Health Insurance Council. Among the 5% of diseases not covered are dentures, orthopedic aids, hearing aids, beautification surgery, optical aids, AIDS drugs, treatment of chronic renal failure, heart and brain surgeries. These exclusions are partially due to high relative costs of treatment. As it stands now, the NHIS waives fees and levy payments for persons below 18 and above 70 years of age, SSNIT contributors and pensioners, pregnant women, mentally ill persons, differently-abled individuals, LEAP (Livelihood Empowerment Against Poverty) beneficiaries and indigents according to the ministry responsible for social welfare (NHIA, 2010).

The NHIS contracts accredited health care provided who provide needed health care to Ghanaian residents who are actively registered under the NHIS. The accredited providers include public, private and church-owned health facilities who deliver health service for subsequent reimbursement when claims are submitted to the NHIA. As of now, the accredited health care provided are reimbursed in accordance with the Ghana Diagnostic Related Groupings (G-DRGs) and fee-for-service (FFS) for drugs which follow a medicines tariff list (NHIA, 2012).

2.2.6 Enrollment onto the GNHIS

A number of research works have provided evidence to prove that access to health care for majority of Ghanaians after the inception of the scheme has seen great improvement. Enrollment over the years has seen increase year on year (Owusu-Sekyere & Chiaraah, 2014).

As at the end of December 2011, the total active membership of the scheme increased from 8.16 million in 2010 to 8.23 million in 2011 showing an increase of 0.8% over the 2010 figure and representing 33% of the population. Table 2.2 presents NHIS membership trend from 2008 to 2011, as presented in Table 2.1.

Table 2.1: Active Membership

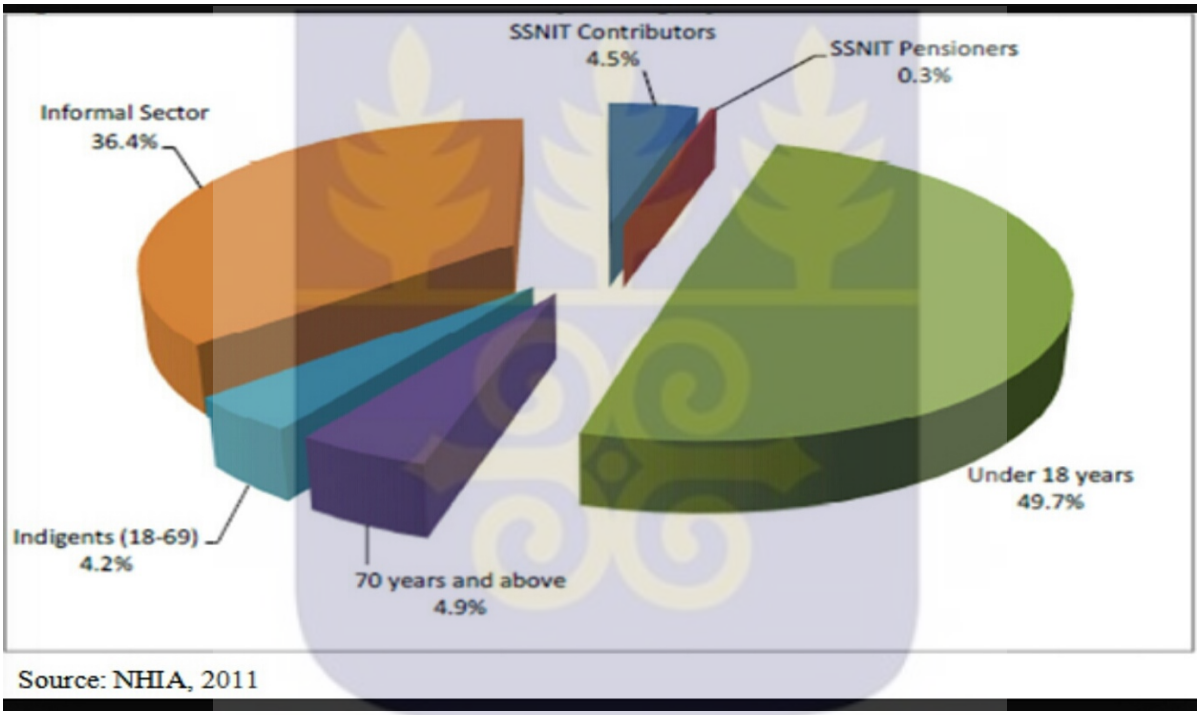
Year	2008	2009	2010	2011
Registered Members (Cumulative)	12,518,560	14,511,777	18,031,366	21,392,402
Active Membership (Old Methodology)	9,914,256	10,638,119	14,157,708	17,518,744
Active membership (New Methodology)	n/a	n/a	8,163,714	8,227,823*

*Figure is provisional Source: NHIA, 2011

According to the National Health Insurance Authority (2011), the new active membership figure of 8.16 million for 2010 does not essentially signify a drop, since there is no comparative historic data based on the new methodology of computation. While the perceived drop in active membership is largely due to the application of the new methodology for reporting, other sub-standard practices from the schemes such as the issuing of old ID cards, the granting of validity period exceeding the three months period mandated for temporary cards and the printing of temporary ID cards outside the NHIS' computerized system. This might have accounted for the

lower figures for the reported new active membership data in 2010. The distribution of active members as at December 2011 by category is as follows: children under 18 years constitute 49.7% of NHIS active members followed by the informal sector 36.4% with the SSNIT Pensioners being the least 0.3% as seen in figure1 below.

Figure 2.1: Categories of enrolled members of the GHNIS



Source: NHIA, 2011

2.2.7 Out-Of-Pocket Payments under the GNHIS

The Act 852 of 2012 stipulates that the enrollment unto the GNHIS is mandatory with legal backing for all Ghanaian residents. However, due to inadequate measures towards enforcement, more than half of Ghana's population remains uninsured under the (NHIA, 2012). This

presupposes that the duty of the NHIS in providing financial protection to Ghanaian residents will be hindered in its achievement.

Adamba (2010) also draws attention to the worsening state and functioning of Ghana's NHIS. As he reports, the decrease in quality of care and drugs administered could be blamed on both ex ante and ex post moral hazard as well as adverse selection issues facing the management of the scheme. Some members of the scheme having lost interest due to the frustrations they have suffered have failed to renew registrations and resorted to paying out-of-pocket for health care.

The World Health Organization provides information on the out of pocket payments that are made in selected countries worldwide. In Table 2.2 there is represented the trend of health care payments that were made out of pocket expressed as a percentage of total health expenditures in Ghana. The years that are presented here only starts from year 2000 and ends in 2013.

Table 2.2: OOP Payments as a percentage share of Total Health Expenditure (THE)

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Value	31.92	25.58	22.80	22.50	19.50	22.20	18.92	18.44	16.15	29.09	36.19

Source: World Health Organization Global Health Expenditure database

CHAPTER THREE

LITERATURE REVIEW

3.1 INTRODUCTION

Provided in the progression of this chapter are a definitions and overviews of health care financing, financial protection, out-of-pocket payments, catastrophic health expenditures and impoverishment.

3.2 HEALTH CARE FINANCING

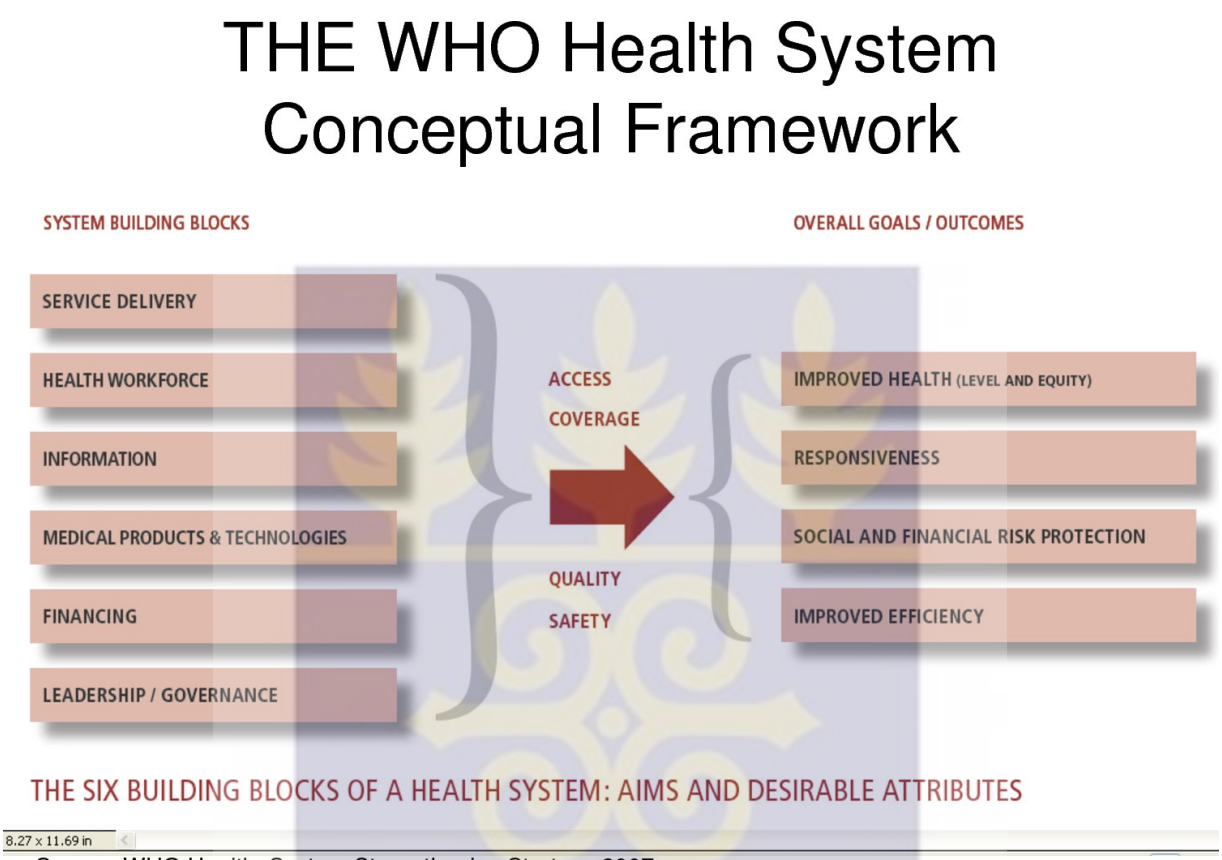
3.2.1 Definition of Health Care Financing

Health care financing is a component of the health system (the body of people, institutions, and resources that make available services to meet the health needs of the population in question). It addresses "the mobilization, accumulation and allocation of money to cover the health needs of the people, individually and collectively, in the health system… the purpose of health financing is to make funding available, as well as to set the right financial incentives to providers, to ensure that all individuals have access to effective public health and personal health care" (WHO, 2000).

Hsaio & Liu (2001) have defined it as the "mechanisms for paying health care".

The figure 3.1 shows the role of health care financing within the health system of a country.

Figure 3.1: Health System



Source: WHO Health System Strengthening Strategy 2007

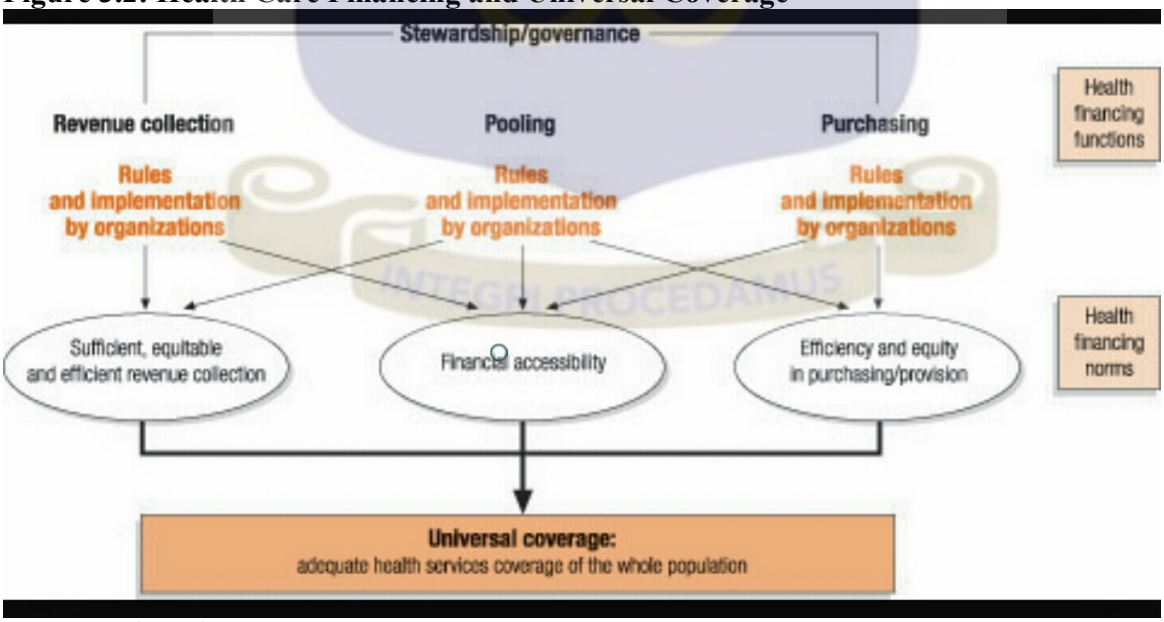
3.2.2 Overview of Health Care Financing

Health care financing is crucial to the proper functioning of any health system in its fundamental duty of maintaining and improving human welfare. But financing in health care is much more complex that just generating funds. The indicators that are used to assess, monitor and evaluate health care financing are built on explicit measures of the goals that they are meant to achieve. These goals, even though they take various forms, all fall under a general notion that apart from seeking to raise sufficient funds for health, people must not be put at risk of severe financial

hardship –often referred to as financial catastrophe –or impoverishment in their bid to obtain health care services (Flores et al., 2008; O'Donnell, van Doorslaer, Wagstaff, & Lindelow, 2008). This explanation encapsulates two dimensions to health care financing; raising funds and providing financial protection. Since there is an indispensable need to apply efficiency in order to achieve these two goals, efficiency in resource allocation is usually added as a third objective of the ideal health care financing. Conceptually therefore, health care financing is divided into three inter-related functions, namely revenue collection, fund pooling, and purchasing/provision of services (Macha et al., 2012; Mills et al., 2012). It is important to understand the key components of these functions in order to properly appreciate the measurement of strategies and indicators used for them.

Figure 3.2 exemplifies the processes involved in health care financing toward the achievement of universal access to health care (Borrell et al., 2001; Mills et al., 2012).

Figure 3.2: Health Care Financing and Universal Coverage



Source: Carrin et al (2015)

3.2.3 Sources of funds for Health Care Financing

The sources of funds for health care financing in middle and low income countries are usually a mix of domestic and external sources. Over the years, donor funds towards health care has increased especially since the year 2000, however there is still difficulty in achieving universal coverage[1] even with the most basic set of health care services. Despite the debate on exactly how much is needed to ensure decent equity in access to health care, the adjustment of Commission on Macroeconomics and Health estimates of the cost of a core package to current prices which reveals that on average, US$40 is needed per person each year (WHO, 2008). Even though many agree that this is an underestimation of the actual need[2], almost 33% of the countries that are members of WHO did not achieve this amount as at 2005 while 17.1% spend less than US$25 per person per year in spite of growing external contributions(WHO, 2008). For this particular objective of health care financing, the ideal indicator for measurement would be required to determine the total amount and the adequacy of the funds that are raised.

3.3 FINANCIAL PROTECTION

3.3.1 Definition of Financial protection

Financial protection against health risks refers to the provisional mechanisms that are in place to bear the costs that arise from health care brought on by illness and injury so that the economic

[1]Universal coverage, also referred to as universal health coverage, universal health care or universal care refers to a health care system which provides health care and financial protection to all citizens of a particular country.

[2]The original estimates did not include antiretroviral drugs for HIV, interventions for non-communicable diseases or a variety of health system strengthening costs essential to being able to deliver the package. Moreover, it assumes that only the interventions in the core set will be provided.

stability of the household is not adversely affected through seeking health care (Wagstaff, 2007; Waters, Anderson, & Mays, 2004; Xu et al., 2009).

3.3.2 Overview of Financial Protection

The success of financial protection rests with how funds are raised and whether and how they are treated as being collective in order to spread risks within the population groups. When out-of-pocket payment for health care is directly proportional to the need for care such that people only spend when they are sick and are free from payment when they are healthy, there is no financial protection (Flores et al., 2008; Xu et al., 2007, 2009). Due to the lack of cohesion or commonality some people may experience financial hardship and in worse cases be pushed into poverty if their payments for health care relative to their income is very high (Donnell et al., 2005; Kawabata, Xu, & Carrin, 2002; Wagstaff & van Doorslaer, 2003).

The purpose of health insurance as a mechanism to achieve financial protection is to mitigate against the risk or uncertainty of illness and injury. Health insurance is therefore nothing but a rainy-day fund that serves as an absorber of future health shocks.

WHO (2008) maintains that significant reductions in the reliance on direct out-of-pocket payments will go a long way to help eliminate the financial barriers to access and subsequently reduce the impoverishing impact of paying out-of-pocket for health.

3.3.3 Sources of funds for risk pooling

Funding of health care systems is an important question for every economy, however rich or poor. The sources of funds that feed into the pool differ only slightly from country to country albeit there may be significant differences in the proportions of these funds. They generally include insurance co-payments, insurance premiums, taxes and levies (Macha et al., 2012; Mills et al., 2012;Soeters, Habineza, & Peerenboom, 2006). It is very easy to see that most of the funds pooled for health care financing simply comes from the people themselves. These payments therefore can be seen as indirect forms of out-of-pocket expenditures.

However, the challenge that poorer countries face is not simply to increase funds available for health, but to even provide and make accessible the satisfactory set of health services with the adequate quality in the areas of treatment, prevention, promotion and rehabilitation. WHO (2008) reports that a good number of countries still do not meet the mark of levels defined as critical minimums that provide the most minimal set of health services. Richer countries may not be faced by such desperate situations but they also face their own hurdles of maintaining their levels of health expenditure in the face of ageing populations that have repercussions for incomes and outlays alike. They are also faced with having to keep up with technological innovations in medicines. It is worthy to note that poorer countries are still not exempt from fronting these challenges.

3.3.4 Increasing and Diversifying Sources of Funds

As countries strive to increase the domestic contribution of funds into the health financing pool, there is a need come up with ideas to diversify the sources of funding. There are opportunities of achieving this goal that include options for governments to attend with greater priority the health budget allocations, employing the most efficient methods of tax collection, ensure compulsory contributions to insurance and working towards an overall increase in funds through innovative funding mechanisms. This is however difficult for most poor countries with large informal sectors. This however does not rule out the possibility of achievement however formidable a task (Ekman, 2007; Finkelstein, 2007; Spaan et al., 2010).

3.3.4.1 Solidarity Taxes

"Solidarity taxes" on particular goods and services present a promising source of raising domestic funds. They have proven to be a reliable source of significant income whiles having relatively lower administrative costs and higher sustainability. Once there is the needed political backing, they are easy to implement within a relatively shorter period. In the USA for instance the compulsory levy on airline tickets have a predicted implementation period of 2-12 months only (Yu, Whynes, & Sach, 2008).

3.3.4.2 Taxes on Harmful substances

Taxes imposed on the consumption of unsafe goods like alcoholic beverages and tobacco products have been a common avenue. The benefit in this option is two-fold as it increases funding resources while discouraging the consumption of these dangerous products thereby improving health among the population which will in turn reduce the burden on and demand for health services (Akazili et al., 2012).

3.3.5 Policy Measures

Ministries of health although lacking the authority to on its own implement measures to raise the funding available to health, have the task to do their best to coerce the rest of government in this regard. They therefore have the responsibility of employing effective dialogue between themselves as health policy makers and the sections of governments that control the allocation of public expenditures that is the ministries of finance and other political players and establishments like parliament and heads of state. There are however legitimate reasons why countries do not treat with priority health in their budgetary allocation processes. These reasons are sometimes fiscal, political and other times merely linked to the perception within the ministries of finance of inefficient nature of operations of the ministries of health. Unfortunately prominent among these reasons is the limited degree to which decision makers care about the health of their people. The poor who are understandably the worse affected are also the group that is poorly represented (Lorenz, 2012; Mills et al., 2012; WHO, 2008).

3.3.6 Domestic Sources versus External Sources

The domestic sources of funding available to already poor countries may still be inadequate and may present a need for external help from donor organizations and countries for a prolonged period of time. It would be best for development aid partners like USAID, UNICEF and WHO to increase their contributions to the poorest of countries that have serious constraints in expanding their health budgets. That said, WHO (2008) reveals that only 25% of the total health expenditure of countries on average was from external sources in the year 2007 even in the poorest countries. It is therefore clear that emphasis should be on efforts to increase domestic funds in order to improve financial risk protection against health shocks. Other indirect ways of improving health is by reducing the health burden through planned interventions that increase public literacy levels for instance.

3.3.7 Equity in Raising Funds

In the bid of health systems of countries to raise funds, equity is a concept that must be considered with all weightiness. That is in a progressive manner in which the rich pay more in relation to their resources than the poor. It is also important to ensure access to health care so that delivery of health benefits are according to need and not ability to pay. There is therefore an undisputable need to put together a prepayment plan followed by pooling of amassed funds to

ensure that there is enough available funds for people to draw from when the specified[3] need for payment arises.

3.4 OUT-OF-POCKET PAYMENTS FOR HEALTH

3.4.1 Definition of Out-of-Pocket (OOP) Payment for Health

OOP payments for health care refer to all direct payments made at health facilities in exchange for receiving medical treatment that is taken from the individual or household's own budget or income. These direct payments include expenses on medicines, fees for consultations and procedures (Damme et al., 2004; Hwang et al., 2001; Mondal, Kanjilal, Peters, & Lucas, 2010).

3.4.2 Overview of OOP payments for Health Care

In the past three decades, the topic of Out-Of-Pocket (OOP) spending for health care and its attendant implications on economic welfare have seen increasing importance and curious awareness (Berki, 1986; Brinda, Andrés, & Enemark, 2014; Kawabata, Xu, & Carrin, 2002; McIntyre, Thiede, Dahlgren, & Whitehead, 2006; Somkotra & Lagrada, 2008). Financing from out-of-pocket has been named the least efficient and most inequitable mode of healthcare financing (WHO, 2000). This form of health care financing is regressive and places huge financial burdens on the already meager incomes that characterize most households in developing countries, such that the poor are relatively disadvantaged or are worse affected in

[3]There is always a list of drugs and medical services that are covered by such payment mechanisms in order to avoid moral hazard brought about by negative health seeking behavior.

relative terms by the payment of user fees and bills for drugs (Sorensen et al., 2003; Wagstaff, 2007; Waters et al., 2004; Whitehead, Dahlgren, & Evans, 2001).

3.4.3 Financial Implications of OOP Payments

OOP payments have been found to have consequences for the utilization of healthcare in middle and low income countries. According to WHO, the extent to which such concerns are justified depends upon the level of unpredictability associated with OOP payments, their magnitude relative to household resources and their distribution in comparison to that of income. The Organization further discloses that when health systems require direct payments out-of-pocket before health care is received, millions of people are prevented from accessing health services while millions more in their bid to attain these services are plunged into financial hardship. OOP health expenditures reduce welfare of the people because of the uncertainty of medical expenses – health risks (WHO, 2008).

Let us consider the case of a poor household that has to divert funds from its already tight budget to pay for the cost of illness. In most cases, the sick person if they are of employable age will miss time on economic activity and on the other hand if they are younger or aged members of the household may need an adult to forgo productive hours of work in order to provide care and assistance. Sickness already presents risks of income loss for the household. When this unfortunate occurrence of illness or injury now comes with monetary costs in order to access health care, there is undue hardship brought upon households, especially poorer households.

3.4.4 Effects of OOP Payments on Access to Health care

Research has proven that the well to do spend a large portion of their income on health care in such countries which presupposes the poor may not even be able to fully access the required health care due to inadequate funding strength (Flores et al., 2008; Kawabata et al., 2002; Tomini, Packard, & Tomini, 2013).

Significant reductions in the reliance on direct OOP payments are usually followed by significant results by way of lowering financial barriers to access so that fewer households are at risk of suffering the effects of bearing these costs against meager financial resources (Russell, 2004; Sauerborn, Adams, & Hien, 1996; Wagstaff, 2007).

It is not surprising therefore that even the World Bank which has been the arch protagonist for user fees has acknowledged that paying for health out-of-pocket could be a differentiating factor between a household being counted as poor or not. In the same vein, the British government's Department for International Development (DFID) has embarked on an ambitious journey of holding negotiations with African governments to totally abolish user fees for health care (McIntyre et al., 2006).

In the United States of America for example, a Foreign Appropriations Bill Report was passed in which the congress were to oppose any loan form the World Bank , IMF or other multilateral development bank that includes user fees for basic health or education (US Network for Global Economic Justice, 2003).

3.4.4.1 Role of Health Insurance in Reducing OOP Payments

Insurance is the most obvious intervention for the problem for any financial risk brought on by any kind of health shock. It is not surprising therefore that many countries have adopted national health insurance schemes to deal with the occurrence of OOP payments. However, it is usually found in developing countries that enrolment unto such schemes is ironically low(Abor et al., 2000; Bayarsaikhan, 2008; Bernstein, Chollet, & Peterson, 2010; Borrell et al., 2001).

3.4.4.2 Problem of Non-Enrollment

This trend of non-enrolment is somewhat accounted for by the inability of households to afford the price or premiums and / or lack of information about these health schemes (Jutting, 2001; Gobah & Liang, 2011). The low levels of education associated with most developing countries also pre supposes that there is even little understanding of the importance of enrolling unto an insurance program to the future economic welfare of the household (Arhin-tenkorang, 2001; Saksena, Antunes, Xu, Musango, & Carrin, 2011). There is also the case where many households or members of the household have failed to enroll onto the schemes available either due to lack of education about subsidized premiums and fee waivers, lack of means of transportation to health facilities or simply because of the "harsh" treatments they receive from hospital staff (Abor et al., 2011).

In similar vein, although public health care financing is generally regarded as progressive (pro-poor), health insurance and OOP have been found to be regressive (pro-rich). Some writers have blamed this on flat rate payments at District Mutual Health Insurance Schemes and also on the

incomplete or failure of enforcement of waiver and exemption policies (Kimani, Ettarh, Warren, & Bellows, 2014; Macha et al., 2012).

3.4.5 Other Mechanisms for reducing OOP Payments

In cases where there are less public funds available for the kind of intervention discussed in the previous paragraphs, transitional measures that include voluntary community based health insurance schemes or conditional cash transfers have also achieved significant results in reducing the incidence of OOP for healthcare (Saito et al., 2013). The voluntary health insurance schemes are operative as a community initiative by pooling resources and risks and offering insurance against the shocks brought on by disease and injury. Conditional cash transfers on the other hand are usually the initiative of donor organizations that target certain communities or households within communities who qualify in some way, usually below a particular income bracket or on a need basis. These households are given cash as economic interventions with conditions attached and in this case, the condition would be to increase their patronage of health facilities and services for treatment against diseases or most commonly to enroll the entire household onto the health insurance scheme.

3.4.6 Coping Strategies for Out-Of-Pocket Payments for Health Care

Research carried out by several authors have shown how households employ a wide variety of strategies to cope with health shocks and attendant OOP payments (Leive & Xu, 2008). These

are generally referred to as coping strategies or mechanisms. They can be grouped under short run and long run.

3.4.6.1 Sale of Assets

In the short run, when medical bills cannot be readily catered for by available household income, households may decide to sell assets that may be vital to livelihood like pieces of land, equipment used for economic activities like farming machinery or even vehicles used for commercial purposes. These assets are crucial to generating income for the household. When they are sold to cover costs of illnesses there is very little hope of their replacement given constant sources of income available to the household. This presupposes that the sale of assets will reduce the level of income that a household is used to living on. The repercussions obviously point to a decline in the living conditions and standards for this household. If the household is very poor, this arrangement may even affect basic needs such as food, clothing and shelter, not to mention education of younger members of the households who are of school going age (Sauerborn et al., 1996).

3.4.6.2 Borrowing

Another coping mechanism is the borrowing of funds from family and friends or taking loans using collateral. This is the commonest form of coping with OOP payments (Mills et al., 2012). Now, the issue with this mechanism is that seeking health care is not an economic activity and so it does not generate profit directly for the spender or the one investing money into it. The

question is, with the same sources of income for the household, how will they manage to pay back the loan which may even accrue interest? The resulting situation is glaringly obvious. The household may have to keep borrowing in order to service previous loans that mature. This plunges the household into a vicious cycle of debt where the household continues to be indebted until they benefit from a financial intervention that rescues them from this trap of indebtedness (Flores et al., 2008).

3.4.6.3 Depletion of Household Savings

The most obvious coping mechanism is for households to fall on savings. When these savings are depleted, the household may become vulnerable to other shocks that may arise. Even worse, is the situation where the funds were being saved in order to afford a future expenditure like acquiring a property, expansion of the family business or even higher education. Like other coping mechanisms this depletion of savings may hinder the capital or human development within the household that could have been an avenue for the household to better its living standards in future. The opportunity cost in the case is apparent (Wagstaff & van Doorslaer, 2003; Wilkes, Hao, Bloom, & Xingyuan, 1997).

3.4.6.4 Diversification of Household Income Sources

Yet another coping strategy of health care costs is diversifying income sources by engaging in additional economic activities and also reallocation of labour responsibilities among the members of the household. Sometimes they engage services of external labour that also has

attendant costs. Members may be required to take on additional economic activity in order to maintain current levels of consumption while absorbing the costs of care. The consequence associated with this strategy is that certain member of the household will be overworked and lose rest which could in turn be detrimental to their own health. This method will turn out to be dangerous the more that it is prolonged as accumulated stress has adverse effect on human health. The worst can be imagined where other members of the household begin to fall sick because they tried to cater for high hospital bills of a household member. The financial burden swells and poses an avenue for impoverishment (Damme et al., 2004; Gotsadze et al., 2009; Ranson, 2002).

3.4.6.5 Forgoing Treatment

The most unfortunate coping mechanism is foregoing treatment partially or completely. In extreme cases where none of the afore-mentioned mechanisms are available to a household, they may resort to the most dangerous of all coping mechanisms –nothing. In such instances, the household forgo medical treatment and just allow the illness to take its full course. Even though this strategy may at a glance seem like the least expensive, it is actually the most costly. Members of the household invariably may have to sacrifice economic activity in order to attend to the sick member. The worst is that when this human life is eventually lost, the household and the nation bears the cost of unrealised human contribution (Berki, 1986; Cid Pedraza & Prieto Toledo, 2012).

This last coping mechanism does not involve any readily obvious costs that may be classified as out-of-pocket spending. It is however undeniable that it arises as a result of a household's inability to afford OOP payments to access health care. Because foregoing treatment has long

term consequences of worsening in health and earnings capability, it is important to view the problem holistically as the exposure incurring these costs instead of narrowing down to just the actual incurrence of OOP expenses (van Doorslaer et al., 2007; Russell, 2004; Wilkes et al., 1997; Wyszewianski, 1986).

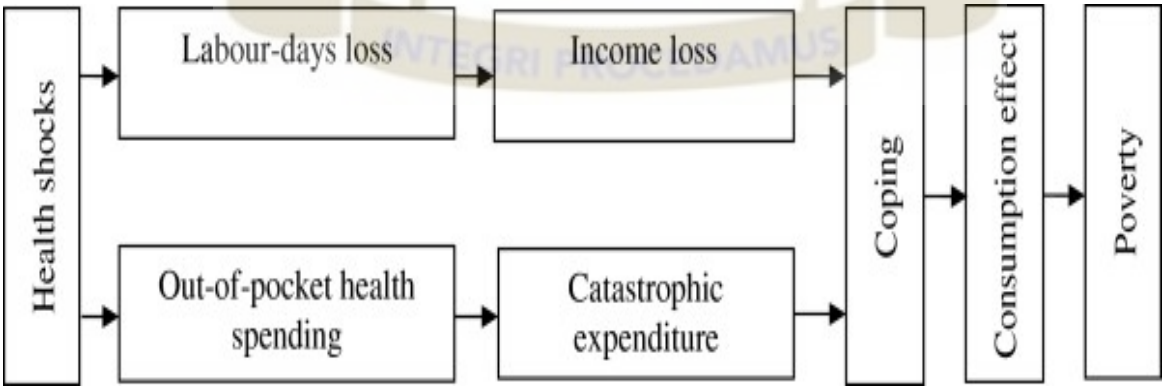
3.5 CATASTROPHIC HEALTH EXPENDITURE

3.5.1 Definition of Catastrophic Health Expenditure

Catastrophic payments for health care are out-of-pocket payments for health that have a tendency to disrupt living standards and plunge the paying unit (usually considered on a household rather than individual level) into extreme financial hardship and impoverishment due to its absorption of a huge percentage of household resources (Berki, 1986; Kawabata et al., 2002; Wagstaff & van Doorslaer, 2003; Wyszewianski, 1986).

Figure 3.3 gives a summary of the impoverishing effect of out-of-pocket payments for health

Figure 3.3: Economic consequences of Health Shocks and Out-of-Pocket Payments



Source: Alam & Mahal (2014)

3.5.2 Overview of Catastrophic Health Expenditure

Catastrophic health expenditure was first identified in the United States of America decades ago as having serious consequences for economic welfare, most times severely jeopardizing welfare (Nyman,1999). The approach consists of two key underlying variables, that is the total household OOP payments for health and a measure of household economic resources measured either as income, consumption or expenditure. Of all the three measures of household resources, the only one that is directly responsive to medical spending is the household income. This may easily come across as an advantage, nevertheless, the health payment - to – income ratio is not responsive to the mode of financing health payments, which is considered as a disadvantage (O'Donnell et al., 2007). This can be explained in the following scenario. Two households that earn the same income are faced with identical out-of-pocket payments for health care.

Household one has savings and finances the cost of health care from its saved funds but household two which has no reserved funds cuts back on current consumption in order to absorb the health expense. Just by looking at their health payment – to – income ratio, it is impossible to tell the effect that the payments for health care will have on the household because it is the same for both. However, since household two had to cut back on expenditure to accommodate its health costs, its expenditure will be smaller than that of household one, all things being equal. This will result in the ratio of health payments to expenditure being greater for household two than for household one. For this reason the household measure of resources used as the denominator for determining catastrophic health expenditures is expenditure and not income.

3.5.3 Measurement of Catastrophic Health Expenditure

van Doorslaer et al (2007) make it clear that the most ideal form of data for assessing catastrophic health expenditures would be longitudinal. This kind of data would have allowed an estimation of the extent to which living standards are affected with continuous response to health shocks through the payment of medical goods and services. It would also have been possible to observe how spending on non-medical products and services change following health shocks (Gertler & Gruber, 2002; Xu et al., 2009). However, cross-sectional data is the usually available data. In order to make good use of this kind of data in making estimations of catastrophic health spending, thresholds are set so that when medical expenses as a share of household resources exceed this threshold within a given period, which is usually a year (Berki, 1986; Russell, 2004; Wagstaff & van Doorslaer, 2003; Wyszewianski, 1986). The understanding is that spending large amounts for medical reasons implies that the consumption of other goods and services had to be sacrificed either in short term by cutting back consumption or in the long term by selling assets or borrowing. This represents the household opportunity cost of paying for medical goods and services in response to health shocks.

In low income countries, the total household income which is usually small is mostly absorbed by consumption of basic necessities. Therefore using total household expenditure may not be representative of the full impact of health expenditures. It is therefore more advisable to subtract subsistence expenditures from total expenditure. The thresholds are then set for health expenditures as shares of capacity to pay (household expenditures net subsistence expenditures).

OOP payments are termed catastrophic when they have exceeded a particular or pre-defined threshold set as a percentage of household expenditure. When the health expenditure is set

against total household expenditure, the thresholds commonly used for low and middle income countries have been 5%, 10%, 15%, 20% and 25% (O'Donnell et al., 2008; Flores et al., 2008; Mondal et al., 2010; van Doorslaer et al., 2007; Xu et al., 2003).

The common thresholds that have been used in popular literatures are 10% and 20% of total income and 40% of income net sustenance or food expenditure (Berki, 1986; Kawabata et al., 2002).

3.5.3.1 Limitations

In using cross-sectional data, there is so far, no direct way of distinguishing between long term and short term consequences of paying for health care.

Another limitation in measurement is that there is no defined method for measuring the impact of health shocks on households that are even too poor to spend on medical products and services in response to health shocks. Pradhan and Prescott (2002) look at exposure to rather than actual incidence of catastrophic health expenditures (Wagstaff & van Doorslaer, 2003).

Also, in using capacity to pay as a measure of household resources, a problem arises of defining what falls under expenditures that are basic necessities (also known as non-discretionary expenditures. A common approach has been to use food expenditures to stand for non-discretionary household expenditure.

3.5.3.2 Evidence of Catastrophic Health Expenditures in Literature

Saito et al., (2013) also presented the state of catastrophic health expenditures in Nepal which is a low income country with per capita income of $620 as of 2011. In their work, they used a threshold of 10% of total household expenditure. Their work also looked at the diseases that are commonly found as relating to the incidence of catastrophic health expenditures. These diseases included diabetes, heart conditions, asthma, arthritis, hypertension, migraine/headache, gastritis, cold/cough/fever, injury.

The findings on the incidence of catastrophic health expenditures were varied according to the income quintiles that households belonged to and also the sort of diseases that the household suffered within the recall period of thirty days used in the survey. But 14.3 percent of respondent households were found to have incurred catastrophic health expenditures within the recall period (Flores et al., 2008; Rahman, Gilmour, Saito, Sultana, & Shibuya, 2013).

In similar research works on catastrophic health expenditures, the limitation of health care expenditures being self-reported, attracted questioning of the level of credibility of reported figures. Also, since poorer households use coping methods, it is hard to measure costs of illnesses other than financial like loss of economic hours due to worsened health status as a result of avoiding consultation or resorting to cheaper medical alternatives that may worsen their condition or skipping doses in order to save cost(Flores et al., 2008; Sauerborn et al., 1996; Wagstaff, 2007).

3.5.3.3 Measuring Distribution Sensitivity

Saito et al (2013) also used the concentration index to ascertain the distribution of catastrophic health expenditures across the economic quintiles which were used as proxy for wealth, the lowest quintile constituting the poorest households and the highest the richest. The concentration indices with 95% confidence intervals and their associated p-values were calculated using bootstrapping with 100 iterations and the delta method.

The concentration index may assume values within the range of -1 and +1. Indices well above zero mean that rich household pay more catastrophic health expenditures while indices well below zero mean that the distribution of catastrophic health expenditures are concentrated in poorer households. With a positive concentration index, the rank-weighted head count and overshoot for catastrophic payment is lower than its original value whereas a negative concentration index makes the rank-weighted head count and overshoot higher than its original value.

CHAPTER FOUR

METHODOLOGY

4.1 INTRODUCTION

This chapter looks at the source of data for this study, the models and the econometric techniques employed to analyse the data for this study. It also, discusses the dependent and the independent variables into details.

4.2 SOURCE OF DATA

The data used for the analysis is taken from the sixth round of the Ghana Living Standards Survey (GLSS 6) which was conducted from August 2012 to August 2013. The survey was conducted 16,772 successfully enumerated households. The data contains detailed demographic characteristics on households as well as essential information on education, health, employment, household expenditures and incomes and their components.

4.3 MEASUREMENTS

The first objective of this study seeks to examine the incidence and intensity of catastrophic health expenditures among Ghanaian households. In order to address this objective, the study followed specifications as presented in the research work of O'Donnel et al., (2008) and Wagstaff and van Doorslaer (2003) which also presented the incidence and intensity of measurement of the catastrophic payment.

4.3.1 Incidence of Catastrophic Payments

According to O'Donnel et al., (2008) the incidence of catastrophic payments can be estimated from a sample using health care costs as a share of total (or non-food) expenditure. With a specified, threshold (a percentage figure), health expenditures as a share household expenditures exceeding the chosen threshold are counted as catastrophic. O'Donnel et al., (2008) and Wagstaff and Van Doorslaer (2003) specifically measure the incidence of catastrophic payments by employing the formula below.

$$E = 1\left(\frac{OOP}{nfX} > z\right) \quad (1)$$

$$H_{cat} = \frac{1}{N}\sum_{i=1}^{N} E_i = \mu_E \quad (2)$$

Where

OOP is out-of-pocket payment

nfXIs the non-food expenditure

zIs the threshold of 0.4 as defined in the data set for this study?

H_{cat}Is the catastrophic payment head count of a household?

N is the sample size

μ_EIs the mean of E_i

Wagstaff and Van Doorslaer (2003) argue that the difficulty with the catastrophic head count measure is its failure to capture the depth and extent to which the threshold is exceeded by

households. They assert, in agreement the literature on poverty, that one could define not just a catastrophic payment headcount but also a measure analogous to the poverty gap, which they called the catastrophic payment gap or excess (Wagstaff and Van Doorslaer, 2003). The authors assert that it captures the height to which payments (as a proportion of income) exceed the threshold. Based on this intuition, intensity of catastrophic payments are discussed below.

4.3.2 Intensity of Catastrophic Payments

Wagstaff and van Doorslaer (2003) measure the intensity or severity by defining the average 'gap' (or excess) of catastrophic payments as specified in the equations 3-5 below.

$$G_{cat} = \frac{1}{N}\sum_{i=1}^{N} O_i$$

$$= \mu_o \qquad (3)$$

Where μ_o is the mean of O_i also the household overshoot defined as $O_i = E_i\left(\left(\frac{T_i}{x_i}\right) - z\right)$

O'Donnel et al., (2008) posit that although H captures only the incidence of any catastrophes occurring, O captures the intensity of the occurrences as well. They document that the two are related through the mean positive gap or overshoot, which is defined as follows:

$$MPG_{cat} = \sum_{i=1}^{N} O_i \Big/ \sum_{i=1}^{N} E_i = \mu_o / E_i \qquad (4)$$

This is therefore simplified to give us the equation defined below

$$\mu_o = E_i . MPG_{cat} \quad (5)$$

The equation (5) simply means that the overall mean catastrophic 'gap' equals the fraction with a positive gap times the mean positive gap or the catastrophic overshoot equals the fraction with catastrophic payment times the mean positive overshoot. Thus, the incidence times the intensity.

4.4 WHETHER CATASTROPHIC PAYMENTS ARE REGRESSIVE OR PROGRESSIVE

The third objective of this study measures the level of equity or fairness associated with catastrophic health payments; whether they are regressive or progressive for the households who incur them. Wagstaff and Van Doorslaer (2003) point out the difficulty with the incidence and intensity of catastrophic payments measures. They argue that there is no surety whether it is the poor or the better-off households who exceed the threshold. They document that it will be better for households in the lowest quintile in society whose spending as a share of their income exceeds the threshold than if it is one in the top quintile. This could mean two things: 1. the richer households spend more on cosmetic health care that are not basic needs, or 2. that the poorer households are not able to meet the financial requirement for seeking health care. One way of doing this is to examine how the proportions of those exceeding the threshold vary across the income distribution. This can be done formally using a concentration indices for E_i and O_i (Wagstaff and Van Doorslaer 2003; O'Donnel et al., 2008). These indices are labelled as C_E and C_O. A positive value of C_E indicates a greater tendency for the better-off to exceed the payment threshold, whilst a negative value indicates that the worse-off are more likely to exceed the threshold (O'Donnel et al., 2008).

One way of adjusting the head count and overshoot measures of catastrophic payments to take into account the distribution of the payments is to multiply each measure by the complement of the respective concentration index (Wagstaff and van Doorslaer 2003). That is, the following rank-weighted head count and overshoot measures are computed:

$$\mathrm{H^W} = H.(1 - C_E) \quad (6)$$

$$O^W = O.(1 - C_O) \quad (7)$$

The concentration ratio according to O'Donnel et al., (2005) can be specified as follows:

$$C = \frac{2}{\mu} Cov(h, r) \quad (8)$$

Where C is the concentration index to be calculated

h is the health variable

μ is the mean of the health variable

r = $\frac{i}{N}$ is the fractional rank of each household or quintile

The measures imply value judgments about how catastrophic payments incurred by the poor are weighted relative to those incurred by the richer households. The imposition of value judgments is unavoidable in producing any distribution-sensitive measure. In fact, it could be argued that a distribution-insensitive measure itself imposes a value judgment catastrophic payments are weighed equally irrespective of who incurs them. The particular weighting scheme imposed by equation 6 is that the household with the lowest income receives a weight of two, and the weight declines linearly with rank in the income distributions so that the richest household

receives a weight of zero. So, if the poorest household incurs catastrophic payments, it is counted twice in the construction of H^w; whereas if the richest household incurs catastrophic payments, it is not counted at all. A similar interpretation holds for equation 7. Obviously, different weighting schemes could be proposed to construct alternatives to these rank-dependent weighted head count and overshoot indices.

If those who exceed the catastrophic payments threshold tend to be poorer, the concentration index $C_E$will be negative, and this will make H^w; greater than H. From a social welfare perspective and given the distributional judgments imposed, the catastrophic payment problem is worse than it appears simply by looking at the fraction of the population exceeding the threshold because it overlooks the fact that it tends to be the poor who exceed the threshold. However, if it is the better-off individuals who tend to exceed the threshold, $C_E$will be positive, and H will overstate the problem of the catastrophic payments as measured by H^w. A similar interpretation holds for comparisons between O and O^w.

4.5 ECONOMETRIC MODEL SPECIFICATIONS

The second objective of this study involves predicting enrolment onto the Ghana National Health Insurance Scheme. The outcome variable then will be covered$_i$ which is a dummy variable that takes the value 1 if the household is insured and 0 otherwise. The outcome variable is regressed against a host of explanatory variables which constitute the socioeconomic characteristics of the household as presented as the expanded probit model in (9).

The final objective of this study is to examine the characteristic features of households that that makes it vulnerable to incurring catastrophic expenditure for healthcare. O'Donnel et al (2005)

presented an analysis of the correlates of catastrophic payments in six Asian countries. This study presents that for the Ghanaian situation for the individual characteristics.

The expanded probit models are presented in (9) and (10):

$$\Pr(Covered_i) = \alpha + \beta_1 agegrp_i + \beta_2 educ_i + \beta_3 hhages_i + \beta_4 religion_i + \beta_5 worked_i + \beta_6 gender_i + \beta_7 mstatus_i + \beta_8 hhsize_i + \beta_9 over18_i + \beta_{10} disability_i + \beta_{11} injury_i + \beta_{12} loc5_i + \beta_{13} wlthind_i + \varepsilon_i \quad (9)$$

$$\Pr(CHE_i) = \alpha + \beta_1 agegrp_i + \beta_2 educ_i + \beta_3 covered_i + \beta_4 religion_i + \beta_5 worked_i + \beta_6 gender_i + \beta_7 mstatus_i + \beta_8 hhsize_i + \beta_9 over18_i + \beta_{10} disability_i + \beta_{11} hhages_i + \beta_{12} loc5_i + \beta_{13} wlthind_i + \varepsilon_i \quad (10)$$

- Where
  - $Covered_i$ is the dependent variable, that is defined as whether the household is enrolled unto the NHIS or not.
  - CHE_i is a dummy variable which takes the value 1 if the household incurs health expenditures above 10% household non-food expenditure and 0 otherwise.
  - $hhsize_i$ is the household size
  - $loc5_i$ is the rural or urban location of the household
  - $disability_i$ is to tell if there is a differently-abled household member

- over18$_i$ is whether there are adults in the household
- wlthind$_i$ is the income quintile the household belongs to

Household head information:

- agegrp$_i$ is the age group
- covered$_i$ is the insurance status
- gender$_i$ is the sex
- worked$_i$ is for employment within 12 months of survey
- mstatus$_i$ marital status
- educ$_i$ is the educational attainment
- α is the intercept and ε_i is the error term

4.6 DEPENDENT AND EXPLANATORY VARIABLES

4.6.1 Dependent Variables

$\boldsymbol{Covered_i}$ is the dependent variable in (9) defined as those households which are actively registered under the NHIS, using household head insurance status as a proxy.

$\boldsymbol{CHE_i}$on the other hand, is the dependent variable in (10) defined as a dummy which takes the value 1(one) with incidence of catastrophic health expenditures and 0 (zero) otherwise.

4.6.2 Explanatory Variables

This section provides information on the explanatory variables included in the model for the data analysis. It provides definition of the variables, the proxies for the variables and the justification for their inclusion in the models.

I. Covered

This is a dummy that takes the value 1 if the household is covered with any form of health insurance and 0 otherwise. The expectation is that if one is covered by any form of health insurance he or she might not incur any catastrophic expenditure. Therefore insurance will help to reduce catastrophic expenditure. There is expected a negative relationship between insurance and catastrophic expenditure.

II. Gender

Gender is a dummy that takes value 1 household head is a male and 0 otherwise. The study expects that male headed household will increase catastrophic payment as compare to their female headed household.

III. Agegroup

The variable takes four dummies 30-39 years takes 1 otherwise 0, those who are within 40-49years takes 1 and otherwise 0, 50-59 years takes 1 otherwise 0, and 60-99 years and 0 otherwise. The reference category is 15-39 years which takes the value 1 and 0 otherwise. We expect a positive relationship between the age of head of household and catastrophic payment. This is because as the household head ages, the tendency for him to visit hospital more is

higher than the younger ones. Also pensioner-headed households may record lower levels of expenditure and this will, all things being equal, increase counts of catastrophic expenditure.

IV. Education

This variable takes three dummies. Thus primary education which takes the value 1 and 0 otherwise, Secondary education takes 1 and 0 otherwise, Tertiary education which takes 1 and 0 otherwise. The reference category is no education, which takes the value 1 and 0 otherwise. We expect a negative relationship between catastrophic payment and the level of education of the households. For instance those with primary education will be better off in terms of catastrophic health payment than their counterparts who have no education and so forth.

V. Marriage status

The variable has two dummies – married which takes the value 1 and 0 otherwise and separated which takes the value 1 and 0 otherwise 0. The reference category is never married and also takes 1 and 0 otherwise. We expect a positive relationship between a catastrophic payment and that of marital status when the head has never been married or is divorce / widowed but a negative coefficient for married household heads. This is because the presence of a spouse would mean that there is an additional source of income coming in to support out-of-pocket spending

VI. Location of residence

Location has four dummies. They include other urban, rural costal, rural forest and rural savannah. The reference category is Accra. It takes the value of 1 for those from other urban and 0 otherwise, those from rural costal takes the value 1 and 0 otherwise, forest takes the value of 1 and 0 otherwise and finally, rural savannah takes the value 1 and 0 otherwise.

VII. Religion

Religion has two dummy variables. They are Muslim and Christians. Muslims take the value of 1 and 0 otherwise and Christians also take the value of 1 and 0 otherwise. The reference category here is no religion (consisting of no religion and all other religions apart from Christianity and Islam).

VIII. Over18 years

All those household members over 18 years takes that value 1 and 0 otherwise. Household members over the age of 18 are likely to be required to pay premiums and fees and may decide not to enrol onto the health insurance thus giving rise to the incurrence of catastrophic expenditures. Therefore we expect a positive sign for the co-efficient.

IX. Household size

The household size is a continuous variable. It measures the number of persons in that household. For this variable, a positive sign since the larger the size of a household, the higher the health expenditures to be incurred if there is no enrolment onto the health insurance scheme.

X. Disability

Also, differently-abled and is another dummy that takes the value 1 for those with a differently-abled member in that household and 0 otherwise. We expect a negative sign for this variable since the NHIS completely exempts Ghanaian residents with disabilities from paying any premiums or registration fees. We expect that most differently-abled people will have no financial barriers to enrolment under the NHIS.

XI. Worked

Employed is a dummy that takes the value 1 for if the head has been employed in the past 12 months within the time the survey was conducted and 0 otherwise for those who had never worked. This variable is expected to have a negative sign since being employed could mean higher incomes compared to households whose heads are unemployed.

XII. Wealthindex

This variable is the wealth index of each individual household. The categories are quintiles 1 to 5 to classify household income in ascending order from the lowest 20% to the highest 20%. The variable represent four dummies: 2nd quintile takes a value of 1 if the household income falls with the second lowest 20% of income and 0 otherwise; 3rd quintile is equal to one if the household's income has a value within the middle or third 20% of incomes in Ghana and 0 otherwise; 4th quintile is equal to 1 if the household's income is within the second highest 20% and 0 otherwise; 5th quintile has a value of 1 if the income of the household is among the richest 20% and zero otherwise.

4.7 DATA ANALYSIS TOOLS

The study investigates the state of catastrophic health expenditures made across Ghanaian households. For this reason there was a need to employ a data set that provided health expenditures of Ghanaian household which was also, importantly, nationally representative. Additional information was required on all other expenditures as well as the socioeconomic factors that identify each household and its unique members. The data set which provided the most of the data required to fulfil the objectives of this study is the sixth round of the Ghana

Living Standards Survey (GLSS 6). The questionnaires administered in the process for the compilation of the GLSS 6 collected data on individual members of all the 16,772 households that were enumerated. Since this study is on a household level, the data was collapsed to the household level so that the household as a whole is characterised by information of its members.

In calculating the catastrophic health expenditure indices (catastrophic head count, overshoot, mean positive overshoot, weighted head counts and overshoots), we employ STATA as a data analysis software.

The same cross-sectional data provided by GLSS 6 is used for the econometric model. The data provided the needed set of characteristics which was used to run a simple regression using STATA. The resulting information was organised into descriptive statistics to provide an in depth information on the characteristics of the households. Additionally, and very importantly, the regression results were presented explained to indicate key relationships between household characteristics and catastrophic health expenditures.

4.8 CHAPTER SUMMARY

This chapter provides presentation of the data set that is employed to achieve the set objectives of this study. A simple regression model is employed which explains the variations in the dependent variable with movements in a host of socioeconomic factors that are characteristics of households included in the regression. A narrative and descriptive form of analysis was adopted in presenting the findings made in this research.

CHAPTER FIVE

ANALYSIS AND DISCUSSION OF RESULTS

5.1 INTRODUCTION

The chapter provides a presentation of the results of the cross sectional data that was used for the study. The chapter commences by presenting a descriptive presentation of the key socioeconomic information of households used in this research

5.2 DESCRIPTIVE STATISTICS

5.2.1 Background Description of Household Heads

Panel A of Table 5.1 provides the age distribution of household heads as well as information on the gender of household heads, the marital status of household heads, their religious affiliation, their level of education attained, the employment status of household heads and the proportion of household heads who have signed unto a health insurance scheme. The insurance status of household heads is used as a proxy for insurance status of the entire household they represent (see Table 5.1).

Table 5.1: Household Descriptive Statistics

VARIABLE	FREQUENCY	PERCENTAGE
PANEL A: HOUSEHOLD HEAD CHARACTERISTICS		
Age group		
15 – 29	2,560	15.26
30 – 39	4,187	24.96
40 – 49	3,746	22.33
50 – 59	2,811	16.76
60 – 99	3,468	20.68
Gender		
Male	12,043	71.80
female	4,729	28.20
Marital status		
Never married	1,754	10.46
Married	11,321	67.51
Separated	3,694	22.03
Religious affiliation		
No religion	1,192	7.11
Christian	11,283	69.29
Muslim	4,292	25.60
Educational level attained		
None	5,323	31.75
Primary	2,486	14.83
Secondary	7,731	46.11
Tertiary	1,227	7.32

Employed within past 12 months	15,367	91.69
Active enrolment onto NHIS	6,097	36.41
Ethnic background		
Akan	6,744	40.80
Ga-Dangme	1,095	6.63
Ewe	2,147	12.99
Guan	708	4.28
Gurma	857	5.19
Mole-Dagbani	3,713	22.46
Grusi	748	4.53
Others	516	3.12
PANEL B: CHARACTERISTICS OF HOUSEHOLD MEMBERS		
Members of household over 18 years	16,755	99.00
Households with boys below 5 years of age	4,613	27.50
Households with girls below 5 years of age	3,929	23.43
Households with boys between 5 and 18 years of age	9,080	54.14
Households with girls between 5 and 18 years of age	9,082	54.15
Households with men over 60 years of age	2,170	12.94
Households with women over 60 years of age	1,298	7.74
PANEL C: HOUSEHOLD HEALTH CHARACTERISTICS		
Households with members with a Disability	542	3.25
Households that experience illness or injury		
Neither	16,298	97.24
Injury	436	2.6

Illness	27	0.16
Households whose members visited heath facilities in past 2 weeks	6,821	66.18
PANEL D: HOUSEHOLD RESIDENTIAL CHARACTERISTICS		
Region of residence		
Western	1,718	10.24
Central	1,602	9.55
Greater Accra	1,924	11.47
Volta	1,574	40.65
Eastern	1,804	10.76
Ashanti	1,981	11.81
Brong Ahafo	1,621	9.66
Northern	1,702	10.15
Upper East	1,447	8.63
Upper West	1,399	8.34
Rural or Urban settlement		
Accra (GAMA)	1,697	10.12
Other Urban	5,748	34.27
Rural Coastal	1,156	6.89
Rural Forest	3,863	23.03
Rural Savannah	4,308	25.69

Source: Researcher's Compilation, Ghana Statistical Service Dataset (GLSS 6).

The table shows that 15.26% of household heads were aged 15-29 years, 24.96% aged between 30-39 years, 22.33% aged 40-49 years, 16.76% aged 50-59 years and 20.68% aged 60-69 years. Again, the table also indicates that 71.80% of the households were headed by males while

28.20% were female-led households. The results has implications for gender-led households and their influence on the propensity to incur OOP health expenditures in Ghana (see Panel A of Table 5.1).

The study further indicates that 10.46% of household heads have never married, 67.51% are married and 22.03% are separated from their spouses. The results show that majority of the household heads are married, and this results has implications for the share of household income that can be allocated to healthcare subsequently the need to enroll on an insurance scheme as a means of reducing reliance on OOP payments, as compared to those household heads that have never married or are separated (see Table 5.1).

The study again, show that 7.11% of household heads are not affiliated with any religious body, 69.29% were Christians while 25.60% were Muslims. While the majority of household heads were Christians, the study provide implications for the health care services sought by household heads with a particular religious affiliation (see Table 5.1).

Following the descriptive statistics, it is observed that 31.75% of the household heads have no formal education. 14.83% have had formal education to the primary level, 46.11% have also had formal education to the secondary level and 7.32% have had formal education to the tertiary level. The results informs the level of understanding into formalized systems such as the NHIS. To a large extent, the high percentage of formal education obtained by household heads, especially at the secondary and tertiary levels, suggest that most household heads have a fair understanding into the implications of signing up under the NHIS (see Table 5.1).

Also, the results indicate that, in order of ranking, most household heads were from the Akan ethnic background (40.80%), followed by Mole-Dagbani household heads (22.46%), Ewe

(12.99%), Ga-Dangme (6.63%), Gurma (5.19%), Grusi (4.53%), Guan (4.2%) and other ethnic backgrounds (3.12%).

Finally, the results show that 91.69% of the household heads in the dataset were employed, suggesting that since they generate some form of income, they may have the means to either sign unto the NHIS or incur OOP expenditure. Following this finding, the study show that only 36.41% of household heads had signed unto a health insurance scheme, implying that about 63.59% made OOP expenditure on health care service (see Table 5.1).

5.2.2 Age Characteristics of Household Members

Panel B provides information on the age characteristics of household members in the dataset, such as; households with boys below the age of 5 years, households with girls below the age of 5 years, households with boys between 5 and 18 years, households with girls between 5 and 18 years, households with men over 60 years and households with women over 60 years (see Table 5.1).

The results examining the age characteristics of household members in the dataset show that 99% of the households in the dataset were above 18 years (see Table 5.1). The results imply that most household members are aged above the lower threshold for fee waiver from NHIS. On the other hand, about 20.68% of the household members, representing 12.94% males and 7.74% females aged above 60 years (see Table 5.1), also enjoy fee waiver from NHIS, following provisions in the NHIS Act 2012 (Act 852). The implication of these results is that most household members have to pay fees in order to be signed unto the NHIS scheme or rather incur

OOP expenditure. Following results for the proportion of household heads that have signed unto an insurance scheme (see Table 5.1), the study infers low rates of health insurance sign-ups by household members.

On the other hand, the study shows that about 50.93% of the households, representing 27.50% boys below 5 years and 23.43% girls below 5 years, have child dependents that qualify for fee waivers under the NHIS (see Table 5.1). The implication of the results is that households that have not signed up unto health insurance schemes are exposed to health risks because they have to incur OOP expenditure for their child dependents, who are also prone to illnesses and injuries.

Also, about 54.15% of household members, both boys and girls, are aged between 5 years and 18 years respectively (see Table 5.1). The results also show implications for house households that have health insurance in the forms of fee waivers and low health risks from OOP expenditure, as opposed to household members with no health insurance.

5.2.3 Health Characteristics of Households

The study provide results for the health characteristics of households. The study examine results for households with members with a disability, a distribution of household illness or injury occurrences and households that seek health care services (see Panel C, Table 5.1).

The table shows that 3.25% of households in the dataset have members who are differently-abled (see Panel C). According to the NHIS Act 2012 (Act 852), disabled persons also enjoy fee and premium waivers under the NHIS scheme. The results have implications for reduced OOP spending on healthcare for households that have signed unto a health insurance scheme in the

sense that there will be no economic barriers to enrolling unto the scheme for differently-abled persons and by extension, there is less expenditure incurred on health for such members of the household, all things being equal.

Also, an assessment of the proportion of households that experience illness or injury indicate that 0.16% of the household members in the dataset experience illnesses, 2.6% experience injuries while 97.24% neither experience illnesses nor injuries (see Table 5.1). It is observed that household members have very low incidence of illnesses or injuries, which somewhat provide explanations for the low patronage of health insurance as shown in the results above.

However, the study present result to show that 66.18% of the household sought health care services when injured or ill (see Table 5.1). The results suggest that irrespective of the low incidence of illnesses and injuries in households, most households with incidences of injuries and illnesses seek health care which could affect their healthcare expenditures.

5.2.4 Regional and Ethnic Characteristics

The study provide results for the regional distribution of households, the ethnic distribution of household heads in Ghana and the rural-urban settlement distribution of households (see Table 5.1).

The results indicate a representative distribution of regional household representation in the dataset, although Volta region recorded very high representation in comparison to the rest of the regions. The representation of households in the dataset according to the results was as follows; Western (10.24%), Central (9.55%), Greater Accra (11.47%), Volta (40.65%), Eastern (10.76%),

Ashanti (11.81%), Brong Ahafo (9.66%), Northern (10.15%), Upper East (8.63%) And Upper West (8.34%) (See Table 5.1). The results have implications for the representativeness of the findings of the study. Thus, the conclusions drawn from the study is representative of the households across the regions of Ghana.

Finally, the study examines the rural-urban settlement distribution of households in the dataset. According to the results, 10.12% of the households settled in Accra, 34.27% in other urban. The results also showed that 6.89% of the households are rural coastal dwellers, 23.03% are rural forest dwellers and 25.69% of the households are rural savannah dwellers. The results suggest that a fair distribution of the households are rural and urban dwellers.

5.3 DESCRIPTION OF HOUSEHOLD EXPENDITURES

The study describe health expenditure variables, variables that measure catastrophic health expenditure and quartile distributions of health and catastrophic health expenditures in the study dataset.

5.3.1 Household Health Expenditure

The study assess the household membership size, value of out-of-pocket spending on healthcare, total household income, non-food expenditure of households, ratio of health payments to total household expenditure and ratio of health payments to non-food expenditure (see Table 5.2).

Table 5.2: Household Size and Health Expenditures

INDEX / VARIABLE	MEAN	S.D	MIN	MAX
Household size	4.3150	2.8136	1.00	30
Out of pocket spending on health care of households (in Ghana Cedis)	76.4389	206.2683	0.00	5461.80
Total household income	8105.18	7582.376	31.20	146345.40
Non-food expenditure of households	3939.78	5202.179	0.00	116035.10
Payments for health as a share of total household expenditure	0.0098	0.0224	0.00	0.3931

Source: Researcher's Compilation, Ghana Statistical Service Dataset (GLSS 6).

The study shows that an average household in the dataset had 4 members, with a standard deviation from the mean of about 3 members (see Table 5.2).

Also, the study indicates that average OOP spending on health for households in the dataset was GH¢ 76.44 (see Table 5.2). The results further indicate a standard deviation of GH¢206.27 of OOP expenditure on health, from the mean. The results indicate that although average spending is low, relative to middle income and high income earners, its risk of incurring more than the average imposes financial strains on the poor and some middle income earners.

The study also provides results from the dataset to show that the average total household income was GH¢ 8,105.18, with a deviation of GH¢ 7,582.38 from the average household income (see Table 5.2). The result seems to show evidence of low, middle and high income earning household population, relative to the average household size.

Average non-food spending of households in the dataset was GH¢ 3,939.79 (see Table 5.2), which is about 48.61% of total household income. The result indicates that households in the dataset spend a significantly large proportion of their income, other than on food alone.

The study shows that the average ratio of health spending to the total household expenditure was 0.98% of total household spending, indicating very low spending by household in the dataset (see Table 5.2). A standard deviation of 2.24% was reported in the results, implying some high levels of uncertainty of spending on health, relative to the average ratio spending on health.

On the other hand, the ratio of health expenditure to total non-food expenditure for households in the dataset was 2.55% with deviations of up to 5.46% from the average (see Table 5.2). The implication of the result is that health expenditure receives very low allocations out of the total expenditure on non-food items.

5.3.2 Catastrophic Payment Measures

The study assesses results for measures employed in examining catastrophic health expenditure for households in the dataset. The results indicate catastrophic health expenditures measured as the percentage share of out-of-pocket spending to total household expenditure and then to total household non-food expenditure, and beyond set thresholds of 5%, 10%, 15%, 25% and 40%. The results provide a headcount of households that incur catastrophic health expenditures, the overshoot of catastrophic health expenditure and the mean positive overshoot of the households, in different quartiles (see Table 5.3).

5.3.2.1 Out-Of-Pocket Health Spending as a Share of Total Expenditure

Table 5.3 shows a headcount of households that incur OOP health expenditure, as a fraction of their total expenditure in the 5%, 10%, 15%, 25% and 40% quartiles of the expenditure. The results indicate that at the 5%-of-total-household-expenditure threshold, 3.82% of households incurred catastrophic health expenditures; 1.10% of households incurred catastrophic health expenditures at the 10%-of-total-household-expenditure threshold; 0.44% of households were found to incur OOP for health at and beyond 15% of total household expenditure and 0.13% households incurred OOP health expenditures that accounted for 25% and more of their total household expenditure (see Table 5.3). The results therefore evidences the incidence of catastrophic health expenditures at the set thresholds (Berki, 1986; Kawabata et al., 2002). These incidences although undeniable, are quite minimal as compared to other countries of similar economic status as Ghana (Brinda, Andres & Enemark, 2014; Cid & Prieto, 2012; O'donnel et al., 2005)

Table 5.3: Measures of Catastrophic Health Expenditure

Catastrophic Payment Measures	**Threshold Budget Share, z**				
	5%	**10%**	**15%**	**25%**	**40%**
Panel A: OOP as Share of Total Household Expenditure					
Head count (H)	641	185	73	22	---
	3.82%	1.10%	0.44%	0.13%	
Overshoot (O)	28.9954	11.3421	5.4294	1.2452	---

	0.17%	0.001%	0.0003%	0	
Mean positive overshoot (MPO)	0.0452	0.0613	0.0744	0.0566	---
Panel B: OOP as Share of Nonfood Expenditure					
Head count (H)	---	1083	565	196	62
		6.46%	3.37%	1.17%	0.37%
Overshoot (O)	---	145.0787	56.8633	23.0067	6.8525
		0.01%	0.003%	0.001%	0.00
Mean positive overshoot (MPO)	---	0.09%	0.10%	0.12%	0.11%

Source: Researcher's Compilation, Ghana Statistical Service Dataset (GLSS 6).

Results for the overshoot OOP health to total expenditure ratio indicate that 0.17% of households in the dataset incur OOP health to total expenditure ratio above the threshold of 5%; 0.001% of the households again incur OOP health to total expenditure ratio above the threshold of 10%; and 0.0003% also incur OOP health to total expenditure ratio above the threshold of 15% (see Table 5.3).

The results found evidence to maintain that Ghanaian households incur very low rates or less intensive catastrophic health expenditure beyond 10% but not above the 15% threshold.

Finally, using the mean positive overshoot (MPO), the study assesses the intensity of the catastrophic health expenditures of households in the dataset. As seen in table 5.3, households

that incur catastrophic health expenditures at 5% (OOP:THE), exceed the threshold averagely by 0.05% while those households that incurred CHEs at 10% (OOP:THE) had a mean overshoot of 0.06%. The table also reports a mean positive overshoot of 0.07% for households that incur CHEs at 15% (OOP:THE) and 0.06% mean positive overshoot for those households that pay catastrophic health expenditures beyond 25% of their total household expenditures (see Table 5.3).

5.3.2.2 Out-Of-Pocket Health Spending as a Share of Total Non-Food Expenditure

Following the results of the headcount, the study found 6.46% of households incur OOP health to non-food expenditure ratio of 10%, 3.37% of households incur about 15% of OOP health to non-food expenditure ratio, 1.17% of households incur about 25% of OOP health to non-food expenditure ratio and 0.37% of households incur about 40% of OOP health to non-food expenditure ratio (see Table 5.3). The results indicate the presence of catastrophic OOP health expenditure by households in the dataset, following (O O'Donnell & Doorslaer, 2005; Wagstaff & van Doorslaer, 2003) definition of a 40% threshold of OOP health expenditure to non-food expenditure ratio. In terms of headcount, the result found very few households incur catastrophic OOP health expenditure.

Again, the study provides evidence to show that in terms of intensity (overshoot) of catastrophic OOP health expenditure above thresholds, 0.01% household units incur OOP health expenditure in excess of 10% of OOP health expenditure to non-food expenditure ratio; 0.003% of household units in the dataset were seen to incur OOP health expenditure in excess of 15% of OOP health expenditure to non-food expenditure ratio; 0.001% of household units were also observed to

incur OOP health expenditure in excess of 25% of OOP health expenditure to non-food expenditure ratio; and 0.0001% of household units were also observed to incur OOP health expenditure in excess of 40% of OOP health expenditure to non-food expenditure ratio (see Table 5.3). The results show lowering intensity of OOP health payments as intensity levels increase implying that household units incur low overshoot rates in OOP health payments.

Finally, the study shows an MPO of 0.09% for OOP health expenditure to non-food expenditure ratio of 10%; 0.10% for OOP health expenditure to non-food expenditure ratio of 15%; 0.12% for OOP health expenditure to non-food expenditure ratio of 25% and 0.11% of OOP health expenditure to non-food expenditure ratio of 40% (see Table 5.3).

5.4 RESULTS FROM REGRESSION MODELS

Two probit models are used to predict the likelihood of enrollment of households unto the NHIS (Table 5.4) and to establish the determinants of households that are likely to incur catastrophic health expenditures at 10% of household non-food expenditure (Table 5.5).

5.4.1 Household Characteristics and its Influence of Health Insurance Likelihood

The study examines how the main characteristics of households influence the likelihood that a household would actively register under the health insurance scheme. Only the results that are statistically significant at 1%, 5% and 10% are discussed.

Table 5.4: Determinants of enrolment unto Ghana's NHIS

Variables	Marginal Effects	Standard Errors
Household size (Ref: 1 - 2 members)		
3 – 6 members	0.0260***	(0.0162)
7 – 10 members	-0.0061	(0.0278)
11 – 30 members	0.0469	(0.0534)
Presence of adult members in household (Ref: no adult members)		
over18	-0.0087	(0.0054)
Gender of household head (Ref: male)		
Male	0.1167***	(0.0145)
Age group of household head (Ref: 15-29)		
30-39	0. 0743***	(0.0152)
40-49	0. 0901***	(0. 0183)
50-59	0. 1419***	(0. 0193)
60-99	0. 2600***	(0. 0205)
Marital Status of household head (Ref: never married)		
Married	0. 0231	(0. 0190)
Separated	-0.0142	(0. 0210)
Religion of household head (Ref: no religion)		
Christian	0. 0897***	(0.0175)
Muslim	0. 0807***	(0.0208)
Educational status of household head (Ref: no education)		
Primary	0.0028	(0.0145)
Secondary	0.0900***	(0. 0135)
Tertiary	0.2547***	(0. 0219)
Presence of differently-abled household member (Ref: no disability)		
Disability	-0.0034	(0. 0024)
Employment status of household head (Ref: unemployed)		
Worked	-0. 0767***	(0. 0180)

Rural or urban settlement of household (Ref: Accra)		
Other urban	0.2701***	(0. 0608)
Rural coastal	0.1230**	(0. 0640)
Rural forest	0. 2262	(0. 0628)
Rural savannah	0. 1453	(0. 0667)
Wealth quintiles (Ref: 1st quintile)		
2nd quintile	-0.067	(0. 0144)
3rd quintile	0.0203	(0. 0146)
4th quintile	0. 0311	(0. 0150)
5th quintile	0.0422***	(0. 0161)
Observations	16,474	
Pseudo R-squared	0.0996	

Ref is the reference group for that variable. Robust standard errors in parentheses. Standard errors were clustered at enumeration area level and sample weights were applied. *** p value <0.01, ** p value <0.05, * p value <0.1

Results from table 5.4 indicate that household that have a size from three to six members are 2.6 percentage points more likely to be registered under the NHIS than households that have only one or two members.

The relationship between the gender of the household head and the enrolment of the household onto the NHIS was found to be significant. Households with males as heads are 11.7 percentage points more likely to have health insurance coverage than household with females as heads (see Table 5.4). The results suggest that male household heads have a significant propensity of getting health insurance coverage than female household heads.

Also, the results indicate that households with age distributions 30-39 years are 7.4 percentage points more likely to obtain health insurance whereas household heads aged from 40-49 years are

9 percentage points more likely to be insured than household heads aged 15–39 years. Also, household heads from 50-59 years of age are 14.2percentage points more likely to have their households insured, while household head of 60-69 years old are 26percentage points more likely to have their households enrolled under the health insurance scheme than household heads with an age distribution of 15-29 years (see Table 5.4). These prove that the older the household head, the more likely for the household to be insured.

The results for the religious affiliation of household heads indicate that households affiliated to the Islamic religion are 8.1 percentage points more likely to have health insurance coverage than households with no affiliation to these two religions (see Table 5.4). On the other hand, the study found that Christian household heads are 9.0 percentage points more likely to have their households enrolled than households that are not affiliated to any of these two religions.

In terms of educational background of household heads, the results show that household heads with formal educational background up to the secondary level were 9.0 percentage points more likely to have their households insured than heads with no formal education. Additionally, households whose heads have attained tertiary levels are 25.5percentage points more likely to have health insurance coverage than households whose heads have no formal educational (see Table 5.4).

Also, the results indicate that household heads that are gainfully employed are 7.7percentage points less likely to have their households obtain health insurance coverage than household heads who are not gainfully employed (see Table 5.4).

The results for the settlement location and enrollment indicate that households that settle in urban areas other than Accra are 27percentage points more likely to be covered than households that

live within the Greater Accra metropolitan area. Moreover, households that reside within the rural coastal areas have a 12.3percentage points more likelihood to be insured as compared to resident households within the Greater Accra metropolitan area(see Table 5.5).

On the basis of wealth, we find that the households that belong to the richest or fifth quintile are 4.2percentage points more likely to enroll onto the NHIS than households whose income is among the poorest or in the first quintile.

5.4.2 Household Characteristics and Catastrophic health expenditures(CHE)

For this regression model, the study used a threshold of 10 percentage points share of health to non-food expenditure to define catastrophic health expenditures (see Table 5.5), This is in line with the arguments put forward by Tomini et al., (2013) that the income level of a country influences its choice of catastrophic threshold. It is common to find that middle and low income countries use thresholds of and around 10% of household non-food expenditure(Flores et al., 2008; Kawabata et al., 2002; Tomini et al., 2013).

The results that are significant at 1%, 5% and 10% are discussed below:

From Table 5.5, household heads' enrollment unto the NHIS is found to have a significant and negative relationship with the incidence of catastrophic health expenditures. When a household's head is enrolled unto the NHIS, that household is 2.4 percentage points less likely to incur catastrophic health expenditure.

The results also indicate that households of 3-6 six members have a 1.3 percentage points more likelihood to incur CHE than households made up of 1 or 2 members. Additionally, households that consist of 7-10 members are 3.0 percentage points more likely to incur CHE as compared to households that have only 1 or 2 members. Furthermore, households that have 11-30 members are 8.5percentage points more likely to incur CHE than households who are 1 or 2 in number. Therefore, the CHE increases with the size of households (see Table 5.5).

Table 5.5: Determinants of catastrophic health expenditures

Variables	Marginal Effects	Standard Errors
Insurance status of household head (Ref: no insurance)		
Covered	-0.0238***	(0.0049)
Household size (Ref: 1 - 2 members)		
3 – 6 members	0.0131*	(0.0080)
7 – 10 members	0.0295*	(0.0173)
11 – 30 members	0.0855*	(0.0460)
Presence of adult members in household (Ref: no adult members)		
over18	-0.0043	(0.0036)
Gender of household head		
Male	-0.0163**	(0.0079)
Age group of household head (Ref: 15-29)		
30-39	0. 0038	(0.0084)
40-49	0. 0082	(0. 0081)
50-59	0. 0177*	(0. 0091)
60-99	0. 0310***	(0. 0096)
Marital Status of household head (Ref: never married)		
Married	0. 0329***	(0. 0075)
Separated	0. 0270***	(0. 0091)
Religion of household head (Ref: no religion)		
Christian	0. 0209***	(0.0063)

Muslim	0. 0306***	(0.0082)
Educational status of household head (Ref: no education)		
Primary	-0.0021	(0.0083)
Secondary	-0.0251***	(0. 0078)
Tertiary	-0. 0331***	(0. 0109)
Presence of differently-abled household member (Ref: no disability)		

Variables	**Marginal Effects**	**Standard Errors**
Disability	-0. 0037***	(0. 0012)
Employment status of household head (Ref: unemployed)		
Worked	-0. 0356***	(0. 0073)
Rural or urban settlement of household (Ref: Accra)		
Other urban	-0. 0351	(0. 0296)
Rural coastal	-0. 0109	(0. 0287)
Rural forest	-0. 0021	(0. 0320)
Rural savannah	-0. 0025	(0. 0337)
Wealth quintiles (Ref: 1st quintile)		
2nd quintile	0.0070	(0. 0072)
3rd quintile	0.0040	(0. 0076)
4th quintile	-0. 0052	(0. 0071)
5th quintile	-0.0198***	(0. 0068)
Observations	16,474	
Pseudo R-squared	0.0789	

Ref is the reference group for that variable. Robust standard errors in parentheses. Standard errors were clustered at enumeration area level and sample weights were applied. *** p value <0.01, ** p value <0.05, * p value <0.1

The results further indicate that households with males as head do are1.6 percentage points less likely to incur CHE as compared to households that are headed by females (see Table 5.5).

Following the age distributions of household heads, the results found that households whose heads are 50-59 years old are1.8 percentage points more likely to incur CHE than households with head who are 15-29 years old. Also, household heads aged 60 years and above are 3.1 percentage points more likely to have their households insured as compared to household heads of ages 15-29 (see Table 5.5).

Results for the marital status of household heads indicate that households whose heads are married are3.3 percentage points more likely to make catastrophic payments for health as compared to households whose heads have never been married. More so, households are 2.7 percentage points more likely to incur CHE if their household heads have been separated or divorced than household whose heads never married (see Table 5.5).

Furthermore, the study found results to indicate that household heads affiliated to the Christian religion are2.1 percentage points more likely to incur catastrophic health expenditures than households whose heads belong to neither the Christian or Islamic religions. On the other hand a household is3.1 percentage points more likely to incur CHE if its head is a Muslim than if its head was neither Muslim nor Christian (see Table 5.5).

Correspondingly, the results indicate that households whose heads have attained up to secondary education are 2.5 percentage points less likely to incur CHE as compared to households whose heads have no formal education at all. Likewise, if a household's head has attained formal education up to the tertiary level, that household is 3.3 percentage points less likely to incur CHE than in a situation where its head has no formal education (see Table 5.5).

Also, the results show that the presence of differently-abled household members mean the household is 0.4 percentage points less likely to incur catastrophic health expenditure as compared to household that record no presence of differently-abled persons (see Table 5.5).

Similarly, the results found that compared to a household whose head is unemployed, a household is 3.6 percentage points less likely to incur catastrophic health expenditures if its head is gainfully employed (see Table 5.5).

Finally, the results show that households that belong to the riches or fifth income quintile compared to households in the poorest or first income quintile are 2.0 percentage points less likely to incur catastrophic health expenditures (see Table 5.5).

5.5 DISCUSSION OF RESULTS

Following Wagstaff and Van Doorslaer (2003), the headcount of households that incur catastrophic payments for health measures the prevalence of catastrophic health expenditure. The study used a range of thresholds that represent the share of total expenditure and non-food expenditure that should be spent on health care for a household to qualify as having incurred catastrophic health expenditure (Pradhan & Prescott 2002; Wagstaff and Van Doorslaer 2003; Xu et al., 2003).

It can be deduced from the results of this study, that prevalence of catastrophic health expenditure was found to be very low in Ghana. The study also found evidence to show that as the thresholds increased, prevalence of catastrophic health expenditure decreased (see Table 5.3), consistent with results by Wagstaff and Van Doorslaer (2003). In explaining this phenomenon,

the study found the average percentages of OOP was low at 0.98% of total expenditure and 2.55% of non-food expenditure respectively, in the dataset (see Table 5.2). Explanations for the low prevalence of catastrophic expenditure is provided by Xu et al. (2003), who opines that countries that rely mostly on OOP health financing generally have the greatest prevalence of catastrophic payments. The low records of catastrophic health expenditures are consistent with low percentage of households that recorded illness or injury in the two weeks prior to the survey (Table 5.1). Conversely, more than half of the population surveyed reported having made a visit to a health facility in the past two weeks of the survey period (Table 5.1).

In terms of intensity, as measured by the MPO following Wagstaff and Van Doorslaer (2003), the findings of the study indicate that the MPO initially increased with threshold increases, but begun showing a decreasing trend after the 25% threshold (see Table 5.3). This means that even the households that record catastrophic expenditures for health are on overage not seriously impoverished by these payments. The findings provide an indication that, given other household needs, there is an upper limit to which households could commit to health care expenditure, consistent with findings by Doorslaer et al. (2008).

Following results of the catastrophic payment overshoot, the study found that the catastrophic payment overshoot (intensity of catastrophic health expenditures or the extent to which thresholds were exceeded) decreased as the thresholds increase. Evidence from the result suggest that catastrophic health payment has a low degree of severity among Ghanaian households (see Table 5.3).

The rank weighted catastrophic counts of prevalence and intensity using the concentration indices (multiplying catastrophic counts by compliments of respective concentration indices)

show that catastrophic payments are concentrated with the poorer households than with the richest households. This situation is undesirable because poorer households have lower tendencies to escape the vicious cycles of debt and impoverishment that these payment plunge them into than their richer counterparts. The adjusted catastrophic counts are found to be higher than their original values due to concentration indices that are below zero.

The study also presents findings on how household characteristics influenced health insurance coverage in Ghana. This examination is conducted following Pradhan and Prescott (2002) who found government intervention in Indonesia was effective in reducing exposure to catastrophic health payment risks. According to the findings of the study, household with health insurance coverage was seen to less likely incur OOP expenditure in Ghana (see Table 5.4), consistent with findings by Pradhan and Prescott (2002). Also, the study found that male household heads increase the likelihood of obtaining health insurance coverage, and reducing OOP health expenditure. Also, a youthful and aged distribution (30-99 years) of household members, also more likely increase health insurance coverage and reduce OOP health expenditure. Household heads affiliated to the Islamic religion was also found to increase their likelihood for health insurance and reduce OOP health expenditure in Ghana. Also, findings indicate that household heads with secondary and tertiary formal education may understand the benefits of health insurance and that increases their likelihood to have health insurance coverage, thus, reducing OOP health expenditure. On the other hand, employed household heads were seen to have a reduced tendency of having health insurance coverage, which in turn increases their OOP spending. The findings imply the gainfully employed household heads may rely more on OOP health financing because they have income to meet the volatile medical expenses incurred. Also, the findings find households in urban, rural coastal, rural forest, rural savannah and other urban

areas significantly increase the likelihood of health insurance coverage and thus reduce OOP health spending. Finally, the findings indicate that households that frequent health centers have a higher likelihood of attaining health insurance coverage, and reduce OOP health financing.

The study present findings of household characteristics that significantly influence catastrophic health financing, as a share of non-food expenditure. First, the study found evidence to show that health insurance coverage reduces catastrophic health financing, consistent with findings by Pradhan and Prescott (2002). The presence of adult members (above 18 years) in a household also reduced catastrophic health financing in Ghana. This is probably due to the fact that grown up members of households have more developed immune systems to fight diseases and may be much more likely to avoid injuries. The health shocks experienced by such households should then be fewer.

Also, household heads aged 40 – 99 years were seen to increase catastrophic health financing in Ghana. Now this could be so for two reasons: first, older heads may record higher health expenditures as they age and secondly pensioner-headed households may have smaller expenditures due to smaller incomes, all things being equal.

Household heads affiliated to Christianity and Islam also increased catastrophic health financing in Ghana. . The findings further indicate that formal education into primary, secondary and tertiary education reduces catastrophic health financing in Ghana. Reduced catastrophic health financing was also found for households with differently-abled persons in a household, households that settled in rural coastal and other urban areas other than Accra. Finally, household wealth in the second quintile increase catastrophic health financing, while household wealth in the fifth quintile reduced catastrophic health financing.

Finally, the study present findings of household characteristics that significantly influence catastrophic health financing, as a share of total expenditure. The study found household size increases catastrophic OOP health expenditure, mainly because as the members in a household increases resources are shifted from non-food expenditure to increase medical expenses arising from the uncertainty of health bills from large household sizes. The larger the household, the higher the catastrophic expenses that are incurred for health care. This can be explained from two points of view. The first is that larger households may have to devote a larger portion of their expenditures to basic or food needs, all things being equal. Therefore, when there is a need to make payment for health care, there may be insufficient funds to cater for it. The other point of view is that larger households may have a larger incidence of illness or injury, all things being equal, just by virtue of their size. The disease creates a financial burden that may turn catastrophic when it absorbs high proportions of household expenditures.

The finding also found evidence to deuce that household head aged 30-39 and from 50-99 years increases catastrophic OOP health expenditure. Again, the findings showed that household heads affiliated to Christianity and Islam also increased catastrophic health financing in Ghana. In terms of ethnicity, household heads from the Gurma and Grusi ethnic backgrounds respectively reduce catastrophic OOP health expenditure. Finally, households in the rural forest areas were found to increase catastrophic OOP health expenditure in Ghana.

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 SUMMARY

This study was set out to achieve four (4) objectives. Firstly to investigate the incidence and intensity of catastrophic health expenditures among households in Ghana; secondly to ascertain whether household with insurance are exempted from payment of catastrophic health expenditures; thirdly to examine the fairness of these payments, that is whether they are progressive or regressive; and finally to identify the factors that characterize households that incur these catastrophic health expenditures.

To achieve these objectives the methodology of the study employs indices for measuring catastrophic health expenditures and their respective overshoots. Concentration indices are also calculated to determine the regressivity or otherwise of catastrophic health expenditures. Lastly we employ probit regression models that offer insight into the household characteristics that predict enrollment unto the NHIS and the incurrence of catastrophic health expenditures by Ghanaian households.

The findings indicate that compared to other middle income countries, Ghana seems to have far lower incidence and intensity of catastrophic expenditures for health. However, because this percentage of Ghanaians may become impoverished by virtue of these payments, it is still important to pay attention to these incidence and put in measures to completely eradicate the occurrence of catastrophic health expenditures in Ghana.

The following characteristics have a positive relationship with enrollment unto the NHIS: male-headed households, age of household head, religion, formal educational attainment, urban and rural coastal settlements and inclusion in the richest income quintile. Contrariwise, employed household heads record a negative relationship with enrollment.

The 36% of Ghanaian households that are enrolled unto the NHIS may not be completely exonerated from catastrophic health expenditures but the likelihood of themincurring catastrophic health expenditures is significantly lower as compared to households that are not covered by health insurance. This points to the role of the Ghana National Health Insurance Scheme does offer financial protection against the impoverishing effects of CHE.

Catastrophic payments for health care in Ghana are regressive. Meaning, the poorer households are worse affected by these payments than their richer counterparts.

Household expenditures on health that are catastrophic in nature were found to increase significantly with household size and age of household head. They also have a positive relationship with marital status and religion. Catastrophic payments for health care however are found to be lower among the richest households and households with employed heads. They also reduce with the presence of differently-abled members and also with increased attainment in formal education. They reduce as well with male-headed households.

6.2 CONCLUSION

There are indeed incidences of catastrophic payments for health care in Ghana, albeit at considerably low levels

These payments are mild in terms of severity as households that incur them do not exceed the set thresholds by large margins, on average.

The case of low incidence and slight intensity are evidenced by low records of MPOs (mean positive overshoots).

Catastrophic health payments for health care are regressive in Ghana.

The Ghana National Health Insurance Scheme offers financial protection against catastrophic health expenditures.

6.3 RECOMMENDATIONS

The following recommendations are made based on the findings of this study.

The GNHIA must put in place measures to increase the proportion of Ghanaians that are actively registered on the national health insurance scheme. Also since the National Health Insurance Act 852, 2012 makes it clear that enrolment is legally mandatory for all Ghanaian resident, enforcements should be put in place to ensure that all Ghanaian residents enroll unto the scheme in order to improve on the current enrollment rate of 36.4%. This can be done by the Ministry of Health influencing the Parliament of the government of Ghana to implement this.

Although elderly Ghanaian citizens above 70 years of age enjoy fee and premium waivers, members of their households do not. We would recommend that in cases where pensioner-heads

are the bread winners of households, all dependents of that household be considered also for premium and fee waivers.

Thirdly, the NHIA is encourage to consider a downward review of the cost of health insurance fees and premiums required of households that belong to the two lowest or poorest income quintiles. Their financial burden could be shifted more unto richer households who could be required to pay higher premium and fees in order to ensure fairness and progressivity of health care financing in Ghana.

Last but not least, arrangements should be made by the NHIA for households that become impoverished after they have registered under a higher income bracket. The fees and premiums required for registering under the NHIS are sensitive to income brackets of individuals and households. However, the economic status of households may deteriorate in between renewals through happenings like retrenchment, loss through fires and floods or even death of family bread winners. When this happens there is the need for provisions to be put in place to protect such households, otherwise they face the risk of being further impoverished by health care expenditures.

Further research in this area of study could delve deeper into the different types of health care services and facilities – public/private or formal/informal and their effects on or relationship with catastrophic health expenditures. Also of special interest would be a research on the trends of catastrophic payments for health care in Ghana over since the inception of the Ghana Health Insurance Scheme.

Bibliography

Aaron, H., & M. C. McGuire (1970). Public Goods and Income Distribution. Econometrica 38: 907–20.

Abor, P. A., Abekah-Nkrumah, G., Adjasi, C., Sakyi, K. and Abor, J. (2011), The Socio-economic Determinants of Maternal Health Care Utilization in Ghana, *International Journal of Social Economics*, Vol. 38(7), pp. 628-648

Adamba, C. (2010). The Thrills and Tears of National Health Insurance Scheme Cardholders in Ghana. *ISSER 2010* (pp. 2-4). Accra: Institute of Statistical, Social and Economic Research, Legon.

Akazili, J., Garshong, B., Aikins, M., Gyapong, J., & McIntyre, D. (2012). Progressivity of health care financing and incidence of service benefits in Ghana Health Policy and Planning 27, i13–i22.

Arhin-tenkorang, D. (2001). Mobilizing Resources for Health: The Casse for User Fees Revisited. Working Paper no. 81. Center for International Development, Cambridge MA.

Asenso-Okyere, K., Osei-Akoto, I., Anum, A., & Appiah, E. N. (1997). Willingness to Pay for Health Insurance in a Developing Economy. A Pilot Study of the Informal Sector of Ghana Using Contingent Valuation. *Health Policy , 42* (3), 223-237.

Axelson, H., Bales, S., Minh, P. D., Ekman, B., & Ulf-G, G. (2009). Health Financing for the Poor Produces Promising Short-Term Effects on Utilization and Out-of-Pocket Expenditure: Evidence from Vietnam. *International Journal for Equity in Health , 8* (20), 1-17.

Bayarsaikhan, D. (2008). Perspectives Financing health promotion in Japan and Mongolia, 86 (11)*Bulletin of the World Health Organization*, pp. 896–898.

Berki, S. E. (1986). A look at catastrophic medical expenses and the poor. *Health Affairs*, *5*(4), pp. 138–145.

Bernstein, J., Chollet, D., & Peterson, S. (2010). How Does Insurance Coverage Improve Health Outcomes? Reforming Health Care Issue Brief #1.

Blanchet, N., Fink, G., & Osei-Akoto, I. (2012). The Effect Of Ghana's National Health Insurance Scheme On Health Care Utilisation. *Ghana Medical Journal*, *46*(2).

Borrell, C., Fernandez, E., Schiaffino, A., Benach, J., Rajmil, L., & Villalbi, J. R. (2001). Social class inequalities in the use of and access to health services in Catalonia , Spain : what is the influence of supplemental private health insurance ? *International Journal of Quality Health Care*, 13(2), 117–125.

Brinda, E. M., Andrés, R. A., & Enemark, U. (2014). Correlates of out-of-pocket and catastrophic health expenditures in Tanzania: results from a national household survey. *BMC International Health and Human Rights*, *14*(5).

Chatterjee, S., & Gilliam, J. (2009). Taking Stock Of Health : An Examination Of Health Insurance. *Journal of Business & Economics Researcch*, *7*(4), 143–152.

Cid Pedraza, C., & Prieto Toledo, L. (2012). [Out-of-pocket health spending: the case of Chile, 1997 and 2007]. *Rev Panam Salud Publica*, *31*, pp. 310–316.

Damme, W. Van, Leemput, L. Van, Por, I., Hardeman, W., & Meessen, B. (2004). Out-of-pocket health expenditure and debt in poor households: evidence from Cambodia. *Tropical Medicine and International Health*, *9*(2), pp. 273–280.

Dercon, S. (2002). Income Risk, Coping Strategies, and Safety Nets. *The World Bank Research Observer*, *17*(2), pp. 141–166.

Donnell, O. O., Van Doorslaer, E., Rannan-Eliya, R. P., Somanathan, A., Garg, C. C., Hanvoravongchai, P., … Doorslaer, E. van. (2005). Explaining the incidence of catastrophic expenditures on health care : Comparative evidence from Asia. *EQUITAP: Manila*, pp. 1–28.

Ekman, B. (2004). Community Based Health Insurance in Low Income Countries: a Systematic Reveiw of the Evidence. *Health Policy and Planning , 19* (5), 249-270.

Ekman, B. (2007). The impact of health insurance on outpatient utilization and expenditure : evidence from one middle-income country using national household survey data. *Health Research Policy and Systems*, *5*(6), pp. 1–15.

Finkelstein, A. (2007). The aggregate Effects of Health Insurance: Evidence From the Introduction of Medicare. *The Quarterly Journal Of Economics*, *CXXII*(1).

Flores, G., Krishnakumar, J., O'Donnell, O., & Van Doorslaer, E. (2008). Coping with health-care costs: Implications for the measurement of catastrophic expenditures and poverty. *Health Economics*, *17*, pp. 1393–1412.

Garshong, B., & Akazili, J. (2015, July). Universal Health Coverage Assessment, Ghana. *Global Network for Health Equity (GNHE)* , 1-14.

Gertler, P., & Gruber, J. (2002). Insuring Consumption Against Illness. *American Economic Review , 92* (1), 51-70.

Gertler, P., & Gruber, J. (2002). Insuring consumption against illness. *The American Economic Review*, (1995), pp. 51 – 70.

Gobah, F., & Zhang, L. (2011). The national health insurance scheme in ghana: prospects and challenges: a cross-sectional evidence. *Global Journal of Health Science*, *3*(2), 90–101.

Gotsadze, G., Zoidze, A., & Rukhadze, N. (2009). Household catastrophic health expenditure: evidence from Georgia and its policy implications. *BMC Health Services Research*, *9*, 69.

Hsaio, W., & Liu, Y. (2001). Health Care Financing: Assessing its Relationship to Health Equity. *Lancet* .

Hwang, W., Weller, W., Ireys, H., & Anderson, G. (2001). Out-Of-Pocket Medical Spending For Care Of Chronic Conditions. *Health Affairs*, *20*(6), 267–278.

Jutting, J. P. (2001). *The Impact of Health Insurance on the Access to Health Car and Financial Protection in Rural Developing Countries; The Example of Senegal.* Washington, DC: The International Bank for Reconstruction and Development / World Bank.

Kakwani, N. C., A. Wagstaff, & E. van Doorslaer (1997). Socioeconomic Inequalities in Health: Measurement, Computation, and Statistical inference. *Journal of Econometrics,* 77 (1), pp 87-104

Kawabata, K., Xu, K., & Carrin, G. (2002). Preventing impoverishment through protection against catastrophic health expenditure. *World Health Organization*, p. 20-22.

Kimani, J. K., Ettarh, R., Warren, C., & Bellows, B. (2014). Determinants of health insurance ownership among women in Kenya: evidence from the 2008-09 Kenya demographic and health survey. *International Journal for Equity in Health*, *13*(1), 27.

Leive, A., & Xu, K. (2008). Coping with out-of-pocket health payments: Empirical evidence from 15 African countries. *Bulletin of the World Health Organization*, *86*, 849–856.

Lorenz, C. (2012). Triangulating Health Expenditure Estimates from Different Data Sources in Developing Countries The Case of Pakistan ' s Private Health Expenditure. *Applied Health Economics Health Policy*, *10*(1), 1–13.

Macha, J., Harris, B., Garshong, B., Ataguba, J. E., Akazili, J., Kuwawenaruwa, A., & Borghi, J. (2012). Factors influencing the burden of health care financing and the distribution of health care benefits in Ghana, Tanzania and South Africa. *Health Policy and Planning*, *27 Suppl 1*, i46–54.

McIntyre, D., Thiede, M., Dahlgren, G., & Whitehead, M. (2006). What are the economic consequences for households of illness and of paying for health care in low- and middle-income country contexts? *Social Science & Medicine (1982)*, *62*(4), 858–65.

Mills, A., M., Ally, J., Goudge, J., Gyapong, J., & Mtei, G. (2012). Progress towards universal coverage: the health systems of Ghana, South Africa and Tanzania Health Policy Planning, 27(suppl 1), i4-i12.

Mondal, S., Kanjilal, B., Peters, D. H., & Lucas, H. (2010, June). Catastrophic Out-of-Pocket Payment for Health Care and its Impact on Households: Experience from West Bengal, India. *Future Health Systems Innovations for Equity* , 1-21.

Moreno-Serra, R., & Smith, P. C. (2012). Does Progress Towards Universal Health Coverage Improve Population Health? *The Lancet , 380* (9845), 917-923.

Nyman, J. A. (1999). The Economics of Moral Hazard Revisited. *Journal of Health Economics , 18* (6), 811-824.

O'Donnell, O., & Doorslaer, E. van. (2005). Explaining the incidence of catastrophic expenditures on health care: Comparative evidence from Asia. *EQUITAP: Manila*, 1–28.

O'Donnel, O., van Doorslaer, E., Wagstaff, A., & Lindelow, M. (2008). *Analyszing Health Equity Using Household Survey Data. A Guide to Techniques and Their Implementation.* Washington, DC: The World Bank.

Owusu-Sekyere, E., & Chiaraah, A. (2014). Demand for Health Insurance in Ghana: What Factors Affect Enrollment? *American Journal of Public Health Research , 2* (1), 27-35.

Pradhan, M., & Prescott, N. (2002). Social Risk Management Options for Medical Care in Indonesia. *Health Economics , 11* (5), 431-446.

Rahman, M. M., Gilmour, S., Saito, E., Sultana, P., & Shibuya, K. (2013). Health-related financial catastrophe, inequality and chronic illness in Bangladesh. *PloS One*, *8*(2),

Ranson, M. K. (2002). Reduction of catastrophic health care expenditures by a community-based health insurance scheme in Gujarat , India : current experiences and challenges. *World Health Organization*, pp. 613–621.

Russell, S. (2004). The Economic Burden Of Illness For Households In Developing Countries : A Review Of Studies Focusing On Malaria , Tuberculosis , And Human Immunodeficiency Virus / Acquired Immunodeficiency Syndrome, *71*(Suppl 2), 147–155.

Saito, E., Gilmour, S., Rahman, M. M., Gautam, G. S., Shrestha, P. K., & Shibuya, K. (2013). *Catastrophic household expenditure on health in Nepal: a cross-sectional survey* (No. 92).

Saksena, P., Antunes, A. F., Xu, K., Musango, L., & Carrin, G. (2011). Mutual health insurance in Rwanda: evidence on access to care and financial risk protection. *Health Policy (Amsterdam, Netherlands)*, *99*(3), 203–9.

Sauerborn, R., Adams, A., & Hien, M. (1996). HOUSEHOLD STRATEGIES TO COPE WITH THE ECONOMIC COSTS OF ILLNESS. *Social Science & Medicine*, *43*(3), 291–301.

Somkotra, T., & Lagrada, L. P. (2008). Payments for health care and its effect on catastrophe and impoverishment: experience from the transition to Universal Coverage in Thailand. *Social Science & Medicine (1982)*, *67*(12), 2027–2035.

Sorensen, G., Emmons, K., Hunt, M. K., Barbeau, E., Goldman, R., Peterson, K., … Berkman, L. (2003). Model for incorporating social context in health behavior interventions: applications for cancer prevention for working-class, multiethnic populations. *Preventive Medicine*, *37*(3), 188–197.

Spaan, E., Mathijssen, J., Have, A., Baltussen, R., Tromp, N., & Mcbain, F. (n.d.). A Systematic Review of Health Insurance Impact in Low-income Countries. *Nijmegen International Center for Health Systems Research and Education*, p. 2.

Soeters, R., Habineza, C., & Peerenboom, P. B. (2006, November). Performance-based financing and Changing the District Health System: Experience from Rwanda. *Bulletin of The World Health Organisation* , 884-889.

Spaan, E., Jehu-Appiah, C., Aryeetey, G., Agyepong, I., & Baltussen, R. (2012). Household Perceptions and their Implications for Enrolment in the National Health Insurance Scheme in Ghana. *Health Policy and Planning , 27* (3), 222-233.

Sulzbach, S., Garshong, B., & Owusu-Banahene, G. (2005). *Evaluating the effects of the national health insurance act in Ghana: Baseline report*. Partners for Health Reformplus.

Tomini, S. M., Packard, T. G., & Tomini, F. (2013). Catastrophic and impoverishing effects of out-of-pocket payments for health care in Albania: Evidence from Albania Living Standards Measurement Surveys 2002, 2005 and 2008. *Health Policy and Planning*, *28*, 419–428.

Van Doorslaer, E., O'Donnell, O., Rannan-Eliya, R. P., Somanathan, A., Adhikari, S. R., Garg, C. C., … Zhao, Y. (2007). Catastrophic payments for health care in Asia. *Health Economics*, *16*, 1159–1184.

Wagstaff, A. (2007). The economic consequences of health shocks: evidence from Vietnam. *Journal of Health Economics*, *26*(1), 82–100.

Wagstaff, A., & Lindelow, M. (2008). Can insurance increase financial risk?. The curious case of health insurance in China. *Journal of Health Economics*, *27*, 990–1005.

Wagstaff, A., & van Doorslaer, E. (2003). Catastrophe and impoverishment in paying for health care: with applications to Vietnam 1993-1998. *Health Economics*, *12*(11), 921–34.

Waters, H. R., Anderson, G. F., & Mays, J. (2004). Measuring financial protection in health in the United States. *Health Policy (Amsterdam, Netherlands)*, *69*(3), 339–49.

Whitehead, M., Dahlgren, G., & Evans, T. (2001). Equity and health sector reforms: can low-income countries escape the medical poverty trap? *Lancet*, *358*(9284), 833–6.

World Health Organisation (2008). *Health Systems Governance*. *Health San Francisco* (Vol. 304).

World Health Organisation (2000). *The World Health Report, 2000.* World Health Organization 2000.

Wilkes, A., Hao, Y., Bloom, G., & Xingyuan, G. (1997). Coping with the costs of severe illness in rural China, *100*(1415), 1–27.

Witter, S., & Garshong, B. (2009). Something Old or Something New? Social Health Insurance in Ghana. *BMC International Health and Human Rights , 9* (20), 1-13.

Wyszewianski, L. (1986). Financially catastrophic and high-cost cases: definitions, distinctions, and their implications for policy formulation. *Inquiry*, *23*(4), 382–394.

Xu, K., Evans, D. B., Carrin, G., Aguilar-Rivera, A. M., Musgrove, P., & Evans, T. (2007). Protecting households from catastrophic health spending. *Health Affairs (Project Hope)*, *26*(4), 972–83.

Xu, K., Evans, D. B., Kawabata, K., Zeramdini, R., Klavus, J., & Murray, C. J. L. (2003). Household catastrophic health expenditure: a multicountry analysis. *Lancet*, *362*(9378), 111–7.

Xu, K., Saksena, P., Carrin, G., Jowett, M., Kutzin, J., & Rurane, A. (2009). Access to health care and the financial burden of out-of-pocket health payments in Latvia. *Social Science & Medicine*, *62*(12), 10.

Yu, C. P., Whynes, D. K., & Sach, T. H. (2008). Equity in Health Care Financing: The Case of Malaysia. *International Journal for Equity in Health , 7* (15), 20-33.