ADDIS ABABA UNIVERSITY
COLLEGE OF BUSINESS AND ECONOMICS
DEPARTMENT OF ECONOMICS

Equity Healthcare Financing in Ethiopia: Measuring the Burden of Out-of-Pocket Payments

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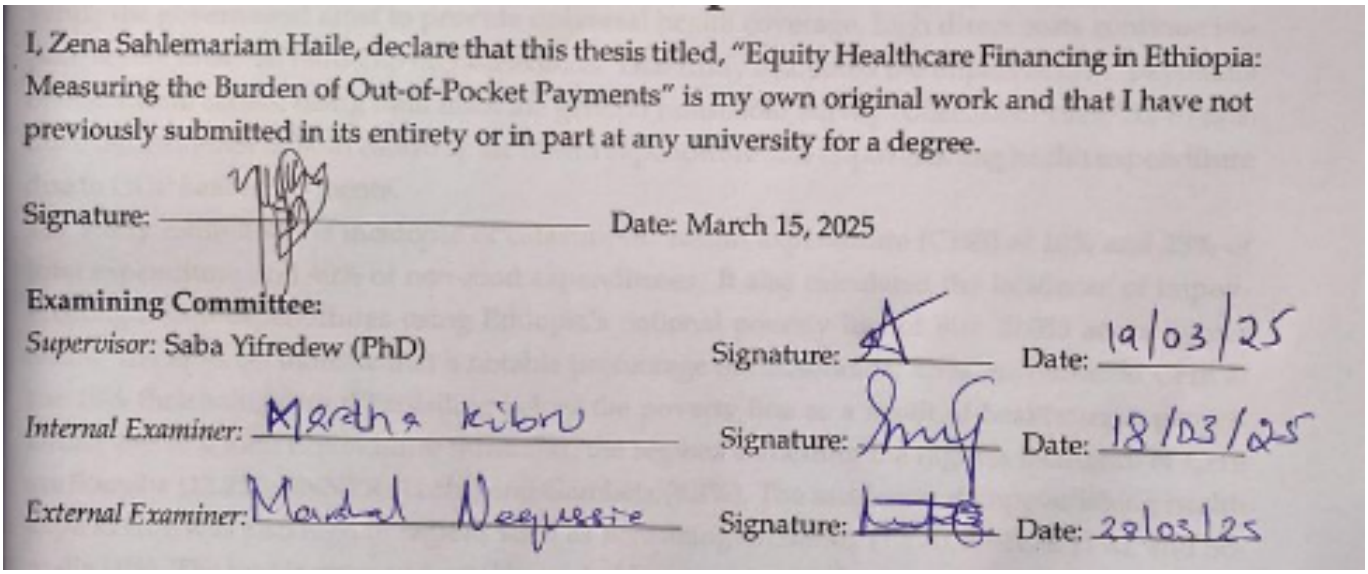
Declaration of Authorship



I, Zena Sahlemariam Haile, declare that this thesis titled, "Equity Healthcare Financing in Ethiopia: Measuring the Burden of Out-of-Pocket Payments" is my own original work and that I have not previously submitted in its entirety or in part at any university for a degree.

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Abstract

Equity Healthcare Financing in Ethiopia: Measuring the Burden of Out-of-Pocket Payments

by Zena Sahlemariam Haile

Paying out-of-pocket (OOP) continues to be a major obstacle to accessing healthcare in Ethiopia. While the government aims to provide universal health coverage, high direct costs continue impose severe financial hardship on households. This study evaluated the impact of OOP payments on healthcare access, using data from the general household survey collected in 2019/20, to estimate the incidence of both catastrophic health expenditure and impoverishing health expenditure due to OOP health payments.

The study estimated the incidence of catastrophic health expenditure (CHE) at 10% and 25% of total expenditure and 40% of non-food expenditures. It also calculated the incidence of impoverishing health expenditures using Ethiopia's national poverty line of Birr 10,053 annually per adult. The findings indicate that a notable percentage of households, 8.5%, encountered CHE at the 10% threshold, with 0.7% falling below the poverty line as a result of healthcare expenses. Under the 10% total expenditure threshold, the regions exhibiting the highest incidence of CHE are Somalia (12.2%), SNNPR (11.5%) and Gambela (9.3%). The incidence of impoverishing health expenditure was also high in regions such as Benishangul-Gumuz (1.4%), SNNPR (1%), and Somalia (1%). The low-income and rural households were found to be the most vulnerable. In summary, OOP payments undermine healthcare access and impoverish Ethiopian households. There is a need to strengthen financial risk protection mechanisms and improve equity in healthcare financing, especially in the regions most affected by the catastrophic and impoverishing effects of out-of-pocket health expenditures. Expanding prepayment mechanisms like social health insurance and subsidies could help promote equitable access in line with universal health coverage goals. Strengthening financial risk protection is critical to reducing disparities across Ethiopia.

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List of Abbreviations

CBHI	Community-Based Health Insurance
CHE	Catastrophic health expenditures
CSA	Central Statistical Agency
CTP	Capacity to pay
EA	Enumeration Area
EDHS	Ethiopian Demographic and Health Survey
EPHI	Ethiopian Public Health Institute
ESS	Ethiopia Socioeconomic Survey
ETB	Ethiopian Birr
FMoH	Federal Democratic Republic of Ethiopia Ministry of Health
FPR	Financial Risk Protection
GDP	Gross Domestic product
IMF	International monetary Fund
LMICs	Low- and middle-income countries
NHA	National Health Accounts
NGO	Non-governmental organization
OOP	Out-of-pocket
OOPE	Out-of-pocket payment (Expenditure)
PPP	Purchasing Power Parity
SNNP	South Nation and Nationality People
SSA	Sub-Saharan Africa
UHC	Universal health coverage
USD	US Dollar
WHO	World Health Organization

Chapter 1

INTRODUCTION

1.1 Background of the study

Ethiopia has a large and growing population of over 107 million people, making it the second most populous nation in Africa (CSA, 2023). Despite facing global economic instability and the challenges posed by the COVID-19 pandemic, Ethiopia has maintained a robust economic growth. In 2022, the country achieved real GDP growth of 6.4%. However, growth is projected to decline to 6.1% in 2023 and 6.2% in 2024 - a sharper drop than the average of 3.5% forecast for Sub-Saharan Africa (SSA) overall according to the IMF's World Economic Outlook Update released in October 2023 (IMF, 2023).

The primary aim of a healthcare system is to improve the overall health of population (Murray and Frenk, 2000; Roberts MJ et al., 2008). To accomplish this, measure should be taken to protect individuals and households from health expenditures that might hinder their ability to seek care and maintain financial stability. This initiatives are often referred to as financial risk protection (FPR) measures, which play a vital role in promoting access to healthcare while ensuring financial security of households (Murray and Frenk, 2000; Roberts MJ et al., 2008).

Financing and providing adequate healthcare remains a significant challenge in Ethiopia. Out-of-pocket healthcare expenditures are an important feature of health systems worldwide (WHO, 2015). However, their impact varies significantly. For some households, such expenditures are considered a luxury, while for others they represent a necessity. Continuous out-of-pocket spending can psychologically stress patients and their families (WHO, 2015). It also worsens poverty in underprivileged households, as patients may skip essential because they can't afford them (Eskinder, 2014). Out-of-pocket costs are particularly catastrophic for poor households, presenting an important policy challenge (Beogo et al., 2016).

Total healthcare expenditures can be categorized as either public or private spending. Public expenditures are financed through government funds or loans, primarily for non-profit motives to satisfy basic human rights (Moscone F, 2010). In emergencies, governments may subsidize some pharmaceuticals. Private expenditures refer to costs that are not covered by the government. These include expenses by household, businesses, non-governmental organizations (NGOs), medical insurance planes, and insurance policies provided by employers (Rannan and Ravi, 2008; Sidze, Beekink, and Maina, 2015).

Before 1998, Ethiopia lacked formal healthcare financing policies. The health system relied heavily on direct out-of-pocket payments from patients (Alebachew et al., 2015). This posed severe access barriers due to the financial burden on households looking care, especially in rural communities with limited facilities and care options (WHO, 2021). To address these issues, the 1998 Health Care Financing Strategy focused to expand coverage through community-based health insurance (CBHI), removing user fees for priority services, and developing rural infrastructure (Alebachew et al., 2015; WHO, 2021). Although somewhat effective, OOP expenditures still make up a significant part of overall health expenditures in Ethiopia.

In order to attain universal health coverage by 2030, the Ethiopian government plans to guarantee that everyone can access necessary services without facing financial difficulties. This goal will demand ongoing efforts to tackle the challenges of healthcare financing and accessibility, particularly for low-income and rural populations. It will also require strong political commitment, adequate resources, and innovative approaches to healthcare delivery and financing (Debie, Khatri, and Assefa, 2022; FMoH, 2020; FMoH, 2015).

Over the past twenty years, Ethiopia has seen a consistent increase in per capita health expenditure. In 1995/96, the expenditure was USD 4.502, which grew to USD 33.2 in 2016/17 and further to USD 36.30 in 2019/20 (including COVID-19 spending). However, it is important to note that this amount remains relatively low when compared to the average of USD 43 for low-income African countries. Additionally, it falls significantly short of the World Health Organization's recommendation of USD 86 per capita spending for the delivery of essential health services by 2015 (NHA, 2022).

The eighth National Health Accounts report reveals that around 30% of total health expenditure is paid directly by individuals and families in the form of OOP payments at the time of service (NHA, 2022). This places significant financial strain on households, especially those with limited resources (EDHS, 2021; NHA, 2022). Even for insured individuals, cost-sharing requirements can discourage utilization of needed care. The high reliance on OOP also undermines risk-pooling and prepayment mechanisms critical to equitable and resilient health systems. Although Ethiopia has over 18 million people enrolled in community-based schemes, their contributions represent just 1% of total health expenditure (NHA, 2022).

To address these challenges, the Ethiopian government is promoting health insurance as a means of financing healthcare services. The establishment of the Ethiopian Health Insurance Agency in 2010 aimed to offer social health insurance coverage to the entire population. This particular health insurance program is specifically designed to be financially accessible to everyone, where the amount of contributions is determined by individuals' income levels and the size of their households. Despite being its initial stage, the system's reach is still restricted (NHA, 2019). As a result people in Ethiopia primarily pay for healthcare services out of their own pockets.

1.2 Statement of the Problem

Lately, economists have highlighted the importance of investing in healthcare and education to develop human capital (Well, 2007). This is crucial for economic growth, as healthier individuals contribute more effectively to the labor force, leading to increased productivity and income (Anyanwu and Erhijakpor, 2009). However, poor health can lead to adverse consequences for household income, thereby exacerbating poverty rates. It diminishes individuals' earning capacity, raises medical expenses, and reduces savings, creating a cycle of illness and poverty (Baltagi et al., 2017). One significant challenge in low-income countries is the high level of healthcare expenditures that individual must pay out of their own pockets. This accounts for the large portion of the total health expenditure and disproportionately affects low-income individuals (Xu et al., 2007; WHO, 2010). The share of out-of-pocket expenses is more influenced by a country's ability to generate revenue than by its income levels (Fan and Savedoff, 2014). Limited social assistance and fee exemptions for healthcare further exacerbate the situation (Onwujekwe, 2010). The World Health Organization (WHO) reports that a significant number of people face financial difficulties or are pushed into poverty due to direct out-of-pocket health expenditures (WHO, 2014; WHO, 2023). In Ethiopia, per capita out-of-pocket payments have increased, imposing a financial burden on households (NHA, 2019).

Cavagnero et al., 2006 conducted a study in Argentina to analyze how changes in the health sector impacted healthcare utilization and expenditures that posed catastrophic costs to households. The researchers employed a statistical technique called multinomial logit regression to identify factors influencing individuals' choice of care source when faced with an illness in the previous 30 days requiring outpatient treatment. Specifically, the study examined utilization patterns across different financing schemes. The results showed wealth played a role in healthcare access - those in the highest income quintile were significantly less likely to use public outpatient services compared to the poorest quintile, even after accounting for other personal characteristics. This suggested direct payments acted as a barrier disproportionately for the poor in accessing needed care through public facilities in Argentina. Overall, the findings provided insights into how the cost of care influenced healthcare usage in relation to individuals' financial resources (Cavagnero et al., 2006).

Out-of-pocket expenditures create significant financial barriers to accessing healthcare, attributed to factors such as a lack of prepayment mechanisms, limited risk pooling, and inadequate social safety nets (Wagstaff and Doorslaer, 2003). Numerous empirical studies consistently find a strong association between poverty and high out-of-pocket healthcare spending across different countries (Xu et al., 2003; Van Doorslaer et al., 2006).

Out-of-pocket expenditures make up a significant portion of overall health spending in low and middle-income countries, with estimates ranging from 20% to 80% of national health expenditure (Xu et al., 2003). Studies conducted across eleven Asian countries revealed that out-of-pocket payments were regressive, imposing a heavier load on individuals with lower economic resources (Van Doorslaer et al., 2006).

Globally, catastrophic health expenditures resulting from out-of-pocket costs are widespread, affecting 10% to 60% of households in many countries annually (Xu et al., 2003; Onwujekwe, 2010). These costs often lead to the impoverishment of families or further entrench them in poverty (Wagstaff and Lindelow, 2008). In Ethiopia, the high cost of healthcare has various consequences, including reduced healthcare seeking behavior, asset sales, borrowing, and mortgage of crops, all of which deepen poverty and negatively impact livelihoods and children (Witter, 2005).

Recent studies in Ethiopia highlights the urgent need for alternative financing mechanisms to ensure fair access to healthcare services, considering the rise of out-of-pocket payments as the primary healthcare financing method (Kruk, Goldmann, and Galea, 2009). Governments have committed to advancing universal health coverage (UHC), implying that all people can access needed healthcare without financial hardship (WHO, 2010; WHO, n.d.). While countries seek alternative financing arrangements (McIntyre, 2013; Reich et al., 2016), many low- and middle-income nations, including Ethiopia, lack structured frameworks for healthcare financing and achieving universal coverage. As a result, populations often have no choice but to directly pay out-of-pocket for services at the point of care when needed (WHO, 2010).

Healthcare spending represents a significant portion of individual and national budgets in least developed countries. In low-income nations, OOP payments are often regressive, and social assistance or fee exemptions are either insufficient or unavailable (Onwujekwe, 2010). Given high poverty levels, healthcare costs can be unaffordable for many households and catastrophic consequences for others (FMoH, 2014; WHO, 2014). In Ethiopia, per capita OOP health expenditure is USD 36.30 in 2019/20, a 9.34% increase from 2017 (NHA, 2022). However, OOP payments represents a smaller portion of overall expenditures.

Most Ethiopians do not seek care when ill, and of those who do, two-thirds' poverty deepens to cover costs through asset sales, borrowing, or crop mortgages. This undermines long-term livelihood sustainability with grave child consequences. Withdrawing children from school and accruing debt are common impacts of unaffordable care (WHO, 1948).

Healthcare financing significantly impacts equity, efficiency, and outcomes. Equity aims to eliminate unfair differences, while UHC means all can access care without financial hardship. This remains challenging in low-income countries like Ethiopia with widespread poverty (WHO, 2010). A major issue is unequal access due to high OOP costs creating barriers to essential care for low-income households, resulting in hardship, preventable illness, and death. Despite insurance's role in reducing hardship and improving access, many low-income Ethiopians face barriers to affordable coverage. High OOP reliance has significantly burdened limited households, undermining risk pooling and prepayment. Lack of understanding also hinders insurance access among low incomes (Alemayehu et al., 2023).

Alternative approaches to insurance addressing OOP challenges and improving low-income access in Ethiopia warrant exploration. This study aims to understand OOP's role and impacts on access and financial protection. Alemayehu et al., 2023 conducted a study examining the impact of community-based health insurance on health service utilization and financial risk protection in Ethiopia. The findings demonstrated that CBHI membership leads to increased utilization of

health services and a reduction in catastrophic health expenditure, emphasizing the importance of strengthening CBHI as a crucial approach to advancing universal health coverage (Alemayehu et al., 2023).

However, many studies in Ethiopia have primarily been qualitative and led out by health experts, with limited input from economists. Additionally, relying solely on household surveys to collect data on healthcare expenditure can be expensive, time-consuming, and subject to recall bias. Accessing households for surveys can also pose challenges, leading to non-response bias.

Therefore, there is a research gap in understanding and measuring the burden of out-of-pocket healthcare expenditures in Ethiopia. This study aims to address this gap by conducting a quantitative analysis using secondary data sources to examine the impact of out-of-pocket payments on financial access to healthcare in Ethiopia. The findings of this study can provide valuable insights for policymakers and stakeholders in designing strategies to enhance healthcare financing, improve access to healthcare services, and reduce poverty in the country.

In general, this study is going to answer the following research questions:

1. What is the current state of OOP payments in Ethiopia's healthcare system, and how do they contribute to catastrophic health expenditures and impoverishment among households?

2. How do OOP payments affect access to healthcare services for vulnerable households in Ethiopia, and what are the implications for healthcare utilization and equity in Ethiopia?

1.3 Objective of the study

1.3.1 General Objective

The main objectives of this study is to evaluate the burden of out-of-pocket payments on healthcare access in Ethiopia and to explore strategies for mitigating catastrophic and impoverishing health expenditures.

1.3.2 Specific Objective

In particular, this study will:

1. Assess the current level and trends of out-of-pocket payments in Ethiopia's healthcare system and their contribution to catastrophic health expenditures and household impoverishment.

2. Examine how out-of-pocket payments impact healthcare utilization, particularly among vulnerable households, and identify barriers to equitable access.

1.4 Motivation the Research Questions

The research questions in this study are motivated by the need for up-to-date evidence on inequities in Ethiopia's healthcare system caused by high reliance on out-of-pocket payments. As Ethiopia aims for universal health coverage by 2030, it is crucial to understand the impact of out-of-pocket payments and identify disparities in healthcare access, particularly among vulnerable groups. The findings will provide policymakers with evidence to prioritize reforms in the healthcare financing system, implement interventions to strengthen financial protection, and improve equity in healthcare access.

Contribution to the prior literature

By analyzing the impact of out-of-pocket payments on access to healthcare among households and identifying alternative financing approaches in the Ethiopian context, this study aims to add to the limited but growing body of evidence on equitable healthcare financing solutions in low-income countries seeking to transition towards universal health coverage.

1.5 Significance, Scope and Policy Implication of the study

This study is significant because it will generate evidence on how Ethiopia's high reliance on out-of-pocket payments undermines healthcare equity and financial access for vulnerable households, informing policies needed to reform the healthcare financing system and transition toward sustainable models that can help Ethiopia make progress on universal health coverage goals.
The scope of this study is to analyze the impact of out-of-pocket payments on access to healthcare in Ethiopian households. It aims to understand the financial burden imposed by these payments and how they affect individuals' ability to seek and afford necessary healthcare services. The study will also explore alternative health financing approaches that can alleviate the burden of out-of-pocket payments for the Ethiopian population. This includes examining existing health insurance models or other financing mechanisms that can provide financial protection and improve access to healthcare services.

1.6 Organization Of the study

This study organized into five chapters. Chapter one provides an introduction to the study, outlining the background, problem statement, objectives, research questions, scope, significance, and organization of the research. Chapter two reviews relevant literature on healthcare financing and equity in Ethiopia. In chapter three discusses the research methodology used for analysis. The results and discussions are presented in Chapter four. Chapter five presents conclusion and recommendations.

Chapter 2

LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of literature on out-of-pocket payments in healthcare. Various studies are examined to gain insights into the factors that contribute to OOP payments and their impact on households in Ethiopia. The chapter begins with a review of theoretical literature, followed by empirical literature, and concludes with an overview of the literature, identifying knowledge gaps.

2.2 General Concept

2.2.1 Health and Health Financing

According to the World Health Organization (WHO), health is a state of complete physical, mental, and social well-being, not merely the absence of disease or infirmity (WHO, 1948). It encompasses various biological, social, and environmental determinants that influence an individual's overall well-being (Marmot, 2005). Health is more than just the absence of illness; it is a positive concept that includes the ability to handle everyday challenges, achieve personal goals, and experience contentment and joy (Huber et al., 2011).

The attainment of the highest possible level of health is crucial not only for the health sector but also for social and economic sectors. Health is a critical component of human capabilities, and without it, individuals are unable to fully participate in society, enjoy life, or achieve their potential. Additionally, health helps preserve human capital, which is the primary resource for economic development (Bloom, Canning, and Sevilla, 2004).

Health financing refers to the ways in which healthcare services are financed, including the sources of funding and the mechanisms used to allocate resources. Tax-based financing is one financing mechanism that has been implemented in countries such as the United Kingdom and Canada. This system promotes equity in access to healthcare services by ensuring that everyone contributes to the financing of the healthcare system based on their ability to pay (Davis et al., 2014; Tikkanen et al., 2020). Social health insurance is another financing mechanism that has been

implemented in countries such as Germany and France. This system involves mandatory contributions from both employers and employees and promotes equity in access to healthcare services by ensuring that everyone has access to healthcare services based on their need, regardless of their ability to pay (Carrin and James, 2005; Wagstaff, 2010).
Establishing a fair and sustainable health financing system is crucial for ensuring a healthy population and providing universal access to high-quality healthcare services for all individuals, regardless of their social or economic status (WHO, 2000). Health financing plays a pivotal role in improving health outcomes, reducing health inequalities, and promoting sustainable economic development (McIntyre, 2013). Healthier populations are more productive, and a healthy workforce is essential for economic growth and development (Bloom, Canning, and Sevilla, 2004). The World Health Organization has identified three key objectives of health financing:[1]

1. to raise sufficient funds for health services,
2. to allocate resources fairly and efficiently, and
3. to ensure that financial risk protection is provided to all individuals who need healthcare services.

2.2.2 Health Equity

Health equity, according to the WHO, refers to the absence of avoidable, unfair, or remediable differences among groups of people, whether they are defined by social, economic, demographic, geographic, or other factors such as disability status (FMoH, 2020). This involves addressing the root causes of health inequities, such as poverty and systemic racism, and implementing policies and programs that promote access to quality healthcare, education, employment, housing, and other social services. By promoting health equity, we can improve the health of entire communities and create a more fair and just society. Community-based health insurance is one financing mechanism that has been implemented in countries such as Rwanda and Ethiopia to promote equity in access to healthcare services. This system involves community members contributing to a health insurance fund, which is used to cover the cost of healthcare services (Ekman, 2004; Shigute Z, 2020). Community-based health insurance promotes equity in access to healthcare services by ensuring that everyone has access to healthcare services, regardless of their ability to pay. Therefore, equity in healthcare financing is an important concept in the context of Ethiopia, where a large proportion of the population lives in poverty and faces significant barriers to accessing healthcare services.

[1] https://www.who.int/health-topics/health-financing

2.2.3 Healthcare Expenditure

Healthcare financing encompasses all spending from public and private sources towards health services and goods (WHO, 2022). In many low and middle-income nations, private out-of-pocket expenditures make up a substantial portion of total costs due to direct payments at the point of care (Xu et al., 2003). When individuals face financial hardship due to health expenses, their out-of-pocket health spending can threaten their standard of living and hinder their access to essential goods like food, shelter, clothing, or education. Catastrophic health spending is characterized by out-of-pocket expenditures that surpass 10% or 25% of a household's total consumption or income (budget), along with out-of-pocket spending exceeding 40% of nonfood consumption (WHO, 2023).

The occurrence of impoverishing health spending is defined as the percentage of the population pushed into poverty or deeper poverty due to out-of-pocket health expenses. Impoverishing health spending takes place when a household's overall consumption, inclusive of out-of-pocket spending, exceeds the poverty line, while its consumption excluding out-of-pocket spending falls below this threshold (WHO, 2023; Getachew et al., 2023).

This reliance on direct payments poses issues due to their regressive nature, disproportionately impacting the poor (Arhin, Oteng-Abayie, and Novignon, 2023). Research shows high private costs can limit utilization as individuals forgo needed care due to financial barriers (Mtei et al., 2007). This threatens health outcomes and risks impoverishing households with large medical bills (Wagstaff and Doorslaer, 2003).

Equitable, sustainable systems require strategic public investment through prepayment options like taxes or insurance that facilitate access and risk-sharing (WHO, 2022). While money alone doesn't guarantee efficiency or coverage, adequate priority services funding still supports universal goals (Savedoff et al., 2023). Demand and supply interventions customized locally can strengthen systems (Atun et al., 2010).

Healthcare costs incorporate direct out-of-pocket payments as well as indirect items like lost income or transport fees. These direct and indirect expenses may represent a major household budget share and potentially push families into poverty (Binnendijk, Koren, and Dror, 2012).

To handle costs, families apply various coping strategies depending on amounts, such as savings, asset sales, or borrowing (Leive and Xu, 2008).

Designing fair financing poses challenges around shielding households from destitution risks of direct costs and ensuring affordable access (Cavagnero et al., 2006). When families directly pay at treatment sites, spending on healthcare can inhibit essential expenses or care-seeking (Cavagnero et al., 2006; Whitehead, Dahlgren, and Evans, 2003). Systems must address these financial protection and equity concerns.

2.3 Theoretical Literature

Equity theory provides a foundational framework for analyzing healthcare systems. As Whitehead, 1992 initially proposed, equity theory posits that systems should aim to eliminate unfair disparities in access to and outcomes of care. A core element is ensuring equal access based solely on need rather than ability to pay or socioeconomic factors (Whitehead, 1992; Braveman and Gruskin, 2003).

Equity theory has informed health policy debates on addressing inequities. Braveman and Gruskin, 2003 apply the framework to analyze maternal health disparities and develop equity-promoting policies. However, some argue it provides limited practical guidance on operationalizing equity in varied contexts (Culyer and Wagstaff, 1993).

Closely related to equity theory is the concept of financial protection in healthcare. Financial protection theory postulates that prepayment mechanisms like social health insurance allow populations to collectively pool and share the risks associated with healthcare costs through such arrangements (Carrin and James, 2005). This enables resources to be distributed more evenly across a population and ensures those with the greatest needs are still able to access necessary care.

Without adequate financial protection, households face potential catastrophic out-of-pocket expenditures from illnesses. Such costs disproportionately impact poorer groups (O'Donnell et al., 2007). Financial protection theory thus emphasizes reducing over-reliance on direct payments that undermine equity objectives (Carrin and James, 2005).

Ethiopia's system exemplifies these issues. High out-of-pocket payments undermine equity principles by disproportionately burdening those with limited means through catastrophic costs (O'Donnell et al., 2008). Strengthening financial protection through prepayment alternatives is needed to promote more equitable access aligned with theories (WHO, 2010; Alebachew et al., 2015).

The global proportion of the population experiencing catastrophic healthcare expenditures due to OOP health payments, with the 10% thresholds, steadily increased from 9.6% in 2000 to 15.6% in 2015 and 13.5% in 2019 (WHO, 2023). Evidence shows the poor allocate disproportionate budgets to healthcare due to out-of-pocket costs (O'Donnell, Van Doorslaer, and Van Ourti, 2015). Rates of catastrophic expenditures predominantly affect the poorest with forgoing care due to costs threatening health outcomes (Getachew et al., 2023).

While Ethiopia has made significant progress in expanding prepayment mechanisms, such as community-based health insurance. However, existing evidence emphasizes the need to transition away from direct out-of-pocket health payments, which lack adequate risk-pooling and financial protection, particularly for vulnerable populations. This study aims to inform such health financing reforms by providing an updated analysis of the equitable burden of OOP health expenditures (Borde et al., 2022; NHA, 2022; Kiros M, 2020).

2.4 Empirical Literature

In many low- and middle-income countries, healthcare is primarily financed through out-of-pocket payments, which impose a significant financial burden on households (Xu et al., 2007; WHO, 2010; Masiye F, 2016). Healthcare expenditure is closely linked to the demand for health services, which is a complex behavioral phenomenon influenced by various socioeconomic factors (Aregbeshola and Khan, 2018). One of the primary determinants of healthcare expenditure is income. Empirical studies have consistently shown a positive statistical association between income and out-of-pocket healthcare expenditure. Households with higher incomes tend to have higher health expenditures, while low-income households bear a disproportionately higher burden, making them susceptible to catastrophic health expenditure (Łyszczarz and Abdi, 2021; Masiye F, 2016; Thu Thuong et al., 2021).

Due to issues like seasonal changes in income in developing countries, researchers often use proxies like wealth status, land ownership, and consumption spending to measure financial situation. These proxies are seen as good indicators as they can avoid the problem of endogeneity that arises when directly using income (Pal, 2010; Samad and Rad, 2013).

The positive income elasticity of healthcare expenditure has also been well documented, with some studies indicating an elasticity greater than one (Aregbeshola and Khan, 2018). This means that as incomes rise, spending on healthcare increases more than proportionally.

In addition to income, other socioeconomic factors also influence healthcare costs. Studies found that the education level of the household head is a significant determinant, with higher education linked to increased healthcare spending (Masiye F, 2016). This is likely due to better knowledge of healthcare options and a greater focus on preventive health measures (Pal, 2010; Samad and Rad, 2013). Furthermore, household size has been observed to have a negative correlation with health expenditure (Thu Thuong et al., 2021). Larger families, facing scarce resources and high poverty, may prioritize other needs over healthcare except in life-threatening situations. This suggests household size is a key factor in understanding out-of-pocket costs and the risk of impoverishment (Aregbeshola and Khan, 2018).

The out-of-pocket share of spending is influenced more by a country's ability to raise revenue than income levels (Fan and Savedoff, 2014). However, some countries with similar income levels have vastly different levels of out-of-pocket spending on healthcare. One factor that may help explain this variation is differences in a country's ability to raise general revenues, such as through taxation.

Recent research in Ethiopia shows that out-of-pocket payments are the primary source of financing and have increased significantly (Borde et al., 2022). This highlights the need for alternative financing mechanisms to promote equity in access (Borde et al., 2022). Studies have documented challenges with out-of-pocket payments and suggested prepaid insurance could provide better financial protection (Kruk, Goldmann, and Galea, 2009). While community-based insurance has potential to improve access for the poor, sustainability challenges exist. Social health insurance, though relatively progressive, has yet to be fully implemented. Government health spending

tends to be progressive but vertical program spending can be regressive, raising horizontal equity concerns (Alebachew et al., 2015; Borde et al., 2022).

Several policy options have been recommended for Ethiopia, including reducing out-of-pocket payments, expanding coverage of insurance schemes, improving targeting of subsidies, and investing in primary healthcare facilities serving disadvantaged populations (FMoH, 2015; O'Donnell et al., 2007). However, more evidence is needed on promoting both vertical equity (based on ability to pay) and horizontal equity (equal access for equal need) in financing (Borde et al., 2022). In summary, while out-of-pocket payments are common in low-income settings, insurance and tax-based systems show potential to improve access. More evidence is needed to identify the most equitable and sustainable financing for Ethiopia.

2.5 Summary and Conclusion on Literature Review

The literature review emphasizes the importance of theoretical frameworks, particularly equity theory and financial protection theory, in analyzing healthcare financing systems. Equity theory advocates for access based on need rather than financial capability, while financial protection theory highlights the necessity of risk pooling mechanisms, such as insurance, to reduce the financial hardship of healthcare expenditures.

Empirical studies reveal that out-of-pocket expenditure significantly affect low-income households, especially in developing countries like Ethiopia. Factors such as income, education, household size, and other socioeconomic variables play a vital role in determining healthcare expenditure patterns. The positive income elasticity of healthcare expenditures indicates that as incomes rise, healthcare spending increases more than proportionally. However, poorer households often face a disproportionately higher financial burden relative to their income due to limited resources and high out-of-pocket costs, even though they spend a smaller share of their income on healthcare compared to wealthier households. The continued reliance on direct payments presents challenges to achieving equitable and affordable healthcare access.

In Ethiopia, although initiatives like CBHI have been introduced to improve prepayment options, the ongoing dependence on out-of-pocket payments raises concerns about sufficient risk pooling and financial security. There is still a considerable lack of clarity regarding the most effective and equitable policy combinations that would be appropriate for Ethiopia.

In conclusion, while theoretical frameworks provide a valuable foundation, there is an urgent need for empirical data specific to the country and research focused on implementation. Continued examination of catastrophic health expenditures, the equity implications of different financing models, and factors that influence revenue generation are crucial for guiding Ethiopia's shift away from out-of-pocket payments. Addressing existing knowledge gaps through updated research and evaluation of reform strategies is essential for progressing toward universal health coverage and ensuring that the health system aligns with principles of equity and accessibility.

Chapter 3

METHODOLOGY

This study estimated the impact of out-of-pocket payments on access to healthcare in Ethiopia. Specifically, it estimated the incidence of catastrophic health expenditures and the extent to which health expenses contribute to impoverishment, aiming to understand the financial burdens faced by households.

3.1 Data Source

The study utilized secondary data from the general household survey data collected in 2019/20 by MERQ Consultancy in collaboration with the Ethiopian Health Insurance Agency (EHIA). This survey data, which includes a sample size of 5,954 households, was collected aiming to evaluate the impact of the CBHI scheme and estimating ability and willingness to pay for CBHI. The researchers obtained this data through a proper request to the Ministry of Health (MoH), as it was used for the 8^{th} round of the National Health Accounts (NHA).

Data were collected through household and market surveys. Household information was gathered through in-person interviews with household heads and their partners, along with weighing of food items. The data encompassed various household characteristics such as family size, composition, health service utilization trends, and both food and non-food consumption and expenditure, including OOP health expenditures. This data was collected during two rounds of household visits, with food consumption data captured over three days in the first round and four days in the second round (Alemayehu et al., 2023).

This study utilized this comprehensive data to evaluate the impact of out-of-pocket payments on access to healthcare national and regional levels within Ethiopia. The large, nationally representative sample allowed for robust analysis of financial access barriers faced by Ethiopian households and reliance on out-of-pocket payments when seeking healthcare. Key outcomes like catastrophic health expenditures and impoverishment were analyzed to understand the burden on households.

3.2 Study Variables

Dependent variables:

- **Out-of-pocket health expenditure** : Out-of-pocket health payments refer to the payments made by households at the point they receive health services. Typically these include drug, Equipment, Outpatient, Laboratory, Traditional Healer's and Inpatient.
- **Catastrophic health expenditure**: CHE refers to out-of-pocket health expenditures that exceed a certain threshold of a household's budget or resources.

The independent variables in the analysis are socio-economic indicators, including:

1. **Income:** Income was categorized into quintile groups (Q_1(poorest), Q_2(Second), Q_3(Middle), Q_4(Fourth), and Q_5(Richest)) to represent different income levels. Dummy variables were created to indicate whether a household falls into a specific income quintile.
2. **Household size (HS):** This variable represents the number of members in a household.
3. **Type of facility (TF):** This variable captures the type of healthcare facility visited by a household member and is categorized as private, public, or traditional healer. Dummy variables were created to indicate the type of facility visited.
4. **Education level of the household head (E)**: The education level of the household head was categorized as primary, secondary, or post-secondary. Dummy variables were created to represent each education level.
5. **Sex of the household head (S)**: This variable indicates whether the household head is male or female. It is represented by a dummy variable, where 1 indicates male and 0 indicates female.
6. **Age of the household head (A):** This variable represents the age of the household head in years.
7. **Age of household members:** The age of household members was categorized into different age groups using dummy variables.
8. **Chronic illness:** The presence of specific chronic illnesses, such as ulcers, diabetes, hypertension, arthritis, HIV/AIDS, gouts, cardiac disorders, and cancer, was considered. Dummy variables were created to indicate the presence of each chronic illness.
9. **Insurance:** This variable indicates whether a household has medical insurance coverage or not. It is represented by a dummy variable, where 1 indicates yes and 0 indicates no.

3.2.1 Model specification

Catastrophic Payment for Health Care

To assess the extent of out-of-pocket expenses for healthcare across different economic groups in Ethiopia, we utilized the methodology described by Wagstaff and Doorslaer, 2003. In this context, OOP payments are considered catastrophic when they surpass a certain threshold (z), which is defined as a fraction of the total household consumption or non-food expenditure. To determine if a household has incurred catastrophic payments, we compare the OOP payments (T) for healthcare to either the total household expenditure (x) or the difference between total household expenditure and food expenditure $(x - f(x))$. That is catastrophic payments incurred if

$$E = \frac{T}{x} > z \qquad \text{or} \qquad E = \frac{T}{x - f(x)} > z$$

where T is OOP payments, x total expenditure, $f(x)$ food expenditure and z some threshold.
If the ratio of OOP health payments to total or non-food expenditures exceeded the threshold z, the household was deemed to have experienced catastrophic payments.
The catastrophic payment headcount (H) is used to measure the incidence and extent of catastrophic payments. It represents the proportion of households in the sample that face catastrophic payments. Specifically:

$$H = \frac{1}{N} \sum_{i=1}^{N} E_i$$

where N is the total number of households, and E_i indicates whether household i experienced catastrophic payments or not.

Impoverishment due to out-of-pocket health expenditure

Impoverishing Health Expenditure measures the proportion of households pushed below the poverty line due to healthcare expenses. A household is regarded as poor $(poor_h)$ when its total household expenditure is smaller than its subsistence spending (ss).

$$poor_h = \begin{cases} 1 & \text{if } x < ss \\ 0 & \text{if } x \geq ss \end{cases}$$

A non-poor household is impoverished (impoor) by health payments when it becomes poor after paying for health services.

$$impoor = \begin{cases} 1 & \text{if } x \geq ss \text{ and } x - oop < ss \\ 0, & otherwise \end{cases}$$

To assess the impoverishment resulting from out-of-pocket healthcare expenses, two poverty measures were employed: poverty headcount and the poverty gap (Wagstaff and Doorslaer, 2003). The poverty headcount (PHc) indicates the percentage of total households living below the poverty line. This provides an understanding of the proportion of households impoverished. Meanwhile, the poverty gap (PG) captures the depth of poverty by measuring how far below the poverty line the average poor household falls. This provides insight into the severity of impoverishment experienced. Together, these two measures offer a more comprehensive perspective on the impoverishing impact of health expenditures by examining both the prevalence and depth of poverty induced by out-of-pocket costs.
Assume C_i represents i's household expenditure per adult equivalent, pl represents the poverty line. Then

$$\begin{aligned} PHc &= \frac{1}{N}\sum_{i=1}^{N} K_i, \text{ and} \\ PG &= \frac{1}{N}\sum_{i=1}^{N} M_i \end{aligned}$$

where

$$M_i = C_i - pl, \text{ and } K_i = \begin{cases} 1 & \text{if } C_i < pl \\ 0, & otherwise \end{cases}$$

The normalize poverty gap ($NorPG$) can be calculated by

$$NorPG = \frac{PG}{pl}$$

and the normalized mean positive poverty gap ($NorMPG$) calculated as the average poverty gap of the poor divided by the poverty headcount: $NorMPG = \frac{PG}{PHc}$.

Inequity of OOP Health Care Financing

To measure inequity caused by OOP financing, we analyzed OOP as a proportion of total expenditures and ability to pay, as well as the concentration index.
The concentration index quantifies the degree of socioeconomic inequality, defined as twice the area between the concentration curve and the line of equality (i.e. a 45-degree line of no inequality). A value of zero represents no inequality, while a negative value indicates disproportionate concentration among the poor and a positive value indicates disproportionate concentration among the rich.

3.3 Data Analysis

The data was analyzed using Stata (version IC 15.0). Each dataset included a unique identification number assigned to every household based on a combination of variable codes for region, zone, woreda, enumeration area (EA), and household. The variables of interest used in the analysis were created according to the definitions provided by CSA.
The utilization of health services was determined by calculating the proportion of households with self-reported illness that obtained healthcare during the survey period. Individual level consumption and expenditures were combined at the household level. To ensure comparability of households in terms of consumption and expenditures, taking into account differences in sex and age composition, we calculated the per adult equivalent consumption (Coudouel, Hentschel, Wodon, et al., 2002; Wagstaff A et al., 2011) using Ethiopia's Ministry of Finance and Economic Cooperation adult equivalent scale.
To analyze the incidence of catastrophic health expenditure and understand its magnitude, we considered multiple threshold levels. The primary thresholds used in this study is **10% of total household expenditure**, which classifies a household as facing catastrophic health expenditure if its out-of-pocket (OOP) health spending exceeds this limit. This threshold is widely recognized and recommended by the World Health Organization (WHO) as it captures households experiencing significant financial strain due to health costs, even if they are not pushed into poverty. It serves as a benchmark for identifying households at risk of financial hardship and informs broad-based policy interventions to protect them from excessive health expenditures.
In addition to the 10% threshold, we also report estimates using alternative thresholds such as 25% of total expenditure and 40% of non-food expenditure for comparative analysis and future reference (Table 4.6). These alternative thresholds provide a more comprehensive understanding of the severity and depth of catastrophic health expenditures:

- **25% of Total Expenditure:** This threshold identifies households experiencing a more severe financial burden, where health expenditures consume a substantial portion of their total budget. Such households are likely to face significant trade-offs, such as reducing spending on other essential needs (e.g., food, education) or taking on debt. This threshold is particularly useful for understanding the depth of financial hardship and targeting interventions to the most affected households.

- **40% of Non-Food Expenditure:** This threshold focuses on a household's capacity to pay (CTP) by considering its non-food expenditure, which better reflects discretionary income after meeting basic subsistence needs. It is especially relevant in low-income settings, where a large share of household expenditure is devoted to food. Households exceeding this threshold are at high risk of severe financial distress or impoverishment due to health expenditures.

Using multiple thresholds allows for a more nuanced assessment of catastrophic health spending and financial implication. The additional thresholds help test the sensitivity of our findings to different definitions of catastrophic expenditures and provide valuable insights for policy makers. Understanding how different thresholds impact CHE estimates can inform the selection of appropriate benchmarks for designing interventions to mitigate financial barriers to healthcare access.

To examine the distribution of catastrophic health expenditures across socioeconomic groups, the households were first arranged in order from lowest to highest based on their real per adult equivalent total consumption expenditures. They were then divided into five equal-sized expenditure quintiles, with the first quintile representing the 20% of households with the lowest consumption levels (the poorest) and the fifth quintile representing the 20% of households with the highest consumption levels (the richest), then we estimate concentration indices. This allowed an analysis of whether the incidence of catastrophic expenditures was concentrated in specific socioeconomic segments of the population.

The number of households experiencing catastrophic health expenditures was measured using catastrophe headcounts (H). H represents the percentage of households whose out-of-pocket payments as a share of income or total expenditures exceed a threshold (Wagstaff, 2008). The threshold indicates the point at which OOP costs severely impact living standards (Wagstaff, 2008; WHO, 2010). The threshold used (10%, 25%, or 40%) depends on whether the denominator is total expenditures or capacity to pay. In this study (Table 4.6), the threshold was 10% of total household consumption.

A household is considered to be impoverished by health payments if it falls below the poverty line after paying for healthcare services. The study measured the impoverishment due to out-of-pocket health payments in terms of the absolute increases in the poverty headcount, poverty gap, and normalized poverty gap after these payments (Wagstaff A et al., 2011).

In 2019/20, the poverty line for Ethiopia was established at 10,053 birr annually per person by utilizing the 2017 Purchasing Power Parity (PPP) of $ 2.15 USD per day per person. This poverty threshold served as a benchmark for assessing poverty levels and disparities in poverty indicators, both pre and post healthcare expenditures, aiding in determining the poverty headcount and gap within the country.

Chapter 4

Result and Discussion

4.1 Result

This section presents the results of the analysis conducted in this study. The results are presented in both tables and figures.

4.1.1 Socio-demographic characteristics of study households

This section provides results of the socio-demographic characteristics of household members, including the gender and marital status of the head of the household, educational attainment, employment status, and the age distribution within the family. Additionally, it examines the health status of the sampled households.

Among the 5,954 individuals sampled, it was found that 72.37% of households were headed by males, while 27.63% were headed by females. The households were further categorized into four age groups based on their working age. Consequently, households aged between 11 and 35 years accounted for 40.14% of the sample, those between 36 and 45 years constituted 24.84%, households between 46 and 64 years represented 24.12%, and those equal to or older than 65 years made up 10.90% of the population (Table 4.1).

The study revealed that the average age of household heads was 42.6 years. The age of the household head plays a crucial role in assessing the likelihood of a household experiencing catastrophic health expenditures. Generally, older household heads are less likely to encounter such a significant health expenses. This is likely because as they age, they may have fewer financial responsibilities for their family, as their children have likely become old enough to cover their own expenses. In contrast, the descriptive statistics indicate that the majority of household heads are middle-aged. This suggests that these middle-aged household heads may be more vulnerable to experiencing catastrophic health expenditures compared to their older counterparts. Their greater financial obligations for supporting their families could make them more susceptible to facing severe financial hardship due to high medical costs.

In terms of education status, the households were classified into three categories. Approximately 47.72% of the sample had no formal education, 20.05% had primary education, and the remaining 32.23% of household heads had secondary education or higher.

TABLE 4.1: Summary statistics of Demographic and Social variables

Variable	Categories	Frequency	Percentage
Household Size (Household Head)	Male	4,309	72.37%
	Female	1,645	27.63%
	Total	5,954	100.00%
Age group distribution of household head	11-35 years	2,390	40.14%
	36-45 years	1,479	24.84%
	46-64 years	1,436	24.12%
	$\geq$ 65 years	649.00	10.90%
	Total	5,954	100.00%
Marital Status	Married	4,468	75.04%
	Not Married	1,486	24.96%
	Total	5,954	100.00%
Household Education Group	No formal education	2,841	47.72%
	Primary Education	1,194	20.05%
	Secondary and above Education	1,919	32.23%
	Total	5,954	100.00%
Type of Occupation	Unemployed	1,007	16.91%
	Self-employed (most Farmer)	3,890	65.33%
	Employed (private and public)	799	13.42%
	Other Occupation	258	4.33%
	Total	5,954	100.00%
Residential Area	Rural	3707.00	62.26%
	Urban	2247.00	37.74%
	Total	5954.00	100.00%
Region	Tigray	322.00	5.41%
	Afar	216.00	3.63%
	Amhara	1183.00	19.87%
	Oromia	1690.00	28.38%
	Somali	576.00	9.67%
	Benishangul-Gumuz	108.00	1.81%
	SNNP	1043.00	17.52%
	Gambela	72.00	1.21%
	Harari	72.00	1.21%
	Addis Ababa	636.00	10.68%
	Dire Dawa	36.00	0.60%
	Total	5954.00	100.00%

Regarding household occupation, 65.33% were self-employed, predominantly engaged in farming activities. Additionally, 13.42% were employed in private and public sectors, 4.33% had other occupations, and 16.91% did not have any occupation.
In terms of household head's marital status, the analysis showed that the majority of households, 75.04%, were headed by married individuals. Following that, 24.96% of the households were led by unmarried.

4.1.2 Health status and Insurance coverage of the household

According to Table 4.2, the majority of households (71.10%) do not have any insurance coverage, while 27.95% are enrolled in community-based health insurance. The share of private insurance and employer-provided insurance is very low, at 0.05% and 0.91% respectively.
Concerning the health status of these households, 14.58% had at least one member with a chronic illness such as hypertension, diabetes, cardiac issues, cancer, and other related conditions. Approximately 6.43% of households reported members with other types of illnesses, including kidney disease and similar ailments. The majority of households, comprising 78.99%, did not have any chronic illness among their members.

TABLE 4.2: The number of household members who have a chronic diseases and insurance coverage.

Variable		Frequency	Percentage
Insurance	CBHI	1,664	27.95%
	Private or other	3	0.05%
	Employers Insurance	54	0.91%
	No Insurance	4,233	71.10%
	Total	5,954	100.00%
Chronic illness	Hypertension	203	3.41%
	Diabetes	79	1.33%
	Cardiac disorders	135	2.27%
	Arthritis	180	3.02%
	HIV/AIDS	31	0.52%
	Ulcers	55	0.92%
	Gout	43	0.72%
	Other chronic	525	8.82%
	No chronic illness	4703	78.99%
	Total	5,954	100.00%

4.1.3 Household Expenditure

Table 4.3 shows that the average household size was 4.6 members, with households ranging from a single person households to those with up to fifteen members (in Somalia region). Research has found that larger families are less likely to experience catastrophic health expenditures (Rashad and Sharaf, 2015). Larger households tend to pool financial resources to help support sick family members (Treleaven, 2023). With more individuals in a home, there is greater protection for members well-being if someone falls ill. On average, households visit health center (public, private, and traditional healer) visit for those 2.5 times per year.

The mean annual health expenditure was 193.20 Birr. The average out-of-pocket expenditure was 3531.82 Birr, while the average OOP per adult equivalent was 1075.57 Birr. OOP costs accounted for an average of 5.31% of non-food expenditures.

The average yearly spending on food and non-food items was 39711.67 Birr and 42934.28 Birr respectively. However, food spending per adult equivalent was 12718.03 Birr and non-food spending per adult equivalent was 26566.39 Birr. If households have to dedicate a high portion of their budgetto OOP health costs, they may need to cut back on food or other necessities. This could negatively impact their overall well-being.

TABLE 4.3: Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
HH size	5,954	4.64	2.339034	1	15
Annual health expenditure	5,954	193.2014	1627.037	0	85054
OOP expenditure	5,954	3531.82	50506.97	0	3604584
OOP per adult equivalent	5,954	1075.57	17663.22	0	1278221
Annual Expenditure	5,954	83382.49	94362.8	156	3843528
Total visit per year	5,954	2.48	5.945655	0	36
Annual Food Expenditure	5,954	39711.67	37591.44	0	1637977
Annual Non-food Expenditure	5,946	42934.28	79816.01	78	3694710
Food expenditure per adult equivalent	5,942	12718.03	12114.69	407.52	394041.5
Non-food expenditure per adult equivalent	5,954	26566.39	30510.38	53.89	1413378

The bar chart presented in Figure 4.1 shows significant disparities in the mean out-of-pocket healthcare expenditure (OOPE) among different regions within the country. Notably, the SNNP region demonstrates the highest average spending, while the Harari region exhibits the lowest. The Tigray region also indicates relatively low expenditure, slightly above that of Harari. These findings suggest that households in the SNNP region likely bear a greater financial burden for healthcare compared to those in other regions. Additionally, the chart reveals varying levels of mean OOPE in the remaining regions. Regions such as Somalia, Addis Ababa, Oromia, Gambela, and Afar are characterized by households that incur significant mean OOPE, consequently facing financial hardships when accessing healthcare services.

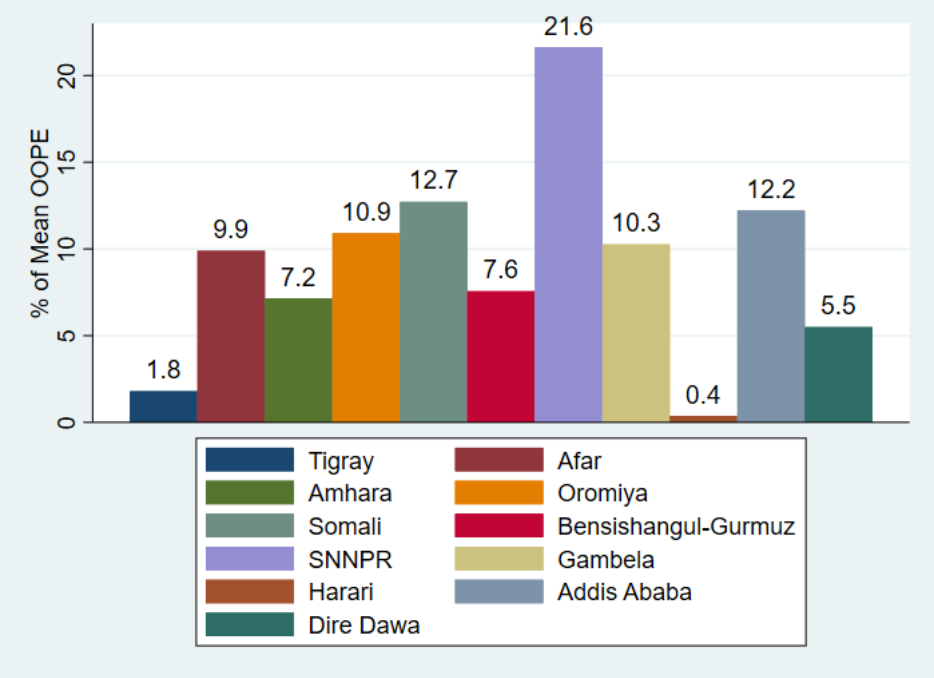

FIGURE 4.1: Distribution of mean OOPE among region of Household Head

Conversely, regions such as Amhara, Benishangul-Gumuz, and Dire Dawa exhibit moderate levels of mean OOPE. This implies that households in these regions bear substantial healthcare expenditure but spend relatively less compared to the average expenditure in other regions.

4.1.4 Household characteristics

Out-of-pocket health expenditure

Across the country, the average household size was 4.6 people. The Somali region had the largest average at 6 people. Approximately 75% of households were male-headed. The overall literacy rate among household heads was 54%, with the highest rates in Dire Dawa at 88% and Addis Ababa at 85%. Around 26% of households resided in urban areas. However, the Harari (53%), Dire Dawa, and Addis Ababa City administrations (both at 100%) had higher urban population proportions compared to other regions. On average, annual expenditure per adult equivalent was Birr 27172.6 equivalent to 2304.7 USD, taking purchasing power parity of 11.79 estimates from the World Bank (World Bank, 2024). Addis Ababa and the Gambela region had the highest levels of household consumption across Ethiopia. The mean out-of-pocket health expenditure per adult was 1075.6 ETB nationally. Households in Addis Ababa and Gambela incurred higher OOP costs on average than the national figure. As a share of total household budgets, OOP payments accounted for 2.3% nationally. The Tigray, Harari and Dire Dawa regions saw comparatively smaller OOP shares versus the national average. Other regions experienced higher OOP burdens relative to households across Ethiopia overall.

TABLE 4.4: Summary of household characteristics

Region	**Mean HH Size**	**Male HH head (%)**	**Urban HH head (%)**	**Literate HH head (%)***	**HH with at least one sick member in the last one month (%)**	**Probability of treatment seeking during illness among households with at least one sick member**	**Mean Expenditure per Adult Equivalent (ETB)**	**Mean OOP per adult equivalent (ETB)**	**Share of OOP payments to total consumption (%)**
Tigray	4.2	68	40	63	23	45	25299.44	183.12	0.8
Afar	4.5	62	24	49	20	73	35406.56	887.98	2.6
Amhara	4.0	73	22	49	40	59	24636.53	558.35	2.7
Oromia	4.9	81	21	56	28	67	22872.71	714.67	2.9
Somali	6.0	55	27	38	29	48	22670.96	965.77	3.9
Benshangul-Gumuz	5.5	78	36	37	57	50	21000.61	587.09	3.6
SNNP	5.1	80	10	52	40	54	21409.75	985.10	3.7
Gambela	3.1	81	0	64	32	85	42423.74	1,321.02	3.5
Harari	4.3	83	53	80	9	67	32662.45	27.91	0.2
Addis Ababa	3.9	55	100	85	29	87	42903.71	1,198.74	2.6
Dire Dawa	3.3	56	100	88	19	67	28856.76	589.39	1.5
Total	**4.60**	**75**	**26**	**54**	**32**	**59**	**27172.6**	**1,075.57**	**2.3**

HH = Household, *Literate = able to read and write

Health service utilization

The distribution of OOP health payments relative to income is illustrated in figure 4.2. Over the one-month period leading up to the study, the prevalence of self-reported illness among at least one household member was 32%. However, the Benishangul-Gumuz region exhibited a higher illness rate of 57%, followed by the Amhara and SNNP regions, both at 40%, compared to the other regions. Health-seeking behavior and financial outcomes during illness varied regionally across Ethiopia. The national probability of seeking treatment during times of illness was 59%. Households in Addis Ababa and the Gambela region had higher rates of treatment seeking compared to other areas of the country (Table 4.4). The share of self-reported illness increases from the poorest quintile to the richest quintile, suggesting a slightly greater prevalence of illness among the higher consumption groups. In contrast, health-seeking behavior remains relatively consistent across different expenditure quintiles, indicating that it is not strongly linked to consumption or income.

TABLE 4.5: Breakdown self-reported illness and expenditure, categorized by quintile expenditure in Ethiopia

Quintile	Share of self-reported illness (%)	Share of care seeking (%)	Consumption per adult adult (ETB)	OOP per adult equivalent (ETB)	Share of OOP per total consumption (%)
Poorest	17	18	7490	194	2.4
Second	19	19	12705	339	2.6
Middle	20	20	18058	531	2.8
Fourth	21	22	26736	798	2.9
Richest	23	21	57725	1854	2.7
Mean of National			26566	1076	
Gini coefficient			0.41* (SE: 0.007)		
Concentration index				0.407* (SE:0.077)	

significance level: p= 0.000

Out-of-pocket expenditure significantly increases from Birr 194 in the poorest quintile to Birr 1854 in the richest quintile, indicating a greater financial burden of healthcare on the better-off households. Additionally, the percentage of OOP expenditure relative to total consumption rises from 2.4% in the poorest quintile to 2.9% in the fourth quintile, before decreasing to 2.7% in the richest quintile (Table 4.5).

Incidence of catastrophic and impoverishing health expenditures

At the national level, the incidence of catastrophic health expenditure was 8.5% using the 10% of total expenditure thresholds, 1% using the 25% of total expenditure thresholds and 3.3% using the 40% of non-food expenditure threshold (Table 4.6). This indicates that a significant proportion of households in the country (8.5%) are facing high out-of-pocket healthcare expenditures, defined as exceeding 10% of their total household expenditure. Under the 10% total expenditure threshold, the regions exhibiting the highest incidence of CHE are Somalia (12.2%), SNNP (11.5%) and Gambela (9.3%). Conversely, regions with the lowest incidence of CHE under the 10% total expenditure are Harari (0%), Dire Dawa (2.5%) and Tigray (2.8%). Considering that the regions Oromia, SNNP and Amhara have the largest populations, they are likely to have the highest number of individuals experiencing CHE in absolute terms. These disparities suggest significant regional varation in the financial burden of healthcare expenses on households.

TABLE 4.6: Incidence of CHE and impoverishment due to OOP health payments.

	Incidence of catastrophic health expenditure by different thresholds			**Impoverishment due to health spending**				
	>10% of total expenditure	>25% of total expenditure	$\geq$ 40% of non-food expenditure	Poverty headcount before health payment	Absolute increase in poverty headcount	Poverty gap before health payment	Absolute increase in poverty gap (ETB)	Absolute increase in normalized poverty gap
Region								
Tigray	2.8	0	0	41.1	0.4	1281.26	32.89	0.3
Afar	7.7	1.2	5.4	2.6	0	48.48	2.74	0.03
Amhara	8.1	2.8	4	21.3	1.6	639.8	70.64	0.7
Oromia	8.1	0.5	3	26.4	1.7	720.37	73.09	0.7
Somalia	12.2	1.7	7	27.2	2.9	838.76	98.40	1
Bensishangul Gurmuz	6.9	0	1	35.1	4.8	1047.07	141.11	1.4
SNNP	11.5	1.2	4.2	27.8	2.7	837.87	100.94	1
Gambela	9.3	0	1.3	6.6	3.1	141.09	37.85	0.4
Harari	0	0	0	10.1	0	150	1.05	0.01
Addis Ababa	6.5	0.9	2.2	3.1	0.3	49.73	4.32	0.04
Dire Dawa	2.5	0	4.2	5.8	0	74.43	2.76	0.03
Expenditure Quintile								
Poorest	9.5	1.8	3.9	92.2	2.4	2687.52	202.49	2
Second	8	0.9	3.4	0	4.2	0	59.22	0.6
Middel	9.8	0.6	3.3	0	0.6	0	15.67	0.2
Fourth	8.5	1.4	3.8	0	0.4	0	12.90	0.1
Richest	7.6	1.7	3.6	0	0.1	0	2.37	0
Resident								
Urban	8.2	0.9	3.3	5.9	0.8	103.7	24.17	0.2
Rural	8.9	1.4	3.7	31.3	2.2	936.56	91.13	0.9
Total	**8.5**	**0.95**	**3.3**	**24.8**	**1.8**	**722.45**	**73.28**	**0.7**

When we consider expenditure quintiles, the poorest (9.5%) and the middle (9.8%) quintiles exhibit the highest incidence of catastrophic health expenditure. The incidence of CHE among quintiles 1 (poorest) to 4 (Fourth) is higher compared to the national average. According to residents, individuals in rural areas experience a higher incidence of CHE.
With in the overall dataset, 24.8% of households fell below the national poverty line; the poverty gap was ETB 722.5, and the normalized poverty gap was 29% prior to health-related payments. Out-of-pocket health payments increased these poverty indices by 1.8%, ETB 73.28, and 0.7%, respectively.

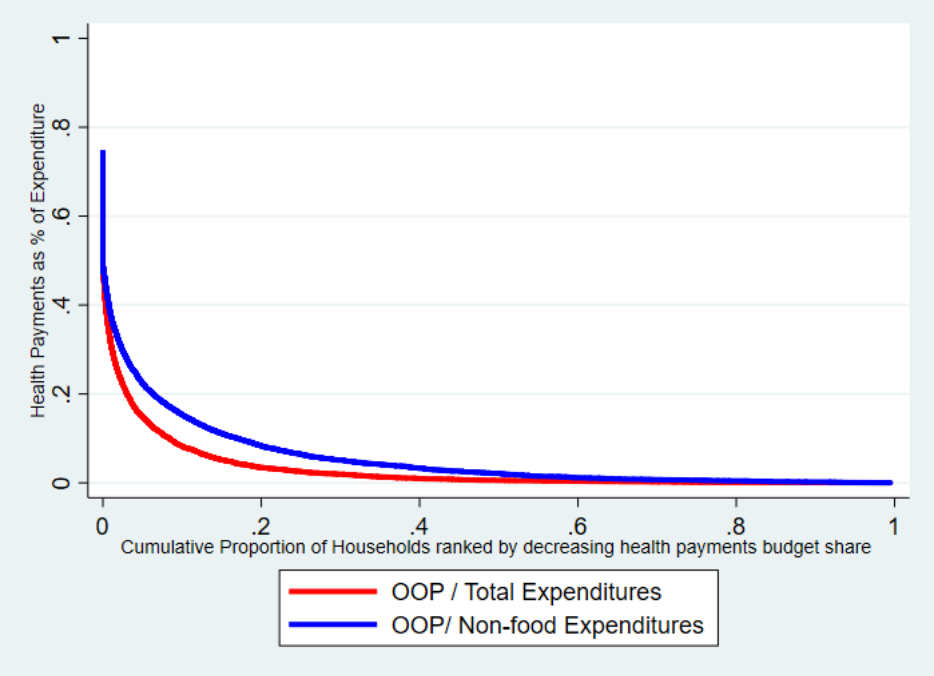

FIGURE 4.2: Cumulative distribution of OOP health expenditures in Ethiopia, as a ratio with either total expenditures or non-food expenditures.

For rural households in the country, impoverishment due to OOP health payments increased the poverty indices further. Prior to OOP health payments, 31.3% of rural household fell bellow the poverty line with a poverty gap of ETB 936.56. After factoring in OOP health payments, the poverty rate increased by 2.2%, the poverty gap increased by ETB 91.13 and the normalized poverty gap increased by 0.9%. In the case of the poorest quintile, after OOP health payments, the poverty rate increased by 2.4%, the poverty gap increased by ETB 202.5 and the normalized poverty gap increased by 2%. This indicates that the poorest and the rural households experienced poverty indices above the national level and suffered a greater financial hardship. Impoverishment due to OOP health payments in regions like Harari, Afar, Addis Ababa and Dire Dawa was comparatively lower than in other regions. These result indicate that healthcare costs are driving a significant portion of the population into poverty, particularly in regions such as Benishangul-Gumuz, SNNP, and Somalia.
These findings highlight the need for strengthening financial risk protection mechanisms and

improving equity in healthcare financing, especially in the regions most affected by the catastrophic and impoverishing effects of out-of-pocket health expenditures. Targeted interventions, such as expanding social health insurance coverage and providing financial assistance to vulnerable populations, could help address these regional disparities and alleviate the financial burden on households.

4.2 Discussion

The objectives of this study were to evaluate the impact of out-of-pocket payments on access to healthcare service in Ethiopia. The result shows that many Ethiopian households face financial hardship when seeking health services. There were a high regional variation in health expenditures, illness rates, and incidence of catastrophic expenditures. Households in SNNP, Somalia, and Benishangul-Gumuz regions faced disproportionately high financial burdens, illness rates, and rates of catastrophic expenditures exceeding 10% of their budget. This disparity suggest inequities in the current system that placing heavier burdens on vulnerable populations in this area. Nationally, around 8.5% of households are at risk of experiencing CHE, while around 0.7% face impoverishing health expenditures. The 8.5% of households experienced CHE indicating that OOP costs impose severe hardship on a significant portion of the population. Additionally, OOP payments contributed to a 1.8% rise in poverty levels, with many regions seeing high impoverishment effects. This confirms direct costs undermine healthcare access and push families into impoverishment. Notably, this estimate of CHE were higher than Kenya's coverage index of 5.5%, while a comparison of the incidence of impoverishment due to OOP health payments finds Ethiopia's estimate (0.8% urban and 2.2% in rural) were lower than Kenya's of incidence 2.2% both in urban and rural areas (Salari et al., 2019). While health-seeking rates were generally high at 68%, various regional differences existed. Targeted interventions may be needed to boost utilization in low-performing areas. The findings also highlight that improving financial protection, rather than just utilization, is important for universal access goals.

Middle-aged, low-income and rural households appeared most vulnerable to catastrophic impacts. This implies the current model disproportionately burdens working families supporting dependents. Expanding prepayment mechanisms could spread risks more progressively.

Overall, the results strongly argue for expanded social health insurance and subsidies for the poor to reduce catastrophic and impoverishing effects inhibiting access across Ethiopia. Continued monitoring of disparities can evaluate progress in establishing more equitable and protective financing nationwide over time.

In summary, this study empirically demonstrates that direct payments undermine Ethiopia's universal health coverage aims by disproportionately burdening the poor and rural populations. The findings can inform strategies to strengthen financial risk pooling and improve access for all residents regardless of their ability to pay.

Chapter 5

Conclusion and Recommendation

5.1 Conclusion

This study presents convincing evidence that out-of-pocket healthcare payments create significant financial burdens for households in Ethiopia. The findings indicate a considerable prevalence of catastrophic and impoverishing health expenditures, which hinder access to essential healthcare services. Specifically, the data reveal that OOP payments have forced 8.5% of households into catastrophic health expenditures, where spending exceeds 10% of their overall budget. Furthermore, these costs have widened the poverty gap by 1.8% and led to the impoverishment of 23% of households after accounting for healthcare expenses (Table 4.6). Overall, OOP health spending contributes to the impoverishment of the population, either by pushing previously non-poor households below the poverty line or by worsening the financial situation of those already in poverty. A significant number of households are at risk of catastrophic expenditures that threaten their well-being.

The results also highlight notable inequities, indicating that certain regions and demographic groups bear a disproportionate share of these burdens. Despite a relatively high level of healthcare-seeking behavior across the country, there is an urgent need for improvements to facilitate better utilization, particularly in areas that are underperforming.

To mitigate these challenges, anti-poverty strategies in Ethiopia should focus on households that are particularly vulnerable to catastrophic health expenditures. Households that are already below the poverty line and require healthcare may face further financial difficulties or may be compelled to forgo necessary healthcare services. The Ethiopian government must implement more proactive measures to tackle these issues, especially for low-income individuals who struggle to afford healthcare. Potential actions could include expanding health insurance coverage and striving for universal health coverage for all citizens.

5.2 Recommendation

Based on the results of the study the following recommendations are forwarded:

1. Expand prepayment and risk pooling mechanisms such as social health insurance to provide universal coverage and spread costs more progressively across the population. Target increasing enrollment in disadvantaged areas.

2. Introduce subsidies and exemption programs to protect vulnerable groups like the poor, elderly, and those with chronic illnesses from impoverishing expenditures.

3. Strengthen primary care services to enhance access in underserved regions through community-based models.

4. Continue monitoring indicators like catastrophic and impoverishing spending among strata to evaluate equity impacts of reforms over time.

5. Consider further options to augment financial protection like exempting or capping OOP costs, results-based financing, or supply-side subsidies in high-burden areas.

Appendix A

Definition of variables used.

Source: (Kiros M, 2020)

1. **Household:** A person or group of persons, whether or not they are related, who normally live together in the same housing unit or group of housing units, and who have common cooking arrangements.

2. **Member of household:** A member of a household may be any of the following: (a) all persons who lived and ate with the household for at least six months (including those who were not present at the time of the survey but were expected to be absent from the household for less than six months); (b) all guests and visitors who ate and stayed with the household for six months or more; (c) housemaids, guards, babysitters, etc. who lived and ate with the household, even for less than six months.

3. **Household size:** The total number of members of a household.

4. **Head of household:** The person who economically supports or manages the household, or for reasons of age or respect, is considered as the head of the members of the household or otherwise declares him/herself as the head of a household. There may only be one head of household and this person may be male or female.

5. **Adult equivalent:** All members of the household with adjusted calorie need requirement on the basis of age and sex.

6. **Household consumption expenditures:** They comprise both monetary and in-kind payment on all goods and services, and the monetary value of the consumption of home-made products.

7. **Out-of-pocket health expenditures:** Out-of-pocket health payments refer to the payments made by households when they receive health services net of third-party payments. Includes: fees for consultation, diagnostic tests, medicines, medical procedures, preventive health commodities, traditional medicine, and non-medical expenses (including transport, food and accommodation expenditures).

8. **Food expenditures:** Household food expenditures are the amount spent on food by the household plus the value of family's own food productions consumed within the household. Excludes expenditures on alcoholic beverages and tobacco.

9. **Non-food expenditures:** The difference in total household consumption expenditures and food expenditures.

10. **Catastrophic headcounts:** Fraction of households whose OOP payments, as a share of income/total expenditures (budget share approach) or capacity-to-pay, would surpass a specific threshold denoted Y. The threshold Y represents the point at which household OOP expenditures can impose a severe disruption to basic living conditions and the specific threshold value (10%, 25% or 40%) can vary when the denominator for calculating Hc is either total income/expenditures or capacity to pay.

11. **Poverty line (poverty threshold):** Refers to the cost of 2,200 kcal per day per adult food consumption with an allowance for essential nonfood items. It is a line below which one is considered poor or not.

12. **Poverty headcount (poverty headcount index):** The share of the population whose income or consumption is below the national poverty line; that is, the share of the population that cannot afford to buy a basic basket of goods.

13. **Poverty gap (poverty gap index):** Poverty gap provides information regarding how far households are from the poverty line (measures intensity of poverty). This measure captures the mean aggregate income or consumption shortfall relative to the poverty line across the whole population.

14. **Health seeking behavior:** Proportion of households with self-reported illness during the survey period who sought care during that period. The recall period is two or twelve months preceding the survey.

15. **Literacy:** The ability to read and write a short message in any language for those aged 10 years and above.

Appendix B

Adult Equivalent Conversion factor for Calorie Analysis

Source: (Kiros M, 2020)

Age group (Year)	Male	Female
<1	0.30	0.30
1 - 2	0.46	0.46
2 - 3	0.54	0.54
3 - 5	0.62	0.62
5 - 7	0.74	0.70
7 - 10	0.84	0.72
10 - 12	0.88	0.78
12 - 14	0.96	0.84
14 - 16	1.06	0.86
16 - 18	1.14	0.86
18 - 30	1.04	0.80
30 - 60	1.00	0.82
> 60	0.84	0.84

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