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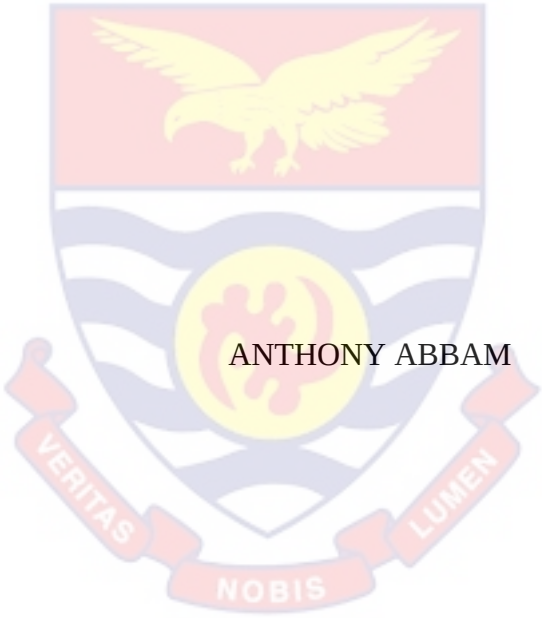
SOCIOECONOMIC INEQUALITIES IN THE UTILISATION OF HEALTHCARE SERVICES IN GHANA



ANTHONY ABBAM

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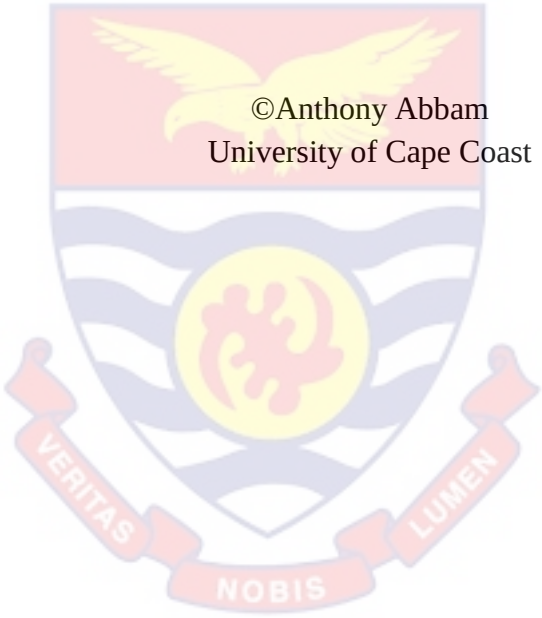

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SOCIOECONOMIC INEQUALITIES IN THE UTILISATION OF HEALTHCARE SERVICES IN GHANA

BY

ANTHONY ABBAM

Thesis submitted to the Department of Economic Studies of the School of Economics, College of Humanity and Legal Studies, University of Cape Coast, in partial fulfilment of the requirements for the award of Doctor of Philosophy degree in Economics.

JANUARY, 2023

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DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature: …….. Date: ……..

Name: Anthony Abbam

Supervisors' Declaration

We hereby declare that the preparation and presentation of this thesis were supervised in accordance with the guidelines on supervision of the thesis laid down by the University of Cape Coast.

Principal Supervisor's Signature: …… Date: ……..

Name: Prof. Emmanuel Ekow Asmah

Co-Supervisor's Signature: ……..... Date: ……..

Name: Dr. Francis Andoh-Kwaw

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ABSTRACT

Ensuring that people from different socioeconomic statuses have access to reliable healthcare services is a basic human right. However, healthcare disparities are a worldwide population health issue, mostly in low- and middle-income countries (LMICs). This research examined the socioeconomic inequalities in healthcare services use in Ghana based on GLSS 6 & 7 data sets. The study used concentration curves, concentration indices and Recentered Influence Function OLS decomposition technique to analyse the degree and causes of socioeconomic inequalities in the utilisation of healthcare services. Also, the Wagstaff decomposition technique was employed to examine the effect of physical, human and social capital on socioeconomic disparities in healthcare use. Finally, the linear and non-linear Oaxaca decomposition methods were used to describe how technology diffusion accounts for gender and rural-urban differential in healthcare use. The study revealed pervasive pro-rich and pro-educated inequalities in the use of healthcare. Besides, it was found that there were gender and locational gaps in the use of healthcare and that mobile phone accounts for a greater portion of these inequalities. The study recommends policy priority to focus on targeted and progressive development of appropriate physical and human capital and other allied services to ease access to healthcare services. Finally, policy strategies should be pursued to support the rural poor and vulnerable to help offset the cost of air time and data, especially for seeking health information.

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KEYWORDS

Concentration index

Concentration curve

Health Care

Recentered Influence Function

Utilisation

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DEDICATION

To the Abbam and Laryea Families

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LIST OF ABBREVIATIONS AND ACRONYMS

CC	Concentration Curve
CI	Concentration Index
EI	Erreygers Concentration Index
GHS	Ghana Health Service
GLSS	Ghana Living Standards Survey
GoG	Government of Ghana
GSS	Ghana Statistical Service
IF	Influence Function
MDGs	Millenium Development Goals
MoH	Ministry of Health
NHIA	National Health Insurance Authority
NHIS	National Health Insurance Scheme
NDPC	National Development Planning Commission
OLS	Ordinary Least Squares
RIF	Recentered Influence Function
SDGs	Sustainable Development Goals
UN	United Nations
UHC	Universal Health Coverage
WHO	World Health Organisation
WI	Wagstaff Concentration Index

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CHAPTER ONE

INTRODUCTION

Background to the Study

The right to health was included in the "Universal Declaration of Human Rights," which was adopted by the United Nations General Assembly in 1943. (UN, 1948). The inclusion of health-related provisions in international treaties, national constitutions, local laws, policies, programmes, and so on by countries attest to the issue's prominence in people's minds and hearts (Pillay, 2008). For instance, the Commission on Social Determinants of Health was established in 2005 by the World Health Organization, recognising the significance of equality in health. This Commission's mandate is to compile and summarise global reports on social determinants of health and recommend practical solutions for alleviating health disparities (Marmotal *et al*, 2008).

The United Nations approved the Sustainable Development Goals (SDGs) with a significant objective of 3.8 targeted at achieving Universal Health Coverage (UHC) to secure healthcare access for all, and the third goal strives to ensure healthy lifestyles and promote well-being for everyone at all ages (UN, 2014).

Even though governments have committed to the SDGs and achieving Universal Health Coverage, inequalities in access to healthcare services persist in developed and poor nations. Particularly, the use of healthcare is prevalent among people from higher socioeconomic status (Chen *et al.*, 2013; Zee *et al.*, 2011; Ataguba & Akazili, 2011). As a result, inequalities in the use of healthcare have emerged as a significant problem in public health, which

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demands an improvement in the health of underprivileged groups in society (Mackenbach *et al*, 2007).

Globally, healthcare systems are recognised as a crucial component in determining a population's health. However, in environments with limited resources, such as in less developed nations, access to healthcare services is consistently unequal. One of the most important ways to achieve equality in healthcare and enhance population health generally is to increase access to health care and improve the manner it is delivered. This is due to the fact that when nations work to achieve universal health coverage, enabling appropriate utilization of effective and dependable healthcare services is crucial.

The need to focus on socioeconomic inequality in healthcare utilisation stems from the fact that ideally all population groups irrespective of their socioeconomic backgrounds are expected to enjoy equal use of healthcare services given their health needs. Actually, this is the prime objective of every health systems around the world and it is an integral part of Sustainable Development Goals adopted by members of United Nations in 2015.

In Ghana, taxes, grants from donor organizations, and household contributions are the main sources of funding for health care (NDPC, 2009; MoH, 2009). The state offers medical services in conjunction with private not-for-profit, private for-profit, and traditional healthcare providers. In the public sector, healthcare delivery is divided into first, second, and third tiers. These tiers include five different levels of healthcare. Locally, there is Community-Based Health Planning and Services (CHPS). This is followed by sub-district health facilities, district health facilities, regional health facilities, and teaching hospitals on a more comprehensive national level. In this system, primary

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healthcare is provided by lower-level healthcare facilities, while higher-level healthcare facilities handle secondary healthcare.

Teaching hospitals provide sophisticated and specialised medical services, including conducting academic research and training medical staff. It is important to note that all tiers are designed to work together through a referral system that promotes using lower-level health facilities before those at higher levels (Ghana Health Service, 2008).

With tremendous gains in economic growth over time, Ghana has one of the fastest-growing African economies, with growth rates ranging from -7 percent in the early 1980s to 8.5 percent in 2017. The country became a lower-middle-income country in 2011 following the discovery of oil in commercial quantities. According to World Development Indicators (2020), Ghana's growth rate was 6.7% in 2019, with the highest recorded growth of 14% in 2011 (Aryeetey and Fenny, 2017).

It is worthy of note, however, that the benefits of economic growth have not been equitably distributed among individuals in the country, and the rate of inequality keeps increasing (Cooke *et al*, 2016). According the Ghana Poverty Report (2018), the national Gini coefficient has increased from 0.419 in 2005 to 0.430 in 2017. This indicates that although the country has been recording impressive growth rates over time, some groups of people are being left out.

Even though various governments have undertaken policies and plans to spur economic expansion and combat poverty over time, disparities between the various tiers of society have continued to rise (Coulombe and Wodon, 2007; Aryeetey *et al*, 2009). Concerns regarding widening gaps in

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access to and use of healthcare, particularly among lower socioeconomic groups, go hand in hand with growing social inequities (NDPC, 2009).

In Ghana, as in many other developing nations, equality in utilisation of healthcare services has been recognized as crucial for formulating public policies aimed at decreasing poverty and promoting development (NDPC, 2009; MOH, 2009). In this regard, extensive policy reforms have been formulated and implemented in the health sector to enhance access, boost efficiency, and lessen inequalities in the utilisation of healthcare services. Notwithstanding these efforts, inequality in access and healthcare use persist (Anima *et al*, 2013; Saeed *et al*, 2012; Buor, 2004).

The inequalities in healthcare utilisation in Ghana can be traced to the period of structural adjustment programs (SAPs), which led to the introduction of user fees known as the "Cash-And-Carry" or "Pay-As-You-Go" System in 1985. Due to the high costs associated with receiving medical care at the point of delivery, many people avoided going to hospitals and health centres in favour of self-medication and other cost-cutting measures (Asenso-Okyere *et al*, 1998). This created inequalities in healthcare access for many Ghanaians, especially the vulnerable and the impoverished.

In 2003, the government of Ghana implemented the National Health Insurance Scheme (NHIS) to guarantee that all citizens, especially the poor and the vulnerable, had access to quality healthcare at a price they could pay (Government of Ghana, 2004; Adjepong and Adjei, 2008). However, new empirical research on NHIS's effect on healthcare access and utilisation shows that, despite its introduction of removing access barriers, the policy has failed to live up to its pro-poor mandate, particularly because the wealthy are much

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more likely to enrol in and benefit from the scheme than the poor and vulnerable (Sodzi-Tettey, 2012; Dixon *et al*, 2011; Agyemang *et al*, 2013; Kusi *et al*, 2015). For instance, it has been noted that the working poor and those who live in rural areas have the lowest enrollment rates in the National Health Insurance Scheme, with an estimate that less than 2% of the poor are covered under the scheme (Fenny et al, 2018).

Attempts aimed at providing increased, accessible and sustainable healthcare services for people of different socioeconomic groupings require fair and equal allocation of medical personnel and facilities. However, these resources are uneven across rural and urban areas in Ghana (Buor, 2004) because health workers and facilities are predominantly concentrated in urban regions. For instance, the Ministry of Health (2009) estimates that 69 percent of doctors in Ghana work in the two largest cities, Accra and Kumasi, with a physician-to-population ratio of 1:5,000 in the Greater Accra region and 1:92,000 in the rural Northern region (Ministry of Health, 2009). The density of health posts per 100,000 people in Ghana declined from 1.18 to 1.11 in 2010 and 2013, according to the State of the Nation's Health Report (2018).

Similarly, in Ghana, the density of health centers per 100,000 people declined from 9.69 to 9.13 in 2010 and 2013, respectively. However, Ghana's province or regional hospital density per 100,000 people throughout the same period stayed constant at 0.03. Interestingly, between 2010 and 2013, the ratio of district and rural hospitals per 100,000 people increased from 0.8 to 1.47. The information above demonstrates unequivocally that Ghana's health facilities are insufficient to effectively manage various diseases given the population.

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Ghana has improved in recent years in terms of training and maintaining health staff, resulting in the health workforce density almost doubling from 1.07 in 2005 to 2.14 in 2015. (Saleh, 2013; WHO, 2016). However, certain reports and studies indicate that the level of the health workforce is not up to par with worldwide standards. For instance, Scheffler et al (2009) have found significant shortages of doctors, nurses, and midwives in Ghana. While the midwife-to-patient ratio was 1:1077 in 2010 but grew to 1:1374 in 2014, the doctor-to-patient ratio was 1:10,000 in 2010 but decreased to 1:9,043 in 2014 (GHS, 2014).

A survey also revealed that there are not enough hospital beds and that there has not been enough commitment to increase essential resources and health facilities (Schieber et al, 2012). It should be emphasised that the maldistribution and uneven access to health facilities and professionals may affect healthcare utilisation among the especially vulnerable and rural populations and the overall health of such groups.

The world community is still very interested in gender issues and the fight for equal rights for all sexes. To promote gender equality and the empowerment of all women and girls, the fifth Sustainable Development Goal (SDG) aims to guarantee that everyone has access to sexual and reproductive health care and reproductive rights. On the other hand, it has been claimed that women are disproportionately affected by economic, social, and health issues (United Nations, 2005). Women tend to live longer than men, but they also have poorer health and are more likely to be hospitalised or require medical attention due to sickness or disability. In addition, women typically need more

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healthcare visits than men due to their reproductive responsibilities (Yakong, 2008).

Research has shown that men are more likely to seek medical help than women (Anima *et al*, 2013; Saeed *et al*, 2012; Buor, 2004). Perhaps this is because men are more likely to make important health-related decisions for their families. After all, they control household resources and for that are better placed to access more health care. Therefore, it is necessary to have a health system that delivers adequate and equitable healthcare services based on health requirements and independent of the ability to pay for those treatments (Culyer and Newhouse, 2000).

This calls for measures to be put in place to reduce socioeconomic inequalities in healthcare utilisation to help improve the health of vulnerable populations and facilitate the achievement of global health and developmental goals. Accordingly, a thorough understanding of disparities in healthcare services and their contributing factors will offer helpful insights for creating more focused, efficient, and comprehensive intervention programmes and policies required to address health and healthcare use inequality.

The role of social factors in influencing health and healthcare use has triggered interest directed at exploring the potential of social capital or the power of networking based on a strengthened sense of belonging, trust and reciprocity required to leverage the resources needed to improve the health of citizens has emerged. This interest has emerged out of concern that despite significant progress in addressing key global health and social issues (United Nations, 2011; Wilmoth *et al*, 2010), coupled with an abundance of affordable and effective life-saving technologies, medicines and knowledge, inequities in

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health outcomes continue to expand, both within and between countries and subpopulations (Marmot *et al*, 2012; Africa Progress Panel, 2012). This may be largely due to inequality in access and use of health care services.

Social capital is defined as those features of social structures such as levels of interpersonal trust and norms of reciprocity and mutual aid which act as resources for individuals and facilitate collective action (Coleman, 1990; Putnam, 1993; Kawachi & Berkman, 2000). Social capital has been described as a capital good since it facilitates the achievement of goals that would otherwise be impossible to achieve. People achieve their goal better if they have more resources – physical capital, human capital and social capital. Thus, people with better social capital will succeed better in attaining their goals (Van der Gang, 2008).

Members in personal networks or having relationship with other enables individuals to have access to resources of others in the group. Therefore, strengthening interpersonal relationships helps to enhance health information, trust in information, norms of support and reciprocity and social participation thereby promoting utilisation of healthcare services.

It is important to note that despite global efforts to provide universal access to healthcare in most nations, inequalities in utilisation of healthcare services continues to persist. Now given that social capital serves as an important mechanism in influencing health by enhancing or facilitating access and utilization of healthcare services (Kawachi & Kennedy, 1999) necessitates the need for a study that examines how social capital can play a role in addressing the issue of inequalities in the use of healthcare.

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Apart from social capital which is anticipated to play a role in brigding inequalities in healthcare use, scholars and policymakers alike have recognised the role of digital revolution brought about by rapid diffusion of mobile phones to empower marginalised communities and promote sustainable development goals (Walson & Sahay, 2006; Aker & Mbiti, 2010). The widespread and increasing use of mobile phones, especially in low and middle income countries where the disease burden is high has necessitated calls to fully harness the potential of mobile phone technology to improve healthcare delivery and use. Mobile phones enable quick and direct access to others regardless of the location, distance and cost of accessing and utilising healthcare services particularly in resource-limited settings.

Studies have shown that mobile phone technology improves access and utilisation of healthcare (Braun, Catalani, Wimbush & Israelski, 2013) and patients often use it to obtain information on health and healthcare services (Krebs & Duncan, 2015). Haenssgen and Ariana (2017) have demonstrated the potential of mobile phone diffusion to improve healthcare access and use in low income countries. Further, mobile phone diffusion can facilitate equal distribution of healthcare resources (Qureshi, 2016) and decision-making for improved care with immediate access to health information (Negash, Musa, Vogel & Sahay, 2018).

It is important to note that the level of mobile phone technology diffusion and its innovativeness promises to be a critical tool for enhancing healthcare provision and bridge inequalities in healthcare utilisation (Pillay and Motsoaledi, 2018). Consequently, the current thesis seeks to analyse the

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extent to which mobile phone technology accounts for gender and locational inequalities in healthcare utilisation.

Statement of the Problem

As an essential component of human capital, health has been recognised to relate positively to different dimensions of economic outcomes. The connection between health, human capital and economic outcomes lays credence to the need to develop a healthcare system capable of delivering effective and equitable healthcare services. The goal of healthcare systems in rich and developing nations is to ensure equity and reduce inequality in the use of medical services. Health inequalities persist not just between and within impoverished countries but also between and among wealthier nations, according to the World Health Organization's (WHO) conceptual framework on social determinants of health (Marmot *et al*, 2008).

Over the years, a number of policy initiatives and programs have been carried out in Ghana to increase access to the country's healthcare system. These included the 1996 Ghana Health Service and Teaching Hospital Act, the "Medium-Term Health Strategy" based on Vision 2020, and, more recently, the National Health Insurance Scheme (World Bank, 1997; MoH, 2000; GoG, 2003; GoG, 2007). Despite the implementation of these policies in the health sector throughout time, the extent to which Ghana's current healthcare system permits equitable healthcare utilisation is unknown. In addition, there is uneven distribution and allocation of health workers and health facilities (Buor, 2004) which has the potential to disproportionately impact the use of healthcare and consequently the health status of people from different socioeconomic backgrounds.

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It is, therefore, crucial to investigate socioeconomic inequalities or disparities in the use of healthcare in order to make informed policy decisions that could help to lessen such health disparities. It is imperative to focus on socioeconomic factors rather than other variables affecting equity in accessing healthcare because these variables are the core indicators of socioeconomic status or living standards. They also represent direct measures of access to economic resources.

Considerable empirical evidence exists on socioeconomic inequalities in the use of inpatient as well as outpatient healthcare in developing countries (Ezzatabadi *et al*, 2017; Abouie *et al*, 2018; Abu Bakar *et al*, 2019; Mulynato *et al*, 2019; llinca *et al*, 2019; Vahedi, 2020). This notwithstanding, a major limitation of these studies is their overreliance on either income or wealth as measures of socioeconomic status in the analyses. These empirical efforts though commendable, provide a narrow perspective to evaluating socioeconomic inequalities in the utilisation of healthcare. The current study uses various socioeconomic status measures, such as wealth, consumption expenditure, and educational attainment, to comprehensively analyse socioeconomic inequalities in healthcare services.

Furthermore, the unique roles of physical, human, and social capital in explaining healthcare inequalities have been overlooked in the current research on socioeconomic differences in outpatient and inpatient healthcare use in developing nations. Decomposition analyses are used in this thesis to determine the relative importance of physical, human, and social capital in explaining socioeconomic disparities in the utilisation of both outpatient and inpatient healthcare, thereby expanding the existing body of knowledge.

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Also, in Ghana, empirical research on socioeconomic inequalities in healthcare services has mostly concentrated on maternal and child care (see Novignon *et al*, 2019; Fenny *et al*, 2019). However, emphasizing only maternal and child care without paying attention to outpatient and inpatient healthcare services that are more encompassing in dealing with diverse health conditions or diseases that affect various segments of the population is inadequate. Besides, women do not only suffer from pregnancy-related health issues; thus, concentrating on only maternal care implies neglecting other health challenges experienced by women, which are equally important. If these realities are not carefully considered, chances are lost to adopt population-wide health initiatives that might dramatically reduce inequities in the utilisation of outpatient and inpatient healthcare services among different segments of the population.

Finally, prior scholarly efforts on mobile phone diffusion have concentrated mainly on the health implications of mobile phone use, including brain tumors (Coureau et al, 2014), stress, emotional instability, and depression (Augner & Hacker, 2012); sleep disorder (Thormee, Harenstam, and Hagberg, 2011), disease prevention and management (Qureshi *et al*, 2016; Benhamou *et al*, 2007). Interestingly, the extent to which mobile phones contribute to socioeconomic disparities in the utilisation of healthcare services has not yet been investigated. The current thesis contributes to the literature by analyzing how mobile phone technology accounts for gender and locational differences in outpatient and inpatient healthcare services usage.

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Objectives of the Study

The general objective of the study is to analyse socioeconomic inequalities in the usage of healthcare services in Ghana. Specifically, the study seeks to;

a. examine the nature of socioeconomic inequalities in the utilisation of outpatient and inpatient healthcare.
b. examine the effect of physical, human and social capital on inequalities in outpatient and inpatient care utilisation.
c. investigate the effect of technology diffusion on inequalities in outpatient and inpatient healthcare utilisation.

Research Questions

The study is guided by the following research questions:

a. What is the nature or degree of socioeconomic inequalities in the utilisation of outpatient and inpatient healthcare.
b. What are the contributing factors to the nature or degree of socioeconomic inequalities in the utilisation of outpatient and inpatient healthcare.

Hypotheses of the Study

The following are the hypotheses of the study based on the research objectives:

Ho: physical capital has no significant effect on inequality in utilisation of outpatient and inpatient healthcare services.

H_1: physical capital has significant effect on inequality in the utilisation of outpatient and inpatient healthcare services.

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Ho: human capital has no significant effect on inequality in the utilisation of outpatient and inpatient healthcare services.

H_1: human capital has a significant effect on inequality in the utilisation of outpatient and inpatient healthcare services.

Ho: social capital has no significant effect inequality in the utilisation of outpatient and inpatient healthcare services.

H_1: social capital exerts a significant role effect on inequality in the utilisation of outpatient and inpatient healthcare services.

Ho: technology diffusion has no significant effect on gender differences in the utilisation outpatient and inpatient of healthcare services.

H_1: technology diffusion has a significant effect on locational differences in the utilisation of outpatient and inpatient of healthcare services.

Significance of the Study and Contribution to Knowledge

Researching socioeconomic disparities in healthcare is important because it may provides light on both internal and external variations across demographic subgroups. For more than two decades, several studies have been undertaken on inequality in healthcare utilization, and health, mostly focused on high-income industrial countries. Invariably, similar studies in low-middle-income country contexts are sparse; hence a study of inequalities regarding healthcare services usage would be useful for developing appropriate healthcare systems, including formulation of relevant health policies in developing countries.

This study can assist in identifying and analysing some potential predictive factors that affect healthcare utilisation disparities in Ghana so that greater emphasis can be placed on health issues or challenges that

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disproportionately affect households with different degrees of socioeconomic status.

There is a dearth of data in Ghana that would allow for a complete picture of the socioeconomic gaps in the usage of various forms of healthcare. To enable appropriate policies and efficient monitoring of the effects of the health delivery systems to reach the most disadvantaged people and households, detailed information that identifies health sector inequities and gaps in the usage of various sources of healthcare is required (Yazbeck, 2009).

Empirical studies on socioeconomic inequalities in healthcare consumption have recently become a subject of research in Ghana, even though eliminating inequalities in healthcare utilisation has been a global issue for some time. Most empirical studies on socioeconomic inequalities in healthcare consumption in Ghana have focused on maternity and child healthcare (see Novignon *et al*, 2019; Fenny *et al*, 2019), without clear distinction as to whether these healthcare services constitute outpatient and or inpatient utilisation. Empirical evidence on socioeconomic inequalities in the use of inpatient and outpatient healthcare services in Ghana are almost absent. This study uses nationally representative data to address this knowledge gap by investigating the causes and factors contributing to socioeconomic disparities in the use of inpatient and outpatient healthcare services.

In addition, by utilising a variety of indicators of socioeconomic status (wealth, consumption, and education level) in the research, this study adds to the existing body of empirical information on socioeconomic inequalities in the utilisation of inpatient and outpatient healthcare services. This has the benefit of providing estimates and presentations of the socioeconomic

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disparity in the utilisation of inpatient and outpatient healthcare services from many viewpoints and assessments.

There is a dearth of research on the role of physical, human, and social capital in explaining inequalities in the use of outpatient and inpatient health care services in developing countries, despite the fact that such disparities are widely observed (Ezzatabadi *et al*, 2017; Abouie *et al*, 2018; Abu Bakar *et al*, 2019; Mulynato *et al*, 2019; llinca *et al*, 2019) This thesis makes a contribution to the literature by isolating the effects of these distinct kinds of capital on utilisation of outpatient and inpatient health care disparities. This may provide important directions to policymakers about the most effective levers to bridge the inequality gap in outpatient and inpatient healthcare utilisation.

Finally, research efforts on mobile phones have largely concentrated on the health implications of mobile phone use, including brain tumours (Coureau *et al*, 2014), stress, emotional instability and depression (Augner & Hacker, 2012), sleep disorder (Thormee, Harenstam & Hagberg, 2011), disease prevention and management (Qureshi *at al*, 2016; Benhamou *et al*, 2007). However, no scholarly attention has been given to how mobile phones account for gender and locational inequalities in healthcare services. This thesis adds to the body of knowledge by investigating the role that mobile phone technology plays in explaining the gender and location-based differences in the use of outpatient and hospilisation care.

Scope of the Study

The study focuses on socioeconomic inequalities in the usage of healthcare services in Ghana. It examines the nature, extent and causes of

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socioeconomic disparities in the use of healthcare. More specifically, the study looked at the relative significance of physical, human, and social capital to disparities in healthcare services. The thesis also examined the degree to which gender and locational disparities in healthcare services are accounted for by mobile phone technology. In order to achieve the study objectives, data from the sixth and seventh rounds of the Ghana Living Standard Survey and district-level information on health resources, such as the number of healthcare facilities and health professionals, were employed.

Organisation of the Study

This study is divided into eight chapters. The first chapter covers the introduction, which includes a background of the study, a statement of the problem, study objectives, hypotheses, significance, scope, and organisation. The second chapter provides a general overview of the Ghanaian healthcare system's organisational structure. Here, the organisation of the Ministry of Health, the manner in which healthcare is delivered in Ghana and the country's main health policies are described. The review of the pertinent theoretical and empirical literature is presented in Chapter three of the thesis. The diverse theoretical stances on health disparities and the use of healthcare services are covered in this chapter. It also includes a review of the pertinent empirical literature.

The methodology for the study is provided in Chapter four. This covers the research design, philosophy, and analytical frameworks for empirical estimations. This chapter also includes a description of data sources and variables used in the study. Chapter five discusses the empirical results of the nature and degree of socioeconomic inequalities in healthcare utilisation.

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Chapter six presents and discusses the findings about the relative contributions of physical and human social capital in explaining socioeconomic inequalities in the utilisation of healthcare services. This is followed by the empirical analysis of the extent to which mobile phone technology accounts for gender and locational differences in the utilisation of healthcare services in Chapter seven. Finally, Chapter eight presents a summary of findings, conclusion, recommendations, implications for additional research, and study limitations.

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CHAPTER TWO

THE HEALTHCARE SYSTEM OF GHANA

Introduction

The Republic of Ghana's 1992 Constitution, Article 36/10, states that the state shall protect the health, safety, and welfare of all employed individuals and lay the groundwork for the full expression of the creative potential of all citizens. The Ghanaian healthcare system includes all pertinent institutions, organizations, health professionals, and other resources used to provide healthcare services and address the various health needs of the populace. Health care is an integrated system that includes disease prevention, detection and treatment, rehabilitation, and health promotion (Weitzu and Fuerte, 1979).

The healthcare system in Ghana is briefly described in this chapter. Emphasis was placed on a historical review of Ghana's healthcare system, the structure of the Ministry of Health, the organization of the healthcare delivery system, the use of healthcare, and some of Ghana's most important health policies.

A Historical Overview of Ghana's Healthcare System

Sennh (2001) classified the three stages of the contemporary development of Ghana's healthcare system. The first phase, associated with a period (1471–1844), saw the beginning of biomedicine. However, the colonial masters were the only ones who enjoyed or benefited from this new healthcare system. It was set up largely to protect them from the risk of getting infectious illnesses from the "unhygienic" surroundings of the "natives environment," with whom they had regular contact (Sanah, 2001). Before independence, the

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colonial administration or missionaries who provided healthcare during this time financed healthcare in Ghana (Dummett, 1993).

When the British and several local authorities signed a bond in 1844, it marked the beginning of the second period. Despite the fact that the signing of the bond encouraged European and Christian missionary business activity in the hinterlands, it was soon realised that colonial rulers could not simply enjoy wonderful health without addressing the necessities or desires of the locals with regard to healthcare (Twumasi, 1975, Senah. 2001). Consequently, domestic workers received access to the then-elite health services and other hygienic facilities, especially if they worked for civil or security agencies like the army or navy that had regular interaction with their colonial masters (Senah, 2001).

Construction of the first hospital in Cape Coast and dispensaries in many rural settlements began concurrently with the third phase in 1868 (Senah, 2001). The Korle Bu Teaching Hospital, the nation's first hospital, was constructed in 1923 to meet the Ghanaian citizenry's medical requirements. Despite this, there was significant prejudice throughout the colonial era against providing healthcare to local people and even against Ghanaian healthcare professionals. The devastating effects of colonialism on the health sector led to an immediate focus on establishing efficient social and welfare services following independence in 1957.

The first national government extensively redesigned the health care system by increasing access, modernising facilities, and increasing the number of trained medical personnel (Opare and Mills, 2000). As a result of these policies, all citizens of Ghana had access to free healthcare at any public

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health facility run by the government, including hospitals, clinics, and pharmacies. Senah (2001) reports that between 1957 and 1963, the government allocated about £144 million to the health sector, resulting in a 41 percent increase in health centres. During this period, the government allocated over 31% of its entire budget to the provision of social services, focusing on the health sector in particular.

Furthermore, government spending on health climbed from 6.4% in 1965 to 8.2% in 1969. (Patterson, 1981). Comparing the figures mentioned above to other sectors, it was clear that the government was committed to ensuring quality healthcare and the development of human resources.

Until Ghana's economic crisis in the 1970s and 1980s, government spending on health was rising, but it eventually fell to just 2 percent of its pre-crisis level (Smithson, 1994). There was a virtual prohibition on the construction of new medical facilities, regular shortages of essential pharmaceuticals and other supplies, workers were paid poorly and had low morale, patients paid for care in secret and illegally, and so on. Failure by subsequent governments to adequately fund the healthcare system (Osei-Boateng, 1992) worsened the problem, and by 1969, user fees were being charged.

This practice persisted in various forms until the "Cash-and-Carry" or "Pay-As-You-Go" System was introduced in 1985. The International Monetary Fund (IMF) and the World Bank implemented a programme called Structural Adjustment (SAP), a major component of which was cuts to government spending. This means that individuals in Ghana must shoulder the cost of their own healthcare. Asenso-Okyere and Dzator (1997) found that

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more than 60% of the expense of treating malaria can be attributed to the cost of treatment, despite malaria being one of the most common diseases in Ghana.

In the meantime, government spending on health dropped from 10% of the national budget in 1982 to 1.3% in 1997. (Asenso-Okyere et al., 1998). These and other factors made it challenging for people to pay the necessary expenses when receiving medical care. Consequently, most individuals avoid going to hospitals and health facilities and instead turn to self-medication or other cost-saving techniques (Asenso Okyere et al., 1998). This brought about severe health-seeking costs to Ghanaians, especially the vulnerable.

To do away with the "Cash and Carry" system and lower patient out-of-pocket expenses, the government of Ghana approved the National Health Insurance Law, 2003 (Act 650) and the National Health Insurance Regulations, 2004 (L.1. 1809) in 2003 and 2004, respectively. Ghana has attempted, via several pieces of legislation, to lessen the population's exposure to healthcare costs, remove financial hurdles that Ghanaians face when attempting to get healthcare services, and guarantee fair access to quality treatments, especially for the poor and vulnerable (Government of Ghana, 2004; Adjepong and Adjei, 2008).

The NHIS is supported by a variety of of taxes and fees, including a sales tax on goods and services, a portion of employee social security payments in the formal sector, individual premiums, other investment returns, Parliament and donors, and the informal sector. The National Health Insurance Levy (NHIL), a 2.5% tax on a select group of goods and services, accounts for almost 70% of all income. Variable sources account for the remaining 25%,

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including 5% in premiums and contributions to Social Security over the minimum (Yankah, 2009). When the NHIS was originally implemented in 2011, the number of people using outpatient healthcare services surged by more than 40 times, from 0.6 million to 25.5 million. On the other hand, the number of inpatient visits increased from 28,906 in 2008 to 1,451,596 in 2011. (NHIA, 2011). As a result of the programme, the low-income population has significantly increased their utilisation of both hospitalisation and primary care services. Although imperfect, the present NHIS is more equitable than its predecessor, the "Cash and Carry" system.

Ministry of Health

The statutory body in charge of ensuring the health of citizens in Ghana is the Ministry of Health (MoH). However, with the passage of ACT 525, an act of parliament, the Ghana Health Service and teaching hospitals have been mandated to perform the functions of promotion, preventative, curative, and rehabilitative treatment. In order to promote national development, the Ministry's vision is to ensure a healthy population. As part of its mission, the Ministry aims to support the country's socioeconomic growth by encouraging health and vitality by providing all Ghanaians with access to high-quality healthcare through motivated staff.

Policies, methods, and procedures for evaluating work programs are developed, coordinated, and implemented under the supervision of the Ministry of Health. It makes sure that accountability, system design, regulation, coalition building, and supervision are all intertwined in strategic policy frameworks. It is critical to emphasize that consumer or client protection is the main focus of regulatory operations in the health sector.

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This is accomplished by ensuring sufficient and qualified human resources for service delivery at all service delivery sites.

Regulatory Agencies under Ministry of Health

The Ghana Health Service is an important organisation within the Ministry of Health (GHS). It is an independent organisation created by legislative ACT that serves as the Ministry of Health's (MOH) service delivery arm (ACT 525, 1996). Aside from teaching hospitals, GHS is in charge of the administration and provision of services at all national public health facilities. The GHS Director-General serves as a member of the GHS Council, the organisation's supreme governing body. It provides both clinical and public health services at the primary and secondary levels. In addition to overseeing government and non-government hospitals, the Ghana Health Service is also in charge of policing the activities of mission and private hospitals through its network of District Health Administrations.

Another agency reporting to the Ministry of Health is the Food and Drugs Authority. It regulates the country's manufacturing, importing, exporting, distribution, use, and advertising of all food, medicines, cosmetics, medical equipment, and household chemicals. When it comes to the dispersal of pharmaceuticals like narcotics and psychotropic substances, the Board is also in charge of advertising, post-market control, and safety checks.

The Pharmacy Council is another organisation tasked with ensuring the highest standards in pharmacy practice. By granting personnel licenses and establishing practice requirements for them, the Council ensures the competency of service providers. The Council also supports responsible drug use and guarantees a consistent and dependable system for supplying and

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distributing medicines. These obligations are also carried out by issuing licenses to establishments, conducting inspections, and enforcing standards through observation.

There is a Nurses and Midwives Council in addition to the Pharmacy Council. The primary mission of the Council is to improve the quality of healthcare in Ghana by increasing the number of qualified nurses and midwives. The major goal is to increase the number of registered nurses and certified nurse midwives working in all sectors of the healthcare delivery system. The Council is responsible for providing a healthy and safe working environment for these nurses. To ensure that registered nurses and midwives are adequately prepared to perform their duties, the council exercises its jurisdiction to oversee their educational programmes and establishes requirements for registration. Additional responsibilities include overseeing nurses and midwives in public and private healthcare settings and checking the registration and licencing orientation of nurses and midwives who were trained abroad.

The Medical and Dental Council establishes and enforces the highest standards of professional behaviour and guarantees that medical and dental practitioners receive the best training possible. The council also evaluates the sufficiency and quality of service facilities, encourages continued medical education, and defends the rights of patients and clients. The council's main tasks include registering medical and dental professionals who have received local and foreign training and those currently enrolled in short-term programs in the nation. It also inspects and accredits medical and dental schools and institutions for House-Manship training.

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Regulation and inspection of private healthcare providers fall under the purview of the Private Hospitals and Maternity Homes Board. There are various types of healthcare facilities, such as hospitals, health centres, clinics, and maternity homes, among others. The board is accountable for ensuring enough staffing and operations at these sites while other departments deal with human resources. So, the board is responsible for registering and maintaining the registration of these establishments.

The Traditional and Alternative Medicines Council is in charge of integrating traditional medicine into Ghana's system of providing healthcare. The council is in charge of implementing the Traditional Medicines Council Law, which governs practitioner registration, licensing, and the sale of traditional medicine items.

Another important regulatory body under the Ministry of Health is the "Centre for Research into Plant Medicine". This "Center for Research and Development of Traditional Medicine" is a WHO partner institution. It is in charge of conducting and advancing scientific research into herbal medicine and offers technical assistance and quality control to organisations and individual herbalists.

The Ghana Ambulance Service is yet another agency under the Ministry of Health, operating its ambulance service and offering accessible 24-hour service across the country. It achieves this through collaboration between other service providers like the Fire Service and other hospital-based ambulances. Further, it offers reliable pre-hospital care in accidents, crises, and disasters. The service ensures its efficient operation and responds quickly to victims of accidents, emergencies, and other catastrophic events by

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producing fast, comprehensive, and accurate information to assist these endeavours. The Ghana Ambulance Service coordinates with other response agencies to prepare for national disasters and advocates for widespread access to first aid education.

In conclusion, the "National Health Insurance Authority" is responsible for accrediting and monitoring healthcare professionals, regulating and overseeing Health Insurance Schemes, and managing the "National Health Insurance Fund (NHIF)." The "National Health Insurance Act" mandates free healthcare to eligible exemption groups and re-insurance to District Mutual Health Insurance Schemes.

Structure of Health Care System and Organization of Health Services Provision in Ghana

The healthcare system in Ghana has been praised as being among the most sophisticated in the West African sub-region because of its comprehensiveness, pluralism, and multidimensionality (Gaddah and Munro, 2011; Salisu and Prinz, 2009). Sub-district health facilities, district general hospitals, regional general hospitals, and tertiary hospitals specialising in treating certain conditions are all part of this system. The healthcare system in Ghana is made up of both governmental and private hospitals and clinics. Health care in the private sector can be broken down into for-profit, non-profit, and traditional models. It is worth noting that many people have tried to integrate traditional medicine into the conventional healthcare system (Abor et al., 2008).

Smaller private hospitals, clinics, maternity homes, retail pharmacies, and specialised health institutes are private-for-profit establishments typically

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catering to the affluent. Alternatively, hospitals, clinics, and primary care centres run by religious and non-governmental organisations (NGOs) are considered private, non-profit establishments. The private non-profit/mission sector is responsible for an estimated 42% of Ghana's healthcare needs (MeTA Ghana, 2010). The Christian Health Association of Ghana (CHAG) is a mission-based organisation sponsored by sixteen Christian Churches that acts as an unofficial leader in this area alongside the Muslim Ahmadiyya Movement (MAM). CHAG and MAM are dedicated to serving those living in rural and outlying areas; however, in some areas, CHAG offers more beds than the government does (Ballou-Aares et al., 2008).

On top of that, collaborative groups like enterprises and security services provide facilities that offer medical services to their people. Herbalists, who practice alternative medicine, use plants, animal parts, and sometimes even prayer to treat patients. Malaria is only one of many examples; hypertension, diabetes, and asthma are all chronic conditions in this category as well (Tsey, 1997; GNDP, 2004; Busia, 2005). Some 75% of Ghanaians still seek out traditional medicine practitioners and/or use herbal products, which can be purchased anywhere from unlicensed itinerant vendors to licenced chemical sellers in rural areas, and from herbal shops or retail pharmacies in urban settings, to meet their primary medical care needs (Houghton et al., 2003; Tabi et al., 2006; Goodman et al., 2007). For the sake of organisation and responsibility,

Ghana's health care system is broken down into the national, regional, and community levels. Federal, state, provincial, municipal, and local governments are the five levels of government. Each administrative layer has

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its own Budget and Management Center (BMC), also known as a cost centre, to handle the distribution of monies received from the government and other sources. The Ghana Health Service (GHS) headquarters is also operated as a BMC, bringing the total number of BMCs to 223. There are 10 RHAs, 8 RHA hospitals, 110 DHAs, 95 DHA hospitals, and a number of other smaller hospitals. BMCs are used for all of them (GHS, undated). Transportation, facilities, and medical tools are all under the purview of the Ghana Health Service (GHS). In addition to providing information, it "helps and directs the Ghana Health Service Council in the creation of policies and plans" (GHS, undated). With the Minister of Health as its overarching supervisor, the Ghana Health Service Council is organising and overseeing the service's many components.

The Public Health Care System

Healthcare in Ghana is provided through the Ghana Health Service and three Teaching Hospitals for the general population (Korle Bu, Komfo Anokye, and Tamale). The Ghana Health Service provides primary and secondary-level public health and clinical services, while Ghana's teaching hospitals provide tertiary and specialised treatment and serve as the country's key referral facilities. Three distinct insurance programs—private mutual, private commercial, and district-wide (public) mutual—are allowed to function under Ghana's National Health Insurance Scheme (NHIS). These services are available in each of the 110 districts around the country. Nonetheless, NHIS resources are restricted to District-Wide (Public) Mutual Health Insurance plans (Hepnet, 2007).

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The Private Formal Health Care System

Either for-profit or non-profit organisations often provide services in the private sector. Conservative estimates place the private sector's contribution to the health care system at roughly 60% of the total (Agyepong, 1999, GNDP 2004; Cohen et al, 2005). Smaller, privately owned hospitals, health centres, clinics, maternity homes, retail pharmacies, and specialised facilities all fall under the category of "private for-profit" health care providers; they focus on catering to the needs of the wealthy through the provision of private medical and dental care. On the other hand, hospitals, clinics, and primary care facilities run by private-not-for-profit entities like religious groups and non-governmental organisations (NGOs) provide healthcare at no cost to patients.

Christian Health Association members offer private, non-profit healthcare around Ghana (CHAG). Every clinic or hospital run by the Ghana Health Service or the Christian Health Association adheres to the same standards of care. Forty-two percent of Ghana's healthcare system consists of private, non-profit, and mission organisations, according to reports (MeTA Ghana, 2010). Like its Islamic counterpart, the Movement of Muslim Ahmadis, the Christian Health Association of Ghana (CHAG) is a mission-based organisation backed by sixteen Christian churches (MAM). Community Health Assistance Program (CHAG) also gives rural areas a higher priority, as MAM does, and in certain places, even provides more beds than the government does (Ballou-Aares et al. 2008). Companies and security services are two types of organisations that often pool resources to ensure their

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personnel have access to healthcare. Some of these establishments offer medical services to people in need.

Private Informal Health System

Owners of non-pharmacy retail businesses, as well as traditional healers, homoeopaths, and traditional birth attendants, are all examples of those working in the private informal sector. According to World Health Organization data, nearly 80% of Africans use traditional medicine as their primary healthcare system (WHO, 2003). The World Health Organization (WHO) defines traditional medicine as "the use of manual techniques, exercises, spiritual therapies, and pharmaceuticals derived from plants, animals, and minerals to diagnose, treat, prevent, and maintain health, either alone or in combination" (WHO, 2003).

Patients with acute illnesses like malaria and chronic ones like hypertension, diabetes, and asthma have historically and currently been treated by practitioners in the informal sector, such as Traditional Medicine Practitioners (TMP), using herbs, other plant products, animal parts, and possibly religious practises (Tsey, 1997; GNDP, 2004; Busia, 2005). They may be found in both rural and urban areas, and some have a well-deserved reputation for providing excellent care to those struggling with serious mental health concerns (Tsey, 1997; Abel et al. 2005; Tabi et al. 2006). There are only about 200 TMPs for every 20,000 licenced medical physicians in Ghana.

An estimated 75% of the population still uses TMPs and/or herbal products to meet their primary medical or health care needs. In rural regions, you may get these items from itinerant vendors who are not licenced to sell them, whereas in cities, you can visit a specialty store devoted to herbs or a

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pharmacy (Houghton et al., 2003; Tabi et al., 2006; Goodman et al., 2007). This could be due to the fact that TMPs and herbal remedies are more accessible and cost-effective than conventional medical care (Houghton et al., 2003; Busia, 2005).

A number of TMP procedures and therapeutic items, most notably those derived from plants, have scientifically verified health benefits (GNDP, 2004: Abel et al., 2005). The Ministry of Health (MOH) and other stakeholders in the healthcare system have been making significant efforts for some time to encourage the responsible use of TMPs, improve research in this field, and regulate TMP practises and TMP manufacturing.

Structure of Health Services Delivery

The health service delivery system in the public sector is decentralized at the national, regional, district, sub-district, and community levels. A network of hospitals, clinics, and primary care facilities provides these healthcare services. Depending on the resources at their disposal and the capabilities of their human resource base, each of the aforementioned entities offers various services.

Health Care at National Level

The teaching hospitals at the national level are independently run and overseen by their own boards of directors The “Korle Bu Teaching Hospital” in Accra and the “Komfo Anokye Hospital” in Kumasi are the two primary national teaching hospitals in Ghana. Teaching hospitals are hubs for high-quality, sophisticated medical services. Through its polyclinics, they offer specialized services and, to a certain extent, ambulatory services. Regional

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healthcare facilities and other non-public sector organizations use teaching hospitals as referral hospitals.

The care provided at these facilities typically calls for more sophisticated equipment and highly trained staff. The resources they need are heavily concentrated, and their operating costs are substantial. They also assist with pre-service and on-the-job training for healthcare professionals. The following are some of the duties performed by teaching hospitals:

- Providing cutting-edge, life-saving tertiary care for patients. As part of the primary healthcare system, they treat patients for potential problems in advance and participate in community health improvement projects. Teaching hospitals also accept and process referrals from other districts and regions. Teaching hospitals have an important role in sharing information regarding health problems. Some of the extramural therapy options are day surgery, home care, home hospitalisation, and outreach initiatives.
- Setting high-quality clinical standards and treatment guidelines is a key responsibility of teaching hospitals. Typically, teaching hospitals should offer the highest standard of treatment in the nation.
- Teaching hospitals are involved in research that helps to find solutions to regional and societal health issues because of the concentration of resources and manpower they have. Teaching hospitals offer basic and advanced training for medical specialists.

Health Care at Regional Level

When it comes to regional healthcare, it is all about the cures. The regional hospitals in the respective capital cities serve as the hubs for these

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public health services. Each region has its own administrative districts and subdistricts, which are all supported by the Regional Health Administration (RHA). Regional hospitals provide secondary care for the populations they serve. About 1.2 million people live inside their defined region. Regional hospitals are the next step up for patients referred from district hospitals due to their higher expertise and specialised services.

Hospitals serving a wide geographic area are vital to any regional healthcare network. Their staff needs include physicians, paediatricians, general and specialty nurses, and midwives. Between 150 to 200 beds should be available in regional hospitals. All clinical services, such as general medicine, should be available at regional hospitals. Medical, surgical, anaesthetic, paediatric, obstetrical, psychiatric, trauma, ENT, O&G, ENT, ophthalmology, and dermatological treatment are only some of the general clinical services that should be available at any good regional hospital. As an added bonus, they provide the following assistance:

- Diagnostic and laboratory methods for referrals from lower tiers of the healthcare system.
- Teaching and training for health care professionals, including nurses and medical students.
- Monitoring and supervising operations at district hospitals.
- District hospitals receive technical help in the form of specialized outreach services.

As an alternative to rural health clinics, numerous urban centres feature polyclinics. A polyclinic is a large medical centre that provides a wide variety of care. They are typically staffed by medical professionals and are capable of

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performing complex surgical procedures. They tend to cluster in large cities. They typically employ medical professionals and can carry out complex surgical procedures. They can be found primarily in urban settings.

Health Care at District Level

District hospitals are responsible for providing curative care at that level. Admittedly, many of these district hospitals are faith-based institutions that work with public health facilities to provide medical care. The DHMT and the district hospitals' public health units provide public health services. The District Health Administration (DHA) oversees and aids in managing the subdistricts. District hospitals serve as the district's primary clinical care facility. District hospitals usually cover an area with a population of 100,000 to 200,000. A district hospital typically has 50-60 beds available. As the primary medical facility for the district, it plays a crucial role in patient care.

A district hospital should offer the following:

- Treatment, prevention, and health promotion for a resident in the district.
- Superior clinical care is provided by medical staff that is more knowledgeable and capable than those at health centers and polyclinics.
- Surgery and other treatment modalities are not offered in health centers.
- Laboratory and other diagnostic methods suitable for the district hospital's inpatient, outpatient, and surgical activities.
- District hospitals provide training and technical oversight to health centres and may also include resource centres where health centres can learn more.

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- There is a resource centre for health centres at each district hospital and training and technical supervision for health centres.

Health Care at Community Level

The community and sub-district health centres act as facilities at lower levels of the nation's health care delivery system, focusing mostly on primary health care services. Historically, the client's initial point of contact with the formal health care system has been the health centre. Each health centre provides care to over 20,000 people. They offer fundamental adult and pediatric curative and preventive services and reproductive health care. They do simple surgeries like incisions and drainage. They add outreach services to their existing service offerings and refer patients with severe and complex diseases to higher levels.

Health clinics coexist with the Community-based health planning and services (CHPS) complex. The CHPS zone is a specific area within a subdistrict where a community health officer can provide patients with community-based health services, such as home visits. To that end, in 2003, CHPS was established to provide medical services to rural areas of Ghana. Community health posts focus on providing primary and preventative care, but they sometimes lack the medical expertise to treat more serious conditions. Nurses and other medical staff members may provide initial care and transfer patients to nearby district hospitals, polyclinics, regional hospitals, or tertiary institutions, depending on the severity of the patient's condition and the availability of more advanced medical services.

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Private Maternity Homes

The Ghana Registered Midwives Association is responsible for overseeing private maternity homes. Every area of Ghana is served, albeit Ashanti and Greater Accra have the most locations. The Upper East and West have the fewest. They make up 17% of the healthcare facilities offering reproductive health services in Ghana. They provide family planning and reproductive care while closely collaborating with the GHS's Reproductive and Child Health Unit. Public health workers also carry a few child welfare initiatives at their place of work.

Major Health Policies in Ghana

Since the country's independence, various policy initiatives and interventions have been implemented to raise the standard of health care for Ghanaians. Some early seven and five-year development plans, for instance, targeted issues like morbidity, mortality, and child malnutrition. "Economic Recovery Program (ERP)" and "Structural Adjustment Program (SAP)" initiatives of the 1980s prioritised primary healthcare and preventative services (Aryeetey and Kanbur, 2008). Consequently, due to economic reforms, healthcare in Ghana was provided free of charge before independence. After independence, however, the government began charging patients for their care. In order to improve both accessibility and quality, similar policies and programmes have been in place since the 1990s. Here we explore some of the more significant health policies put in place to improve the health of the Ghanaian people.

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Health Insurance

The Ghanaian government announced its desire to end the "cash and carry" system and started looking into the viability of implementing a national health insurance program run at the district, municipal, and metropolitan levels (Sulzbach *et al*, 2005). The "National Health Insurance Act (Act 650)", passed in 2003, mandated the establishment of cooperative health insurance systems by all metropolitan areas, municipalities, and districts. All Ghanaians, but notably the poor and the helpless, would have access to cheap, high-quality medical treatment under the "National Health Insurance Scheme" (NHIS) (MoH, 2004a).

Over the course of Ghana's history, financing health care has faced many difficulties. After the country gained independence, public health institutions began providing "free" medical care to citizens. Therefore, no out-of-pocket costs were associated with receiving treatment at public health facilities. Public sector healthcare expenses were fully funded by tax money. When the economy started to deteriorate, and conflicting demands were placed on the same source; many questioned whether or not this method of supporting healthcare in the country was sustainable over the long run. To emphasise, general tax revenues did not permit a percentage to be set aside for health, unlike VAT money now being dedicated to education. As a result, most medical care was free until 1985, when the government started charging for all but a few procedures connected to infectious diseases.

Despite the policy's exclusion of people with communicable conditions, nearly no one used the free health care it provided. No implementation instructions were provided to rub salt in the wound, and no

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attempt was made to proactively prevent financial losses. Healthcare quality plummeted in the following years, and essential medications became severely scarce at all publicly funded institutions. As a result, the "cash and carry" system of user fees was implemented to offset the high price of medical care.

Under this arrangement, everyone was expected to pay for medical care afterward. This factored into Ghana's low rate of health care utilisation. The current government of Ghana understands the importance of a healthy populace in fostering the growth and prosperity of our beautiful country, so they made health insurance mandatory. Because of this problem, "the National Health Insurance Scheme" was established (NHIS). It is mandated under the Health Insurance Act of 2003 that the "National Health Insurance Scheme covers the medical expenses of a group of subscribers" (Act 650). Consequently, the money contributed by members of the programme through their premiums will be used to pay for medical care. In other words, the pooling of resources will give participants in the plan the financial security they need if they have bad luck getting sick. This makes the subscribers each other's keepers. Although the "National Health Insurance Scheme (NHIS)" is frequently referred to as a whole, there are three different types of plans covered by section II of the Act:

a. The District Mutual Health Insurance Schemes.

b. The Private Commercial Health Insurance Schemes.

c. Private Mutual Health Insurance Schemes.

The National Health Insurance Council, which is the body appointed for that purpose by sections 13 and 14 of the Health Insurance Act, will register the various insurance schemes administered by various groups or associations

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under each of the three categories of schemes (2003). The government has chosen the concept of the District Mutual Health Insurance Scheme because it does not want to take any chances and wants to make sure that:

a. All Ghanaians are given a chance to have equitable access to the operational systems of health insurance.
b. Ghanaians have switched from an expensive "cash and carry" system to another reasonably priced Health Insurance program.
c. All Ghanaians are given access to a sustainable health insurance alternative.
d. Health Insurance does not compromise the standard of healthcare.

The District Mutual Health Insurance Schemes have been designed to ensure adequate coverage for fundamental healthcare requirements while allowing for the payment of extremely cheap premiums attainable by the needy in society. Due to the low premiums, it will also be difficult for premium payments to meet the "basic health care needs" established for the District Mutual Health Insurance Schemes. In this regard, the National Health Insurance Council will offer a subsidy from the National Health Insurance Fund in accordance with the requirements of section 33 of the Act, which authorizes such a subsidy.

Due to the fact that not all inhabitants of Ghana have the same socioeconomic circumstances, the "National Health Insurance Scheme (NHIS)" was created with the idea that contributions should be affordable for everyone, preventing anyone from being compelled to continue using the "cash and carry system." Since the premium contribution is not uniform across the board, the amount paid varies from one area to the next, just as the

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prevalence of sickness varies across the board. Contributions are payable per one's ability to pay, as previously stated. Community health insurance committees are responsible for identifying and classifying residents in the unorganized sector into social categories so that those within each category can make payments in accordance with their financial capacity. The poor are exempted from paying into the health insurance program if they are considered adults, unemployed, and receive no regular financial assistance from sources that can be identified.

Children under 18 are excused from making any payments if their parent(s) or guardian(s) do so on their behalf. Poor or extremely poor people who are employed or unemployed but get recognizable and regular financial assistance from sources of low income contribute GHC7.20 annually; however, because of financial hardship, they are permitted to pay in monthly instalments of GHC0.60.

The middle class is expected to donate GHC18 year, while the upper class is expected to donate GHC48 annually, every 13 months (National Health Insurance Act). The "National Health Insurance Fund" will reimburse all fully paid contributions to the District Health Insurance Scheme. The broader access and coverage are intended to increase revenue and bring the economically disadvantaged into the consumer economy (Health Insurance Act 2003).

Each state's programme must address the federal government's minimal ailments. Roughly 95% of health issues in Ghana can be solved with this bundle. Malaria, diarrhoea, upper respiratory infections, skin issues, hypertension, diabetes, and asthma are just a few diseases and problems that

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affect people from head to toe. Any district-wide system, however, needs approval from the National Health Insurance Council before it can restrict which diseases and services it covers.

But the coverage package does not cover every illness. This is mostly because some diseases may be unaffordable to treat. For this reason, a wide range of options is being investigated to expand patient access to treatment for these conditions. Care for chronic renal failure, dentures, cosmetic surgery, giving AIDS medicines, heart and brain surgery, etc., are not covered by standard health insurance plans. Those represent only roughly 5% of all diseases that have ever struck humans.

Policy for Community-Based Health Planning and Services (CHPS)

The Ghana Health Service's overarching objective is to create zones in all Sub-districts with a catchment population of 3,000 to 4,500 people, in which a resident Community Health Officer will provide primary healthcare services with the help of the Community structures and volunteer networks. Community-based health planning and services (CHPS) zones are established within a subdistrict by deploying all elements needed for the Community Health Officer to provide door-to-door service. CHPS has as its main strategic goal the improvement of Ghanaian citizens' health through the facilitation of community-based initiatives and increased agency.

By implementing CHPS, the Ghana Health Service completes its health systems reform process and establishes the full "District Health System," which consists of three service delivery levels: community level, sub-district level (health centre), and district level (hospital), with strong referral components between levels.

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CHAPTER THREE

LITERATURE REVIEW

Introduction

This section provides a synthesis of relevant information on inequalities in healthcare services. In order to justify the different approaches used in the methodology, we first present a brief review of the major theories that inform inequalities in health. The theories of social capital and healthcare utilization are then presented. Once more, a review of relevant empirical research on socioeconomic disparities in healthcare services is provided. Finally, an overview of the examined literature and a description of the gaps the study seeks to fill is provided in this chapter.

Review of Theoretical Literature

This section provides an overview of pertinent theories for examining socioeconomic inequalities in the use of healthcare in the context of the current thesis.

Health Inequality and Inequity in Health

In the health literature, the phrases “equity (inequity)” and “equality (inequality)” are sometimes used interchangeably to refer to fairness (unfairness). Conceptual clarity is therefore crucial, especially in light of the normative overtones attached to debates of “inequality” and its connection to “inequity.” Although these concepts are closely related, equity and equality differ (Culyer, 2007). While equality is focused on resemblance in a mathematical sense, equity is concerned with fairness. Equality of treatment is at the heart of what it means to be fair. Equitable treatment is not limited to achieving parity.

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Recognising health inequities necessitates normative judgment to distinguish between equality and equity, as stated by Kawachi, Subramanian, and Almeida-Filho (2002). Unfairness requires a value judgement that the inequality is wrong, while inequality is merely a dimensional description employed whenever quantities are uneven. When referring to the health outcomes of individuals or groups, the term "health inequality" is used to describe the variances, variations, and inequalities between them (Murray *et al*, 1999).

Similarly, health inequality was characterised by Kawachi, Subramanian, and Almeida-Filho (2002) as "variations, variability, and disparities in achieving health among people in a population." Differentiation in health status or underlying factors can also be considered diversity (Royal College of Nursing., 2012). According to Shaw *et al* (2007), health inequality refers to the statistically significant differences between the health of various population subgroups or geographic regions.

Whitehead (1992) contrasted this with a definition of health inequality that emphasised the unfairness and unjustness of health disparities that were unnecessary and avoidable. According to Braveman and Gruskin (2003), health inequality can be defined as "unjust or unfair" allocation of resources that leads to differences in health status between more and less privileged socioeconomic groups. According to international human rights standards and founded on the principles of distributive justice, health equity is an ethical concept of social justice or fairness (Braveman and Gruskin, 2003, Sen, 2002, Whitehead, 1991).

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Health inequalities, as described by Kawachi et al., are health disparities that are unjust or the outcome of a lack of social justice (2002). Similarly, Shaw *et al* (2007) differentiate between inequalities and inequities when it comes to societal relevance, but they define inequalities in terms of the (un)fair distribution of resources or access to services in relation to need rather than health outcomes. However, health inequity is a subset of health inequality because it also refers to an unjust difference in health and has the same meaning. For the sake of this discussion, we will focus on inequities in health, which refer to disparities in health that are viewed as unfair, and inequalities in health, which refer to differences in health across groups regardless of whether they are viewed as fair (Evans *et al*, 2001).

Finally, whereas "inequality" describes the situation in which two or more quantities are compared and found to be different, "injustice" implies a moral judgement that the difference is unfair.

Theoretical Explanations for Health Inequality

Numerous explanations have been proposed to explain the health gaps between groups. These ideas are largely beyond the scope of this study. Some of the many explanations for health inequalities across time are discussed here. Accordingly, the primary purpose here is to provide a concise summary of the key points made by each of the selected theories.

Artefact theory

It is argued in the artefact theory that health disparities do not exist because of differences in health but rather because of differences in the way that social class data has been collected and how health inequity has been measured (or defined) over time (West, 1998; Bambra, 2011; McCartney et al,

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2013). Contrary to popular belief, this theory acknowledges the existence of class distinctions across populations and hence does not deny the existence of health inequities (West, 1998; Bambra, 2011). Several researchers who have identified societal health disparities have refuted this concept, mainly because it is predicated on the false premise that societal health inequalities do not exist (West, 1998; McCartney et al., 2013).

The Social Selection Theory

According to this theory, health influences socioeconomic status rather than the other way around. As a result, healthier people will typically move into better socioeconomic positions than less healthy people, creating health inequities (Bartley and Plewis, 1997; Manor *et al*, 2003; West, 1991). That is to say, according to the social selection hypothesis, inequalities in health status emerge along socioeconomic lines as the healthy ascend to higher status and the sick fall to a lower status (West, 1998).

In essence, this theory contends that social standing is influenced by one's state of health (Bambra, 2011). However, in the real world, this is not always the case. For instance, a family may have a member with a disability who may not be affected by it in terms of his socioeconomic status and that of the family. However, due to the lack of evidence for a causal relationship between health and social selection, some research (Smith and Morris, 1994; Marmot *et al*, 1997) conclude that health selection cannot be regarded as the fundamental reason for health inequalities (Bambra, 2011; McCartney *et al*, 2013).

We can infer from this theory that since healthier individuals will move into higher socioeconomic positions than less healthy people they will

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be better placed to earn higher wages and have more social connections. Consequemtly, they will be well positioned to afford more healthcare services than their counterparts hence exacerbating the inqualities in the use of healthcare services. Ideally, the unhealthy individuals are supposed to require more healthcare serives but due to their lower socioeconomic position they will not be in a position to afford the amount of healthcare services they might need leading to inqualiities in healthcare use.

Cultural and Behavioural Theory

The cultural-behavioural theory suggests that those from lower socioeconomic backgrounds are more prone to participate in risky health behaviours due to differences in health behaviour between social classes (Bambra, 2011). If you assume that culture and conduct are synonymous, West (1998) presents a strong argument against that assumption. However, this hypothesis is also based on the concept that certain health practices and differences between social groups are causally related to health disparities, which has been disputed by certain scholars (McCartney *et al*, 2013). In addition, removing people's socioeconomic status from the equation does not help this theory adequately explain health inequalities (McCartney *et al*, 2013).

It should be noted that people from lower socioeconomic backgrounds are normally the poor and vulnerable in society so as they engage themselves in risky health behaviours they are more likely to fall sick or contract diseases. Unfortunately, this category of individuals who need more healthcare but cannot afford and for that matter are bound to use less healthcare services compared to those from better socioeconomic backgrounds. Unlike healthier

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people who do need more healthcare will rather move to higher socioeconomic statuses which places them at advantageous position to use more health when the arises. This therefore has the tendency of leading to inequalities in healthcare utilization.

Structural Theory

According to this theory, also referred to as the materialist approach, variations in a person's socioeconomic situation account for health inequities (i.e., material conditions). The underlying idea is that people at different levels of the social hierarchy are subjected to material environments that are either beneficial or detrimental to their health (e.g., noise, pollution, and material working conditions). Thus, individual differences have clear and direct ramifications on health outcomes (McCartney *et al*, 2013).

Several authors stressed the importance of considering public infrastructure factors as (neo-) material issues since they may affect the private resources available for health production (Lynch *et al*, 2000; Smith, 1996). Furthermore, structural theorists believe that health inequities are exacerbated by differences in health risks across different socioeconomic classes and different regions (Arcaya *et al*, 2015).

From the above theory, it can be observed that people who are exposed to material environments that are beneficial to their health are more likely to have good heslth and so they might not need to use more healthcare services. On the other hand, those individuals who are exposed to material environments that are detrimental to their health will require more healthcare services since they are more likely to fall sick easily.

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Behavioural Model of Healthcare Utilisation

Anderson (1968) created this model to highlight factors contributing to healthcare use. To better understand why families make use of healthcare services, to define and evaluate fairness in healthcare access, and to aid in the formulation of policies to expand such access, Anderson's Behavioral Model of Healthcare Usage was proposed (Awiti, 2014; Kimalu, 2013; Kimami, 2014). This model proposes that a person's use of healthcare services is affected by a combination of predisposing factors, enabling factors, and need variables (Anderson, 1995). Although they do not directly account for healthcare utilisation, predisposing variables can influence a person's decision to seek medical attention. Societal and cultural characteristics of individuals prior to the onset of illness are examples of such predisposing factors (Anderson & Newman, 1995; 2005).

An individual's or group's demographics, social structure, and pre-existing health attitudes are all thought to have an impact on how likely a person or group is to seek medical attention in the event of illness (Anderson, 1995). A person's likelihood of needing medical attention can be predicted partly by their demographic characteristics, such as sex, history of the disease, and gender. As a metaphor for the many factors that influence an individual's social status, problem-solving skills, and access to resources, the term "social structure" is apt. Marriage, education, religion, family size, economic status, career, ethnicity, and social networks make up a person's social structure (Awiti, 2014; Babitsch, Gohl & Lengerke, 2012; Anderson, 2005).

People's knowledge, attitudes, and values about health and illness, as well as the information they possess about health care, all contribute to their

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health beliefs (Anderson, 2005). People's expectations about their future healthcare needs and actual use of medical services may be influenced by their personal health beliefs (Anderson, 1995; Kimani, 2014). An individual's belief in the significance of health care is positively correlated with their utilisation of those services.

The term "enabling factors" describes conditions that either promote or impede access to health services. These are based on the idea that individuals' propensity to utilise health services is irrelevant unless adequate means exist (Anderson & Newman, 2005; Anderson, 1995). A person's or family's level of poverty, the severity of their sickness, the proximity of medical facilities, the availability of healthcare, health insurance, health policies, and other personal, family, and community services are all factors that contribute to improved health outcomes (Awiti, 2014; Kimani, 2014).

Need factors are based on the idea that in order for people to use health services, there must be a need that is felt by the people themselves (1995). Health care needs can be categorized into perceived needs and evaluated needs (Anderson, 1995). Perceived need is related to how people view their general health. It involves whether or not people believe their health challenges are severe enough to require expert assistance. The term "evaluated need" refers to an expert evaluation and objective appraisal of a patient's health and the extent to which they require medical care (Anderson, 1995; Anderson & Newman, 2005).

The behavioural model provides a theoretical framework to better understand human behaviour and, in particular, how people interact with healthcare systems. The model incorporates concepts and ideas that define

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human behaviour and public health, such as the resources described under enabling factors. Therefore, the model adequately captures the issues of health behaviour and resource availability, making it a solid starting point for a study on socioeconomic inequalities in the use of healthcare (Riegle and Stewart, 2013).

Theory of Human Capital

Since health plays an important role in the economic and development growth of nations, this study draws on the human capital theory, which deals with investing in people to raise their capacity for productivity. Human capital is a country's labor force at its disposal, including its health, education, and skills (Schultz, 2010; Bloom *et al*, 2004). Human capital generally refers to the investment individuals make to increase economic production (Bloom *et al*, 2004; Strauss & Thomas, 1998). According to the human capital idea, investing in health and education can significantly increase a population's ability to produce more goods and services (Suhrcke *et al*, 2005).

Gary Becker proposed his Human Capital Theory in 1964. Knowledge or human capital, according to this idea, grows when an individual's participation in both the market sector (where he earns money) and the non-market (domestic) sector (where he develops objects or products that enter his utility function) increases (Grossman, 1972, 2000). For the first time since Becker, healthcare resources are included in human capital (1964). Grossman (2000) argues that healthy people are more productive in the workplace because they view their health as an advantage. It stands to reason that wages would rise along with health and other forms of human capital. Health care is a decision just like any other investment in human capital (Osoro, 2004).

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The human resources of a country, not its physical capital, financial resources, or material resources, are what determine its economic and social progress, according to the majority of economists (Psacharopoulos &Woodhall, 1997). According to Psacharopoulos and Woodhall (1997), a country's wealth comes from its people. The accumulation of wealth, the exploitation of natural resources, the establishment of social, economic, and political institutions, and the rise of nations are all the result of human agency.

In the industrial process, capital and natural resources play no active roles. The statement implies that no other resources would be useful to humanity without human resources. As a result, the human capital concept provides a strong argument for high levels of public health funding in both developed and developing nations. It also means that governments must implement public policies that need excellent health to raise people's living levels. For instance, governments can advocate for universal free public health insurance to help citizens with the high cost of medical care. This belief must be supported by evidence of a positive financial return on investment in population and individual health.

According to the Human Capital Theory, an increase in income leads to increase in investment in health and this translates into better or good health for the population. When the population becomes healthy, productivity increases thereby resulting in economic growth and development. The segment of the population whose income increases will all things being equal increase their investment in health which implies utilisation of more healthcare services since they can afford compared to those whose income remains the same or reduces leading to disparities in healthcare.

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In brief, proponents of the human capital theory argue that a healthy population is productive and contributes significantly to economic progress. Because of its emphasis on the importance of health for both personal and national economic growth, the human capital theory is central to this investigation. Moreover, this theory supports healthcare systems' efforts to provide fair access to healthcare services to eliminate healthcare utilisation disparities between the wealthy and the less privileged. As a result, the human capital theory has become a useful lens through which to examine healthcare access and utilisation inequalities.

Theory of Social Capital

Researchers in many different subfields of the social sciences have used the concept of "social capital." Bourdieu (1986) defines social capital as "the sum of all the actual or potential resources that can be traced back to the existence of extensive social networks." However, according to Portes (2000), social capital refers to an individual's access to scarce resources through their membership in networks or a wider social structure. As defined by Lin (2008), social capital is a "resource that actors tap into through their social networks to take action." In light of the aforementioned definitions, it is evident that social capital is a resource that may be drawn upon in interpersonal interactions.

Another set of definitions see social capital as forms of social organisation. Social capital, as defined by Coleman (1990) and others, is a social structure that facilitates the attainment of objectives that would be more challenging or costly to attain in the absence of that structure. He argues that trust is necessary for social capital to exist.

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Putnam (1994) argued that trust, norms, and networks are all forms of social capital because they contribute to a society's overall efficiency. Coleman defines social capital as a social organisation that helps people achieve their goals, while Putnam's theory of social capital defines it as trust, norms, and networks within a community. In light of the definitions provided by Putnam and Coleman, we define social capital in this research as forms of social organisation that promote the effective use of available resources. It must noted that these assets could be either physical or intangible.

Social capital has been discovered in a wide variety of forms and dimensions. While some academics adopt a more communal stance, others argue that social capital is mostly a product of individual interactions (Erikson, 2010; Lin, 2008; Van der Gaag & Webber, 2008; Portes, 2000). By highlighting the importance of social networks, social support systems, and access to resources, the network social capital paradigm theoretically supports the concept of social capital at the person level (Van der Gaag & Webber, 2008). In this context, "social capital" refers to the trust, norms, and civic networks that are hallmarks of socially organised communities.

Once again, social capital may be divided into two subsets: structural and cognitive (Islam et al, 2006; Mckenzie, Whitley & Weich, 2002). Externally observable aspects of a social network or membership and engagement are examples of structural social capital (Islam et al., 2006). Conversely, norms, values, views, and perspectives are all examples of the cognitive, social capital that people possess. When compared to structural social capital, which is more focused on what people produce, cognitive social

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capital is more concerned with how people feel about their social interactions and relationships (Harpham, Grant & Thomas, 2002).

The cognitive components of social capital measure attitudes including people's belief that their friends and family have their support, their confidence in their coworkers, and the generosity of their fellow citizens. Cognitive social capital is a measure of how beneficial one's social interactions are. It is comprised mostly of one's perceptions of social support, trust, and reciprocity (Derose & Varda, 2009).

With structural social capital, the underlying structures of social capital examine the extent to which individuals and groups are involved in social and political life. They are sometimes operationalized in terms of social engagement and societal membership (Derose & Varda, 2009). While the feelings and thoughts of others make up cognitive social capital, the acts of others make up structural social capital, which can be observed more easily (Hyyppa, 2010). Cognitive dimensions constitute the qualitative side, whereas structural social capital can be seen as the quantitative side (Hyyppa, 2010).

In addition, horizontal and vertical forms of social capital exist (Islam, 2006). In this context, "horizontal social capital" refers to ties between peers. The term "vertical social capital," also known as "connecting social capital," refers to the ties formed between people despite their socioeconomic and power differences. The most effective application of society's ideas, resources, and knowledge depends on the existence of these connections, which are often represented by ties between communities or community members and representatives of formal institutions like bankers, social workers, and healthcare professionals (Woolcock, 2001).

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Additionally, bridging and bonding social capital make up the horizontal component of social capital. Bonding social capital refers to the strength of relationships within a similar group. Solid relationships within a network that maintain shared identities and provide members with aid and support are examples of this form of social capital. This category includes ties between extended and extended-ish groups of people, such as friends, relatives, and colleagues. All the hallmarks of a truly solid relationship are present here: trust, durability, dependability, and a deep sense of solidarity. Protection from material loss, mental anguish, and physical illness are all provided (Flap, 2004). Friends and family are the primary means through which norms of conduct are communicated to one another (Islam *et al*, 2006). They aid in protecting the most vulnerable members of society, promoting the spread of constructive social norms, and addressing undesirable behaviour (Cullen & Whiteford, 2001).

By contrast, "bridging social capital" refers to the tenuous ties that emerge from casual and formal exchanges between otherwise unconnected people. Weak ties unite people from different networks who then pool their considerable expertise and resources (Putnam, 2000). Generally speaking, people have many different kinds of relationships, but the ones that are weaker, less passionate, less intimate, and have a lower level of reciprocity are among the weakest. Bridging social capital allows individuals from different socioeconomic backgrounds to interact and participate in shared activities.

This thesis employed the structural and cognitive dimensions of social capital to assess or investigate their relative relevance in explaining socioeconomic inequalities in healthcare usage.

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Review of Empirical Literature

This section reviews related studies in connection with socioeconomic inequalities in general healthcare, maternal and child healthcare, and outpatient and inpatient healthcare services.

Empirical Evidence of Socioeconomic Inequalities in Healthcare Service Utilization

Maintaining physical and mental health is crucial. In light of this, both the SDGs and the MDGs have highlighted the importance of ensuring all people have access to healthcare (UHC). With universal health coverage, every person would have access to high-quality primary care, insurance against catastrophic health costs, and low-cost, high-quality preventative medications and immunisations. The primary goal of universal health coverage (UHC) is to ensure that all people, regardless of income, have access to quality medical treatment (World Health Organization 2005, 2010). Thus, many legislators working to reform health systems now aim to ensure that everyone, regardless of their socioeconomic status or cultural background, receives the same high-quality care (Culyer and Wagstaff, 1993; Van Doorslaer *et al*, 2000).

The fact that a well-functioning healthcare system is vital to human survival and can significantly affect the average lifespan provides strong support for this claim. Inequalities in health care persist in both rich and developing countries, despite countries' commitment to the SDGs and achievement of UHC. Therefore, the present thesis aims to examine socioeconomic inequality in healthcare use.

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The nature and magnitude of the gaps in healthcare access and utilisation between socioeconomic groups can be gained by measuring socioeconomic inequalities. In order to implement policies that promote equity and justice in healthcare delivery, it is crucial to identify and clarify the factors that contribute to socioeconomic inequalities in healthcare utilisation. This section presents a literature review on socioeconomic inequalities in access to healthcare, with a particular emphasis on hospitalisation and outpatient treatment options.

Socioeconomic Inequalities in the Use of Healthcare Services – General

Health is essential for individuals to be productive members of society, and it is widely acknowledged that individuals' access to healthcare has a substantial role in influencing population health. Regardless of their socioeconomic status, everyone should have access to quality healthcare that meets their needs (especially in terms of financial level, gender, race, and ethnicity). Providing healthcare to all residents of a country or region is a central goal of health systems worldwide. It is also essential for attaining the 2030 Agenda for Sustainable Development, ratified by all UN members in 2015 and aims to improve people's lives in various ways. (Sustainable Development Goal No. 3.8).

Socioeconomic inequalities in health and healthcare are an increasing concern in both developed and developing countries, and there is a growing corpus of studies examining trends, causes, and contributing factors (Allian, 2008; Deaton, 2013; Godding, 2014; Jamieson et al, 2016; Mackenbach *et al*, 2018; Zhang, 2018; Changjian *et al*, 2019). Findings from this study highlight the significance of social, demographic, racial, cultural, environmental, and

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geographical factors in perpetuating health disparities. When studying horizontal equality "(defined as equal treatment for equal need)" in healthcare utilisation, researchers from 10 European nations and the United States found that those with lower incomes made greater use of the healthcare system. There was little evidence of a major imbalance in healthcare delivery after indirect normalisation for need differences. However, in half of the countries, a large disparity appeared favouring the wealthy in terms of access to doctors (Van Doorslaer *et al*, 2000).

Similarly, Italy's wealthy had preferential healthcare access outside inpatient facilities (Masseria and Giannoni, 2010). Similar research by Mackenbach et al. (2018) found that in European countries, there are and have always been health disparities between socioeconomic categories, with poor health outcomes being more common in those groups with lower socioeconomic status. Contrary to what the author asserts happened in the United States over the same period (a deterioration of health conditions for individuals with low levels of education), they found no worsening of health inequalities despite the 2008 financial crisis in recent years. Flat and Zhang's (2016) findings consistently demonstrated an increase in the amount of pro-rich inequality in healthcare utilisation following China's UHC reforms. They also noted the unfairness of the healthcare system, favouring the wealthy over the poor by sending the former to hospitals while the latter are more likely to visit community health centres.

Cai *et al* (2017) found that while older adults, unhealthy behaviours, and a dysfunctional home environment contributed to greater health disparity, higher income and higher levels of education were the most important factors

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in reducing health disparity. The researchers were particularly interested in the causes behind the healthcare gap between urban and rural Chinese. High-consumption quintiles in eight developing and transitional nations (Burkina Faso, Guatemala, Kazakhstan, Kyrgyzstan, Paraguay, South Africa, Thailand, and Zambia) had greater rates of medical care utilisation and prescription usage compared to low-consumption quintiles (Makinen *et al*, 2000).

Recent studies in urban Nepal revealed that access to healthcare is strongly correlated with socioeconomic class, with the wealthy being more inclined to pay for more specialised, high-priced treatment (Saito *et al*, 2016). Furthermore, according to a number of studies, hospital and general practitioner (GP) services are equitable or pro-poor when healthcare needs are considered; however, specialty treatment tends to favour the wealthy.

According to a study using data from 18 OECD nations in 2000, general practitioner services were utilized by low- and high-income groups in almost equal amounts, but the usage of specialist care was significantly more skewed and dominated by high-income groups in most of these nations (Culyer & Wagstaff, 1993). Similar data were used in a follow-up study by Devaux (2015), which produced essentially the same findings with the inclusion of disparities in the use of preventative care, which likewise favoured the high-income group. Similar trends in inequality have been found in studies from the United Kingdom and high-income Eastern Asian nations like Japan and South Korea, albeit the degree of inequities differs between countries (Hurges, 2007). A 2018 European Union (EU) assessment found that access to and use of healthcare in 28 EU countries continued to favour the high-income group (Baeten *et al*, 2018). This convincing report demonstrates

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that, even in high-income nations where universal health coverage has been attained for decades, disparities in healthcare access remain a serious issue that needs to be addressed.

It is important to remember that healthcare access disparities in LMICs have recently been brought up in public health discussions. One could claim that the level of inequality in low-middle-income countries (LMICs) is higher than in high-income countries and that their citizens struggle to put food on the table. However, results from studies assessing healthcare inequities in LMICs from different regions have varied widely.

Using data from eight low- and middle-income countries (LMICs) in Asia, South America, and Africa, researchers discovered that while there was no uniform pattern of poor-rich differences in healthcare consumption across countries, the wealthy were more likely to seek medical care for illness than the poor (Makinen *et al*, 2000). After ten years of universal health coverage, low-income groups in Thailand have benefited from increased utilisation of basic and secondary care, especially when delivered in public facilities (Somkotra, 2011). Studies conducted in Latin America have yielded contradictory results (Ghosh, 2014).

According to a recent study, inequality in healthcare access between people of different socioeconomic backgrounds has shrunk significantly in Brazil over the past decade, while it has maintained to a much greater extent in Ecuador (Macinko & Lima-Costa, 2012; Lopez-Cevallos & Chi, 2009). According to research by Vasquez *et al* (2013), between 2000 and 2009, the rich-poor gap in access to specialists, primary care physicians, and all doctor visits widened in Chile, whereas the poor-rich gap narrowed. The disparity

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between the richest and poorest Mongolians in terms of healthcare utilisation expanded between 2007-2008 and 2012, according to a research on the dynamics of income inequality among people aged 18 and above in the country. Overall, the wealthy benefited from inpatient treatment, tertiary care, and private hospital outpatient visits (Dorjdagv *et al*, 2015).

According to empirical research, attempts to analyse healthcare inequality without considering the distinctions between public and private healthcare are likely flawed. Example: Regidor et al. (2008) observed that low-income Spaniards were significantly more likely to use public hospitals (39-57%) and general practitioners (61-88%). Private hospitals were more advantageous for the well-off than public general practitioners and specialists because of the high costs associated with the former. Using data from the 2010 "Zambian Living Conditions Monitoring Survey", researchers found that the distribution of high-end services like public hospitals favoured the affluent, while great horizontal equity in access to low-end services benefited the vulnerable and the poor (Phiri and Ataguba, 2014).

As shown by Vikum et al. (2012), after adjusting for the necessity of healthcare, a socioeconomic gradient favouring the rich or the educated emerges in the use of private medical experts and hospital outpatient therapy. Prinja *et al* (2013) found that the rich in India frequently use hospital services, based on data from a nationwide sample survey on healthcare use done in 2004. The wealthy used the private sector more than the general population, but everyone profited equally from governmental services (and more frequently utilised by the poor). Linca *et al* (2020) study indicated that privately owned and operated facilities disproportionately serve the rich,

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whereas public providers disproportionately serve those from lower socioeconomic backgrounds.

Socioeconomic Inequalities in the Utilisation of Child Health Care

A crucial component of human capital is child health. This is due to the fact that good child health increases workers' productivity by enhancing their physical and mental capabilities, including strength, endurance, and cognitive and reasoning abilities. The rate of economic growth and development is affected by health enhancements through several channels. For instance, better health immediately enhances longevity, workplace productivity, and job market participation (Bloom & Canning, 2000; Strauss &Thomas, 1998).

The health of a nation's children is a major factor in determining the country's future human capital (World Bank, 2006). The economic benefits of human capital and increased productivity can be realised only if children can reach their full potential in terms of health and well-being. The global maternal and infant mortality rate is still unacceptably high, despite the many healthcare interventions and programmes introduced to promote safe motherhood worldwide.

In 2017, 6.3 million children and young adults died, according to the United Nations Inter-agency for Mortality Estimation (UN-IGME) (UN-IGME, 2018). 5.4% of all deaths were among those younger than 15; 2.5% occurred in the first month of life, 1.6% between months 1 and 11, and 1.3% between ages 1 and 4. (UN-IGME, 2018). Sub-Saharan Africa and South Asia, in particular, account for 90% of these deaths in Africa and Asia (WHO, 2015). The world's highest infant mortality rate, 74.0 per 100,000 live births, is in Africa (UNICEF, WHO & World Bank, 2018). The Sustainable

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Development Goals (SDGs) of the United Nations (UN) focus on governments' efforts to reduce child mortality and illness.

Most people agree that children are essential to Ghana's prosperity and that its development goal cannot be separated from the well-being and health of children. This is in accordance with Article 28 of the Fourth Republic of Ghana's 1992 Constitution, the Children's Act of 1998 (Act 560) (section 1), and the "UN Convention on the Rights of the Child." However, the country's child mortality ratio was 52 per 100,000 live births in 2017 (GSS, 2017). SDG-3 calls for a worldwide child mortality ratio of less than 25 per 100,000 live births by 2030, and while this looks to be lower than forecasts from many other African states, it is still rather high and has to be decreased. But in many third-world countries, people still have trouble getting the healthcare they need.

While good health care offers protection from child ill health, socioeconomic inequalities in child health care still prevail, as the evidence reviewed shows that this is also strongly associated with poor child health and well-being (O'Neill & Lowry, 2014). Social and public health policy continues to concentrate on measures to alleviate the consequences rather than addressing the root causes, including inequalities in health care services (Cabieses, Pickett & Wilkinson, 2016). From birth on, children from lower socioeconomic statuses have poorer health than their more affluent peers in virtually every metric of physical and mental well-being (Law, Parkin, & Lewis, 2012; Rougeaux et al., 2017; Viner, Arkell, Ashe & Simpson, 2017; Pearce et al, 2019).

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The economic, material, and emotional circumstances in which children grow up are shaped by disparities in the allocation of power and resources, which in turn impact the mechanisms by which socioeconomic variables affect children's health (Pearce et al., 2019). Concern about the effects of economic disparity on people's health, particularly their children's health, is gaining attention (Acheson, 2001; Graham, 2004). Children under the age of five, who have little say over their health, are disproportionately affected by socioeconomic health disparities. This is due to the fact that kids under the age of five have no concept of abstract concepts like birth weight, smoking in the home, or helping their family break out of poverty.

A number of socioeconomic and demographic factors such as household income, residency in urban or rural locations, parent's educational attainment and occupation have been linked with child health inequalities (Thang and Popkin, 2003; Hong, 2007; Van de Poel *et al*, 2008; Kien *et al*, 2016; Egondi *et al.*, 2015).

Recently, Novignon *et al* (2019) have found that socioeconomic status is the predisposing factor influencing child healthcare inequality in Ghana. On the other hand, Srinivasan et al (2013) found parental schooling and household wealth index to play a significant role in the rural-urban inequalities in child nutrition outcomes in the lowest quantiles. Hong (2007) found a significant correlation between poor socioeconomic position and a high likelihood of stunting in Ghana. Van de Poel et al (2008) also documented the socioeconomic disparity in child malnutrition and constructed a concentration index (CI) from data from 47 developing countries. The authors claim that

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child malnutrition correlates with socioeconomic status in these developing countries.

Relatedly, Akombi et al (2019) observed that Nigeria's concentration index showed an increase in childhood underweight and inactivity. Child undernourishment increased with age, lack of mother education, low family wealth index, living in rural areas, and located in the North East and North West of the country, among other socioeconomic factors.

Egondi et al (2015) analysed the factors that influence immunisation inequality among poor urban children in Nairobi's informal settlements and found that most of those affected by immunisation inequality are children from low-income families, while rates of child malnutrition in Vietnam reduced between 2000 and 2011, Kien et al. (2016) observed significant disparities rose. Age and socioeconomic level were the most important predictors of the change in underweight inequality, as determined by the entire differential decomposition.

Socioeconomic Inequalities in the Use of Outpatient, Inpatient/Hospitalized Healthcare Services

A key component of universal health coverage and a source of concern for policymakers is the equitable use of healthcare. This explains why one of the key policy priorities of most countries' healthcare systems is to ensure equity in health and healthcare (MoH, 2015; Viacava, Porto, Carvalho & Bellido, 2019). This is because all countries aiming for universal health coverage share the same goal—the equitable allocation of healthcare services (Dorjdagva, Batbaatar, Dorjsuren & Kauhanen, 2015). As a result, to improve

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the health of the population as a whole, most healthcare systems work to ensure that everyone who needs it can get it.

Global health has several obstacles, but one of the most pressing is improving health system fairness (Kim, Saeed, Salehi & Zeng, 2016). Western and Eastern Europe, for instance, employ different types of healthcare at wildly different rates. After communism collapsed in Eastern Europe in the late 1990s, the region's healthcare system underwent a period of rapid upheaval that may have contributed to the region's glaring health disparities (Balabanova, McKee, Pomerleau, Rose & Haerpfer, 2004; Walters & Suhrcke, 2005).

Disparities in healthcare services, especially in secondary care, were also discovered in a global comparison of Asia, Africa, and Latin America (Mulyanto, Kringos, & Kunst, 2019). Due to the lack of universal health insurance, issues with access to care are more prevalent in low- and middle-income countries. Although some progress has been made, many LMICs still lack the resources to eliminate all treatment barriers.

Despite a population's needs being equalised, if there are still gaps in healthcare utilisation, then there is healthcare inequality. Health inequalities refer to gaps between different socioeconomic groups in terms of access to and utilisation of health care services. Inadequate supply and uneven geographical distribution of these services also create additional obstacles for those living in rural areas to access healthcare. If underprivileged groups are not afforded the same opportunities to receive preventative care, it could lead to health disparities in terms of mortality and morbidity.

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The patterns and factors that cause socioeconomic differences in the utilisation of outpatient and inpatient healthcare services in both developed and developing countries have been the subject of an increasing number of empirical studies (Blackwell et al, 2009; Vikum et al, 2013; Nishino et al, 2015; Sortoso et al, 2017; Mosquera et al, 2017; Fu et al, 2018; linca et al, 2019; Pulok et al, 2020; Petrelli et al, 2020). That is important because eliminating health inequalities based on one's socioeconomic level requires understanding the factors that contribute to such inequalities. Despite Australia's national health insurance system, Pulok et al (2020) point to a small but pro-rich disparity in the likelihood of visits to general practitioners as evidence of unequal access to these critically important services. Male outpatient visits in Norway are constantly more unequal between the affluent and the poor (Vikum et al, 2013).

Sortoso et al (2017) conducted a similar study in Denmark and found that patients of different socioeconomic backgrounds used health care differently, notably for outpatient treatments for diabetes. Using a cross-sectional design, Nishino et al (2015) analysed the racial and socioeconomic disparities in hospitalisations for diabetes in England. They found that the most impoverished income quintile had a relative risk of inpatient admission that was 2.08 times greater than the least impoverished. This effect of deprivation varied across ethnic groups.

In Northern Sweden, Mosquera et al. (2017) dissected healthcare access disparities among young individuals by income. They found a sizable inverse income disparity in clinic visits among young people. General

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practitioner appointments, however, showed inequality, with lower-income people using them more frequently.

Especially troublesome in a developing country is the fact that evidence from China published by Fu et al (2018) on the factors affecting inequality in the use of health services among the elderly shows a bias toward the rich in the utilisation of both outpatient and inpatient treatment. The study concluded that differences in household consumption expenditures were the single most important contributor to economic inequality. However, recent research by Petrelli et al. (2020) indicated that characteristics like low educational attainment, unemployment, and a negative self-perceived economic condition were strongly connected to a higher risk of hospitalisation.

Similarly, Mahapatro's (2020) research on healthcare access and utilisation disparities in India hints that the wealthy are more likely to use hospitalisation because of cost. The study also found that while health insurance's impact on healthcare utilisation may sound helpful in theory, it does little to alleviate economic inequality in practice. With the help of the fourth Kenya household health spending and utilisation survey, Linca et al. (2019) investigated inequities in access to and use of healthcare services by people of different socioeconomic backgrounds in Kenya. A large disparity was discovered in those who use hospitals' inpatient care facilities, with the wealthy disproportionately represented. However, decomposition analysis revealed that socioeconomic status and educational differences were major contributors to inpatient care access discrepancies.

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Vahedi et al. (2020) conducted a study between 2008 and 2016 in Iran to track changes in healthcare access and utilisation by socioeconomic status. Both outpatient and inpatient treatment were found to have pro-rich inequalities, with the outpatient inequality growing from 0.105 to 0.133 and the inpatient inequality decreasing from 0.0558 to 0.006. Again, a decomposition analysis showed that socioeconomic level was the primary driver of differences in the utilisation of outpatient and inpatient healthcare settings. However, Zakeri *et al* (2020) observed a pro-poor pattern in public and private outpatient settings and inpatient admission in Iran's mixed public-private healthcare system.123 Dorjdagva *et al* (2015) analyzed income-related inequalities in healthcare utilisation and trends in Mongolia between 2007/2008 and 2012. Private outpatient and inpatient services showed considerably positive concentration indices in both years, indicating pro-rich inequality.

Mulyanto *et al* (2019) examined the changes in income-related disparities in Indonesia's healthcare system from 1993 to 2014. The study's results showed that in 1993, there were substantial income-related differences between the rates at which people used private inpatient and outpatient care vs public outpatient care. In addition, the income gap between those who utilise public and private outpatient services shrank from 1993 to 2007 but widened again in 2014. However, between 1993 and 2014, there was a narrowing of the gap between public and private inpatient hospital treatment utilisation based on patients' household incomes. Laksono et al (2019) looked at the gap in healthcare access between rural and urban areas and found that those who lived in urban areas were 1.246% more likely to use hospital outpatient

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services than people who resided in rural areas. Once more, persons who live in metropolitan areas are 1.134 times more likely to use both inpatient and outpatient facilities at the same time than those in the rural area

Chapter Summary and Gaps in the Literature

In this thesis section, I aimed to summarise the existing theoretical and empirical research on healthcare utilisation gaps among people of different socioeconomic backgrounds. Some of the theories underlying health inequalities include the artefact theory, which contests the existence of health inequalities but contends that they result from errors in collecting social class data and how health inequality measurements (or definitions) have evolved.

On the other hand, the social selection theory emphasizes that healthier people, relative to less healthy people, will tend to move towards better socioeconomic positions, resulting in health disparities. However, the premise of the cultural-behavioural hypothesis is that people from different socioeconomic backgrounds engage in different health-related activities, and as a result, negative behaviours are typically associated with those from lower socioeconomic backgrounds.

The primary premise of the structural theory is that people in different socioeconomic strata are subjected to varied material environments that might have positive or negative effects on their health. In structural theory, discrepancies in health are attributed to differences in people's socioeconomic status or material circumstances (e.g., noise, pollution, material working conditions). Because of this, there are clear and direct implications for individual differences in health outcomes.

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The healthcare behavioural model provides a conceptual framework for comprehending how people behave when using the healthcare services explained under the predisposing, enabling, and need components. A healthy population is economically productive; hence the human capital theory holds that population health is directly related to economic growth. Whether monetary or intangible, social capital can be viewed as various forms of social organisation or structure that facilitate the effective use of such resources. Different types of social capital include bonding, bridging, and linking, as well as structural and cognitive social capital.

Socioeconomic disparities in maternity care, paediatric care, outpatient, and hospital care were all taken into account by the available empirical literature. Inequalities in access to health care for mothers and children across socioeconomic groups were the subject of the reviewed empirical studies. These studies generally show large disparities in access to prenatal care, favouring the wealthy. The review also uncovered some empirical evidence of socioeconomic differences in the utilisation of both outpatient and inpatient healthcare services in both developed and developing countries. These data show that the rich are given preferential treatment in these medical facilities.

Interestingly, research into socioeconomic inequalities outpatient and inpatient healthcare utilisation in Ghana has not yet been explored. As a result, this thesis aims to fill this empirical void by investigating socioeconomic inequalities in the utilisation of inpatient and outpatient healthcare services and the factors that contribute to these inequalities.

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Furthermore, there is a dearth of study that examined the effect of physical capital (health facilities), human capital (health staff), and social capital on socioeconomic disparities in the use of either outpatient or inpatient healthcare services, according to the reviewed empirical evidence. The current thesis is groundbreaking since it examines how different types of capital contribute to socioeconomic disparities in healthcare access. The extent to which these forms of capital contribute to socioeconomic inequalities in the utilisation of healthcare services is relevant because it may be crucial not only to improve the efficiency of the healthcare system but also to facilitate the development of policy strategies needed to address these healthcare inequalities.

Finally, from the empirical evidence reviewed, no study has looked at how mobile phone technology explains gender and locational differences in the utilization of healthcare services. This thesis seeks to examine the extent to which mobile phone usage accounts for gender and locational disparities in the utilisation of healthcare services.

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CHAPTER FOUR

RESEARCH METHODOLOGY

Introduction

An explanation of the procedures, methods and techniques used to carry out the study is provided in this chapter. The chapter begins with a discussion of the research philosophy and research design used in the study. This is followed by the analytical frameworks used for the various empirical chapters outlined in the thesis and the estimation techniques. A description of the data sources used is provided in the next section. The final section of this chapter briefly describes the variables used in the study and how they were measured.

Research Philosophy

The current study adopted the positivist philosophy to guide the exploration of socioeconomic inequalities in health services use in Ghana. As an ontologically grounded scientific stance, positivism rests on the belief that reality does not change over time and can, therefore, be examined and described dispassionately and accurately without the influence of subjective human biases (Aliyu et al., 2014).

Positivists view the external world as ordered and regular, an objective reality with distinct patterns, and these patterns can be explained and predicted using theories and laws (Howell, 2015). Since external, objective and independent social actors estimations of healthcare utilisation and inequality in healthcare utilisation are crucial to the success of this study, positivism was selected as the underlying research philosophy. That is why it is important to have unbiased, value-neutral criteria for measuring relevant variables.

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Therefore, it is to guarantee objectivity and value-free judgment in the measurement of key variables.

More so, considering the subject matter of the present thesis, the researcher seeks to follow the thoughts of Neoclassical economics. The Neoclassical economic school of thinking linked market forces like supply and demand to the rationality of consumers and their propensity to maximise utility or profit. Importantly, Neoclassical economic philosophy focuses on how the perceived utility of products and services affects supply and demand. Mathematical equations are also used in neoclassical economics to evaluate market forces and other aspects of the economy. Economists frequently resort to neoclassical economic theory in defence of public and private health sector involvement (Preker & Harding, 2000).

The externalities and unpredictability of healthcare as a commodity may be to blame for these market failures. The thesis seeks to explore socioeconomic inequalities in the use of health care, where the individual is a consumer of healthcare services. With this in mind, the individual makes an informed choice about which health service to use. In addition, the individual has access to other healthcare options from which to choose depending on his or her evaluations of the relative benefits of these options.

Research Design

Considering the objectives to be achieved in this thesis, the cross-sectional descriptive research design under the quantitative approach is employed. Cross-sectional descriptive design involves using existing facts or information, analyzing these facts and information to describe the phenomenon under consideration and evaluating the results obtained (Kothari,

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2004). This research design has the advantage of avoiding complications arising when using data collected at different times.

In addition, unlike time series and panel data analysis, data analysis itself does not need the presumption that the nature of the relationships between variables is constant across time. Relationships between quantitatively assessed variables or parameters were tested and verified with the help of analytical tools in this study, which followed a quantitative research strategy. Also, it provides a method for identifying and controlling for the myriad factors that can skew the findings of qualitative research (Uxmatters, 2012).

Data Sources

The sixth and seventh rounds of the data sets from the Ghana Living Standards Survey were used for the analysis in the current thesis. These data sets were collected using the multi-stage sampling method over 12-month periods in 2012/2013 and 2016/2017, respectively. As part of the sixth round of the Ghana Living Standards Survey (GLSS 6), a nationally representative sample of 18,000 households across 1,200 enumeration districts participated in the survey. With the count of 16,772 out of 18,000 households completed, a response rate of 93.2 percent was attained. A nationally representative sample of 15,000 households throughout the 10 administrative regions of Ghana was selected for the Ghana Living Standards Survey Round 7 (GLSS 7) data collection, although the actual sample size was 14,009 households, with a response rate of 94.4%.

For each survey, in-depth data were gathered on household demographics, employment, migration, tourism, housing conditions,

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agriculture, governance, health, education and access to financial services, credit and assets. Information from different sections containing variables of interest was merged for analyses. Additionally, district-level data on health resources from the Ministry of Health, including the number of healthcare facilities and health professionals were used to help achieve the study objectives.

Analytical Framework of Socioeconomic Inequalities in Utilization of Healthcare Services

The current thesis used the Concentration Curve (CC), Concentration Index (CI) and decomposition of the Concentration Index to analyse socioeconomic inequality in healthcare utilisation. The Concentration Curve plots the cumulative percentage of a health variable (y-axis) against the cumulative percentage of the population ranked by living standards or socioeconomic status, beginning with the poorest and ending with the richest (x-axis). In this study, the health variables are outpatient and inpatient visits and the living srandards or socioeconomic status variables are wealth quintile, education and consumption expenditure.

The Concentration Index is defined as twice the area between the concentration curve and the line of equality. A negative value indicates a pro-poor inequality implying disproportionate concentration of the health variable among the poor. On the other hand, a positive value indicates a pro-rich inequality signifying disproportionate centration of the health variable among the rich in society. The Concentration Index has been widely used by health economists and epidemiologists to analyse socioeconomic inequalities in health. The CI is derived from the Concentration Curve. The index is similar

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to the Gini index which is widely applied in the measurement of income inequality. Unlike the Gini index, however, the CI is a bivariate rank index and it summarizes the relationship between the cumulative health against the socioeconomic rank of an individual. The CI is obtained as

$$C = \frac{2}{\mu_H} cov(H_i, Y_i) \quad (1)$$

where Y_i represents the socioeconomic rank of an individual, H_i is the health status and μ_H is the mean of population health. The CI ranges from -1 to +1, with zero denoting the absence of inequalities. Inequalities in health care that favour the wealthy (or the poor) are shown by a positive index value (negative). Health outcomes are more likely to be used or more common among people of higher (lower) socioeconomic position, respectively, indicating a pro-rich (pro-poor) inequality. Inequalities in health are measured using the CI because the index is unaffected by proportional changes in health outcomes.

When the health outcome is binary, there is a lot of debate over whether or not the Concentration Index should be used to evaluate socioeconomic health disparities (Wagstaff, 2005, 2009, 2011a,b; Erreygers, 2009a,b). Wagstaff (2005) shows that the concentration index for a binary indicator can be constrained within certain ranges based on the prevalence of the health outcome.

As such, the index lies between $\mu_H - 1$ and $1 - \mu_H$. The bounds are wider for populations with low prevalence than for populations with high prevalence. The index's value is contingent on which health outcome is selected for analysis. The index is different depending on whether health outcome is being evaluated for improvement or worsening. For a binary indicator, Wagstaff

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(2005) advises normalising the concentration index by weighting it by its feasible maximum bound $(1-\mu_H)$. So, we can calculate the Wagstaff normalisation index by

$$W = \frac{1}{1-\mu_H} 2cov(H_i, Y_i) \quad (2)$$

Erreygers (2009) states that bivariate rank indices must meet four desirable criteria to assess or quantify disparities of a binary health outcome. These are the transfer, mirror, level dependence and cardinal invariance. Three of these properties are met by the normalisation strategy proposed by Wagstaff (2005), but the level independence property, which mandates that an index be invariant to equal increments in health for all individuals, is not met. According to Erreygers and Van Ourti (2011), the Wagstaff normalization index exhibits counterintuitive behaviour and assesses neither relative nor absolute inequality.

Erreygers (2009) proposes an alternative normalising procedure that utilises absolute inequality assessments while still upholding the level independent property. Here is how the Erreygers Index (EI) is written out:

$$EI = \frac{4}{b_H - a_H} 2cov(H_i, Y_i) \quad (3)$$

where a_H and b_H are the lower and upper bounds of the health indicator, respectively.

In this analysis, we use the Erreygers normalisation of the concentration index to quantify socioeconomic disparities in the use of outpatient and hospitalisation care. Using the Erreygers normalisation index, Erreygers and Van Ourti (2011) state it is possible to compare health outcomes with different prevalences through time and between populations. The use of the Erreygers normalisation index thus enables comparison in the degree of disparities as the

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prevalence of access to the chosen healthcare services changes over time. Therefore, applying this index becomes more appropriate as this study explores socioeconomic inequalities over time.

Decomposition of the Causes of Socioeconomic Inequalities

Estimating the degree of inequality over time gives us a crucial overview of how the socioeconomic gradient in healthcare services has changed. A socioeconomic gradient describes the relationship between a social outcome and socioeconomic status for individuals in a community. The social outcome can be health, behaviour, social skills, etc. Willms (2003). In addition, while formulating policies and directing interventions, it is critical to assess the impact and role of sociodemographic factors on the magnitude of health inequities that stem from socioeconomic status. Wagstaff et al (2003) suggest utilising a decomposition technique to determine the underlying causes of socioeconomic health inequalities. This approach is based on a linear health regression expressed as a function of covariates (X_K) and error term (e) of the form

$$h = \alpha + \beta_K X_K + e \qquad (4)$$

h denotes the health outcome of interest.

Wagstaff et al (2003) propose two factors as explanations for the existence of health disparities between different socioeconomic groups. The first source of inequality is the effect that each covariate has on the inequality index, and the second is health disparities that cannot be explained by any other factor. The approach has been criticised for failing to decompose bivariate changes in socioeconomic rank and health (Kessels and Erreygers,

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2016). Heckley et al (2016), however, argue that the Wagstaff et al (2003) decomposition method results in unclear parameter interpretation.

So, Heckley et al (2016) offered a different method of decomposing the causes of socioeconomic inequalities in health for the whole category of bivariate rank indices. The method proposed by Heckley et al (2016) extends the recentered influenced functions introduced by Firpo et al (2009) to bivariate rank indices. The bivariate rank index is expressed in a general manner by Heckley et al (2016) as

"$I = v^I\left(F_{H,F_Y}\right) = v^{\omega_I}(F_H)v^{GC}\left(F_{H,F_Y}\right)$ (5)

where F_H denotes the probability of the health indicator, (H). $v^{\omega_I}(F_H)$ is a weighting function for a specific form of inequality index – in this case the Erreygers Index. The socioeconomic status of the individual is represented as Y and F_Y is the cumulative density function of Y and indicates the socioeconomic rank of the individual. F_{H,F_Y}denotes the joint distribution of H and F_Y. $v^{GC}\left(F_{H,F_Y}\right)$ is the generalised concentration index given by twice the covariance between health and socioeconomic rank. The weighting function of the Erreygers index, $v^{\omega_{EI}}(F_H)$, is expressed as

$$v^{\omega_{EI}}(F_H) = \frac{4}{b_H - a_H} \quad (6)$$

The decomposition is attained by modifying the linear health regression to include the generalised version of the bivariate rank index, as

$$I = v^I\left(F_{H,F_Y}\right) = v^{\omega_{EI}}(F_H)\sum_{k=1}^{K}\beta_k 2cov(X_K, F_Y) + v^{\omega_I}(F_H)2cov(e, F_Y) \quad (7)$$

$2cov(X_K, F_Y)$ and $2cov(e, F_Y)$ are the generalised concentration indices of each covariate and the error term, *e*, respectively.

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The RIF is derived from the influence function (IF) that measures the influence of an observation on the distributional statistics. Heckley *et al* (2016) obtains the IF for a bivariate rank index as

$$IF(h, F_Y(y); v^I) = \lim_{\varepsilon \to 0} \frac{v^I\left[(1-\varepsilon)F_{H,F_Y} + \varepsilon\delta_{H,F_{Y(Y)}}\right] - v^I(F_{H,F_Y})}{\varepsilon} \quad 0 \leq \varepsilon \leq 1 \qquad (8)$$

$\varepsilon\delta_{H,F_{Y(Y)}}$ denotes the joint cumulative distribution of the joint probability measure that puts a mass at the joint values of H and $F_{Y(Y)}$.

The RIF of the Erreygers Index is the sum of the statistic $v^I(F_{H,F_Y})$ and its IF and expressed as

$$RIF(h, F_Y(y); v^{EI}) = v^{EI}(F_{H,F_Y}) + \frac{4}{b_H - a_H} IF(h, F_Y(y); v^{GC}) \qquad (9)$$

The RIF expresses the value statistic $v^{EI}(F_{H,F_Y})$ as the expected value of the RIF

$$v^{EI}(F_{H,F_Y}) = E[RIF(H, F_Y; v^{EI})] \qquad (10)$$

By estimating the conditional expectation of the RIF using ordinary least squares regressions (OLS), Heckley et al. (2016) to decompose the causes of socioeconomic health disparities. Thus, the RIF-EI-OLS equation is as follows:

$$E[RIF(H, F_Y; v^{EI})|\, X] = X'\varphi + \epsilon \qquad (11)$$

Where X is a vector of personal and household characteristics that affect access and utilization of healthcare services and an error term, ϵ. φ is the marginal effect of a covariate and unconditional bivariate rank index partial effects.

Estimation Technique

In order to estimate equation (11), which decomposes the causes of socioeconomic inequalities in healthcare use, we resort to the Recentered

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Influence Function of the Erreygers Index using Ordinary Least Squares regression (RIF-EI-OLS). Conditions of additive linearity and zero conditional means are used in this evaluation. Parameters in the RIF-EI-OLS decomposition have the same interpretations as those of OLS regression coefficients. Using bootstrapping with 1000 replicates, we can obtain reliable standard errors.

Justification of Variables in the Causes of Socioeconomic Inequalities Models

Socioeconomic disparities in the utilisation of healthcare services in Ghana were analysed using decomposition models with the following variables. These variables were chosen based on literature and intuition.

Age

It has been established that the age of the head of household is a significant factor in healthcare decisions (Adamu, 2011), as older people are more likely to have a higher level of experience and knowledge, both of which translate into a greater likelihood of using healthcare services. Often it is expected that the need for healthcare services grows with age. However, this is mostly not the case, as some studies have found that older people proportionally represent non-attendees and infrequent use of healthcare resources (Philip, 1990). Age is, therefore, relevant in studies of inequalities in healthcare utilization.

Sex

It has been observed that men and women use the healthcare system differently (Schofield *et al.*, 2000). However, these differences may depend on different social responsibilities, expectations and experiences (Bird & Rieker,

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1999). A study found gender to contribute positive values to the concentration index and drive pro-rich inequality in healthcare services Ilinca *et al.* (2019).

Health Insurance

Most of the population in low- and middle-income nations can receive financial risk protection through health insurance, which has been referred to as the most sustainable healthcare finance mechanism (Normand et al. 2009). Health insurance has been identified as an important variable influencing healthcare service utilization. Dalinjong *et al.* (2017) found insured household members to have increased odds of utilizing outpatient and inpatient healthcare services. Another study by Flato & Zhang (2016) found health insurance to be the main driver of pro-rich inequity in healthcare utilization after reforms.

Employment

Employed household heads who make financial contributions to the family are anticipated to exert more influence in household and individual decisions, including healthcare decisions. The household's economic position, which indicates the ability to pay for healthcare costs, may also influence healthcare usage. Normally, families from higher socioeconomic classes are better aware of and have greater access to healthcare resources (Feldman, 1983).

Thus, the employment status of the household head is important in analyzing socioeconomic inequalities in healthcare utilisation. Therefore, the employment position of the household head is crucial for examining socioeconomic disparities in the use of healthcare.

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Household Size

Household size has been linked to the overall welfare and household income. It has been demonstrated that big households are more likely to have inadequate financial resources (IFC Macro, 2009), which may prevent sick members from obtaining medical attention. Household size is therefore relevant in studies of inequalities in healthcare utilization.

Mobile Phone

In this study, mobile phone ownership was used as a measure of technology diffusion. Mobile phone access has developed into a crucial instrument for accessing health information, facilitating patient-provider communication, and enhancing healthcare services' use, scope, and quality. Healthcare use and mobile phone ownership have been found to be positively correlated (Greenleaf, 2019).

Religion

Religion has a significant impact in shaping the values, attitudes, and conventions that people bring to their use of healthcare services, making it an important factor in the field of healthcare use research (Adamu, 2011). For instance, spirituality and faith-based activities have been found to be important for coping with the emotional problems of illness and for undertaking behaviours that promote health (Hussen et al., 2014). Therefore, religious factors may contribute to differences in healthcare service utilization within or between communities.

Education

Increases in educational attainment have been shown to have a considerable impact Education may enhance decision-making skills, resulting

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in better health decisions and more effective use of healthcare resources. Liu *et al* (2021) found education to significantly contribute to the inequalities favouring the rich in the disparities in healthcare services. In a related study, Ilinca et al (2019) discovered that the educational attainment of patients and the head of the household had a notably significant impact on the distribution of preventive health service usage while having a relatively less impact on inpatient and outpatient treatment

Wealth

The level of wealth possessed is often indicative of a person's or a group's social standing. According to a number of research, increased healthcare consumption has been linked to higher levels of wealth. Makennin et al. (2000) discovered that individuals in wealthier quintiles were more likely to obtain medical attention and medications than individuals in poorer quintiles in a study of eight developing nations.

Region

Some evidence suggests that access to medical treatment varies by region. Spatial inequalities are not equally obvious and important for all care categories, as the region of residency is found to account for a large amount of the overall disparity in the consumption of preventive care but only for modest shares of the utilisation of inpatient and outpatient treatment (Ilinca et al., 2019).

Area of Residence

The location of the household head's residence has been recognized as important in health care utilization. It is easier to understand why certain people utilise healthcare services more than others when we know where they

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live and how much money they have compared to others. Those living in rural areas often have further to travel to get healthcare facilities, with limited transportation options and high transportation expenditures (Buor, 2003). In addition, those living in rural areas face additional barriers to accessing healthcare due to the inadequate supply and uneven geographical distribution of these services. Inequalities in health outcomes, including mortality and morbidity, may develop if disadvantaged populations are denied equal access to basic medical treatment.

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Table 1: Descrption of Variables in the Socioeconomic Inequalities in Utilisation of Healtcare Services Models

Variable	Definition and Measurement	Expected sign
Age	Age of the household head measured in years	+
Sex	Sex of the household head=1 if household is headed by a male and 0 otherwise.	+/-
Household Size	Number of people in the household	-
Employment	Employment status of household head=1 if a household head is employed and 0 otherwise	+
Education	Educational attainment of the household head=0 if the head has no schooling record; 1 if head's highest educational attainment is basic education; 2 if head's highest educational attainment is secondary education; and 3 if head's highest educational attainment is tertiary	+
Health Insurance	Health insurance status of the household head =1 if household head is covered under national health insurance scheme and 0 otherwise.	-
Religion	Religious affiliation =1 if household head has religious affiliation and 0 otherwise.	-
Wealth Quintile	Household wealth quintile=1 if household belong to the first wealth quintile; 2 if household belong to the second wealth quintile; 3 if household belong to the third wealth quintile; 4 if household belong to the fourth wealth quintile and 5 if household belong to the fifth wealth quintile.	+

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Table 1: Contued

Residence	Place of residence of the household =1 if the household is located in an urban area and 0 otherwise	+/-
Region	Region where household is located=1 if household is located in Western region; 2 if household is located in Central region; 3 if household is located in Greater Accra region; 4 if household is located in Volta region; 5 if household is located in Eastern region; 6 if household is located in Ashanti region; 7 if household is located in Brong Ahafo region; 8 if household is located in Northern region; 9 if household is located in Upper East region and 10 if household is located in Upper West region.	+/-

Source: Author's construct

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Analytical Framework of the Relative Importance of Physical, Human and Social Capital in Explaining Socioeconomic Inequalities in the Use of Health care

Using the concentration index, we analysed the roles of physical, human, and social capital in explaining socioeconomic differences in health care utilisation. The concentration index is defined as twice the area between the concentration curve and the line of equality. The CI is calculated as follows:

$$C = \frac{2}{\mu}\text{cov}\left(y_i r_i\right) \tag{12}$$

Where y is a set of health utilization variables, r_i is fractional rank of the individual in the wealth score distribution, cov is covariance and μ represents the mean of the healthcare variable. T he CI may be either positive or negative. The sign of the CI sheds light on how the healthcare variable relates to where one falls in the wealth score distribution. The concentration index can take on values between minus one and plus one, with equality represented by a value of zero. When the concentration index takes a positive value, it shows that the health variable is concentrated among more economically secure households, and when it takes a negative value, it suggests the opposite.

Due to the study's use of binary outcome variables, the concentration index may be beyond -1 to +1. Hence, as Wagstaff (2011) demonstrated, we normalised the concentration index by dividing it by $\frac{1}{1-\mu}$, where μ is the mean of the outcome variable.

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Decomposition of socioeconomic inequality in healthcare utilisation

The major causes of the observed socioeconomic inequality in healthcare utilization can be determined by decomposing the concentration index. If there is a regression model that connects utilisation of healthcare services, y, to a set of explanatory variables x_k expressed as:

$$y = \alpha + \sum_k \beta_k x_k + \varepsilon \quad (13)$$

Following Bhatti (2007), the concentration index for utilization of healthcare use, y, can be decomposed using the equation below:

$$C = \sum_k \left(\frac{\beta_k \bar{x}}{\mu} \right) C_k + \frac{GC_\varepsilon}{\mu} \quad (14)$$

Where $\bar{x}_k$ is the mean of determinants x_k, C_k is the concentration indices for the explanatory variables x_k, $\left(\frac{\beta_k \bar{x}_k}{\mu} \right) C_k$ is the elasticity of use of healthcare with respect to the explanatory variables x_k. Importantly, elasticity is the responsiveness of the dependent variable to a unit change in an explanatory or independent variable while holding all other factors constant.

If an explanatory variable in the study has a positive elasticity, an increase in the explanatory variable increases the likelihood of using the health system. The term $\sum_k \left(\frac{\beta_k \bar{x}_k}{\mu} \right) C_k$ presents the contribution of explanatory factor x_k, to the overall concentration index for utilization index. The last term, $\frac{GC_\varepsilon}{\mu}$ is the residual component and shows the portion of the concentration index which cannot be explained by the variables included in the model. The

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normalized concentration index for utilization of healthcare, C_n can be decomposed as:

$$C_n = \frac{C}{1-\mu} = \frac{\sum_k \left(\frac{\beta_k \bar{x}}{\mu} \right) C_k}{1-\mu} + \frac{GC_\varepsilon}{1-\mu} \quad (15)$$

Based on equation (14), the absolute contribution for an explanatory factor was calculated by multiplying the elasticity of healthcare utilization with respect to the explanatory variable by the concentration for the explanatory factor and dividing it by $1-\mu$."

The absolute concentration reveals how much of the relationship between wealth status and healthcare use is accounted for by differences in a particular explanatory factor between socioeconomic groups. An absolute negative contribution of an explanatory factor to the C_n means that the socioeconomic distribution of that factor and the association of the relevant component with healthcare utilization contribute to lower healthcare utilization among poorer households and vice versa. Since utilization of healthcare is a binary variable, the marginal effect of explanatory factors obtained from a nonlinear logit regression was used as β_k in the decomposition analysis.

Estimation Technique

The Wagstaff decomposition technique was used to assess the relative importance of physical, human and social capital in explaining socioeconomic inequalities in healthcare utilisation. This has been widely used to investigate the factors that contribute to the socioeconomic gradient in health using bivariate dependent rank indices.

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Justification of Variables in the Relative Importance of Physical, Human and Social Capital Model

The following variables used were in the decomposition models to analyse the relative importance of physical, human and social capital in explaining socioeconomic inequalities in utilization of healthcare services in Ghana. These variables were selected according to literature and intuition.

Availability of Human Capital

The quality of healthcare provided in both high- and low-income countries depends heavily on the availability of human capital. Health care availability may be affected by the demand for, and supply of, human capital (health professionals or healthcare workforce). Having access to healthcare is directly correlated with the presence of health experts, according to previous research (WHO, 2010).

The Level of Human Capital

The quality and quantity of healthcare services that may be made available to the population are influenced by the quantity and distribution of human capital, one of the most crucial aspects of the healthcare system. It is anticipated that greater human capital would result in greater healthcare use. Yinzi *et al.* (2017) have observed that an increase in the number of healthcare professionals was associated with higher utilization of healthcare services

Availability of Physical Capital

Physical capital (health facilities) has been acknowledged as essential in healthcare delivery and attaining universal health coverage. The likelihood that healthcare will be used is impacted by access to suitable healthcare facilities.

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Level of Physical Capital

Accessible healthcare requires an adequate investment in physical capital, measured by the number of healthcare facilities. Researchers have found that the availability of healthcare centres (measured by physical capital) influences patients' decisions to seek medical attention.

Social Capital

The role of structural and cognitive forms of social capital in explaining socioeconomic differences in healthcare access was investigated. Cognitive social capital was demonstrated through trust in community members and respect for the community, while structural social capital was measured by attendance at community meetings and participation in volunteer activities. It is more likely and less expensive for a person to learn about how to treat or prevent illness, the best remedies, and where to find the best medical facility and the most qualified medical doctor if that person has extensive interaction, such as through participation in voluntary activities and community meetings. An important source of market failure in the healthcare business is the information gap between buyers and sellers of healthcare services. Lindstrom and Axen (2004) found that those who reported having frequent access to a doctor were more likely to be actively engaged in social activities.

Respected members of the community can help coordinate citizens' efforts to press government for health-promoting public goods like improved healthcare infrastructure and the deployment of more trained medical personnel to underserved areas. Trust is both an innate characteristic and a social construct that is influenced by one's upbringing, community, and

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culture (Abbott and Freeth, 2008). In order to develop the social relationships necessary for successful interaction, trust is essential. In order to make educated decisions about one's health, it is essential to have access to reliable sources of health information (Kim et al, 2015).

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Table 2: Description of Variables in the Relative Importance of Physical, Human and Social Capital in Socioeconomic Inequalities in Healthcare Utilisation Models

Variable	Definition and Measurement	Expected sign
Availability of Human Capital	Availability of health professional=1 if a community has a health professional and 0 otherwise.	+/-
Amount of Human Capital	Number of health professionals in a district	+/-
Availability of Physical Capital	Availability of health facility=1 if a community has a health facility and 0 otherwise.	+/-
Amount of Physical Capital	Number of health facilities in a district	+/-
Social Capital		
Meetings	Attendance of community meetings=1 if household head attended community meetings and 0 otherwise.	-
Voluntary Activity	Attendance of community meetings=1 if household head attended community meetings and 0 otherwise.	-
Respect	Attendance of community meetings=1 if household head attended community meetings and 0 otherwise.	-
Trust	Attendance of community meetings=1 if household head attended community meetings and 0 otherwise.	-

Source: Author's construct

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Analytical Framework of Socioeconomic Inequalities in the Use of Healthcare Services and Technology Diffusion

In order to assess the influence of technology diffusion on socioeconomic inequalities in outpatient healthcare use, the study adopted the linear Blinder-Oaxaca decomposition. This is because the outcome variable of interest in this section is outpatient healthcare use (number of outpatient visits).

The Role of Technology Diffusion in Accounting for Gender and Locational Gaps in Outpatient Healthcare Use

If Y_i our outcome variable is affected by a single variable, x, which in this study is technology diffusion, then outpatient healthcare use for the male and female and rural and urban households are given by equation (16) and (17) respectively.

$$Y_i^{MR} = \beta^{MR} x_i + \varepsilon_i^{MR} \quad (16)$$

$$Y_i^{FU} = \beta^{FU} x_i + \varepsilon_i^{FU} \quad (17)$$

Where F represents female household heads, M represents male household heads, R represents rural households and U represents urban households. Thus, the male-female and rural-urban gaps in the mean outpatient healthcare use $\left(Y^{fu} - Y^{mr}\right)$ is given as in equation (18).

$$Y^{FU} - Y^{MR} = \beta^{FU} x^{FU} + \beta^{MR} x^{MR} \quad (18)$$

Where x^{fu} and x^{mr} are the explanatory variables (including technology diffusion) at their means for the female and male headed households as well as rural and urban households. The overall female-male and rural-ruban gaps in

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outpatient healthcare use could be decomposed into a gaps that are attributable to difference in the level of the covariates, $X^{'}s$ including technology diffusion and gaps that are attributable to difference in coefficients, $\beta^{'}s$ as in equation (19) and (20):

$$Y^{FU} - Y^{MR} = \Delta x\beta^{MR} + \Delta x\beta^{FU} \quad (19)$$

$$Y^{FU} - Y^{MR} = \Delta x\beta^{FU} + \Delta x\beta^{MR} \quad (20)$$

"Where $\Delta x = x^{female} - x^{male}$; $x^{urban} - x^{rural}$ and $\Delta\beta = \beta^{female} - \beta^{male}$; $\beta^{urban} - \beta^{rural}$

The decomposition equation could be re-written as in equation (21).

$$\begin{aligned} Y^{FU} - Y^{MR} &= \Delta x\beta^{MR} + \Delta\beta\Delta x \\ &= E + C + CE \end{aligned} \quad (21)$$

The overall gender and locational differences in outpatient healthcare utilisation consist of the gaps in endowment (E), coefficients (C), and interactions (CE) . Additionally, $Y^{FU} - Y^{MR} = \Delta x\beta^{MR} + \Delta\beta x$ can be equal to

[E + (C + CE)] and $Y^{FU} - Y^{MR} = \Delta x\beta^{FU} + \Delta\beta x^{MR}$ is equal to [(E+CE) + C].

The Blinder-Oaxaca decomposition could be considered a special case of a more comprehensive decomposition in equation (22).

$$\begin{aligned} Y^{FU} - Y^{MR} &= \Delta x\left(D\beta^{FU} + (1-D)\beta^{MR}\right) \\ &\quad + \Delta\beta\left(x^{FU}(1-D) + x^{MR}D\right) \end{aligned} \quad (22)$$

From equation (22), D represents a weight matrix, while 1 represents an identity matrix. The identity matrix has a value of 1 when is a scalar. If the

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weight is zero, then equation (22) gives us equation (19), and if D is one, then we get equation (20) (O'Donnel et al., 2008).

Some economists have proposed a different weighting system. For instance, Reimers proposes weighting the gap in x by using the average mean, $\beta = \frac{1}{2}\beta^{FU} + \frac{1}{2}\beta^{MR}$, while Cotton suggests weighting the β by the relative groups sizes $\beta = \frac{\eta_{FU}}{\eta_{FU}+\eta_{MR}}\beta^{FU} + \frac{\eta_{MR}}{\eta_{FU}+\eta_{MR}}\beta^{MR}$. Furthermore, Neumark suggests using the pooled regression coefficients $\beta^{'}$ in weighting the difference in x,

$$Y^{FU} - Y^{MR} = \Delta x\beta + \left[x^{FU}\left(\beta^{FU} - \beta^{MR}\right)\right] + \left[x^{MR}\left(\beta - \beta^{MR}\right)\right].$$

Effect of Technology Diffusion on Gender and Rural-Urban Inequalities in Inpatient Care

This section examines the effect of technology diffusion on gender and rural-urban disparities in the use of inpatient health care services. The outcome variable of interest in this section is inpatient healthcare use (hospitalisation). Since our outcome variable is binary, we made use of non-linear decomposition methods suggested by Fairlie (2005) which is an extension of Blinder-Oaxaca decomposition method. Thus, in this section, we adopted the non-linear Blinder-Oaxaca decomposition method to analyse gender and rural-urban inequalities in inpatient healthcare use based on equation (23) and (24) respectively.

$$\bar{Y}^{F} - \bar{Y}^{M} = \left[\sum_{i=1}^{N^F}\frac{F\left(X_i^{F}\beta^{F}\right)}{N^{R}} - \sum_{i=1}^{N^M}\frac{F\left(X_i^{M}\beta^{M}\right)}{N^{M}}\right] + \left[\sum_{i=1}^{N^M}\frac{F\left(X_i^{M}\beta^{F}\right)}{N^{M}} - \sum_{i=1}^{N^M}\frac{F\left(X_i^{M}\beta^{M}\right)}{N^{M}}\right] \quad (23)$$

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$$\bar{Y}^R - \bar{Y}^U = \left[\sum_{i=1}^{N^R} \frac{F\left(X_i^R \beta^R\right)}{N^R} - \sum_{i=1}^{N^U} \frac{F\left(X_i^U \beta^R\right)}{N^U}\right] + \left[\sum_{i=1}^{N^U} \frac{F\left(X_i^U \beta^R\right)}{N^U} - \sum_{i=1}^{N^U} \frac{F\left(X_i^U \beta^U\right)}{N^U}\right] \quad (24)$$

Where F represents female household heads, M represents male household heads, R represents rural households and U represents urban households. It is worthy of note that $\bar{Y}$ does not necessarily equal $F\left(\overline{X}\beta\right)$.

The first term in equation (23) represents the explained portion of the gender disparities between male and female headed households which is due to differences in the distribution of independent variables and the second term represents the unexplained portion caused by differences in regression coefficients. Similarly, the first term in equation (24) represents the explained section of the locational differences between rural and urban populations that can be accounted for by differences in the distribution of explanatory variables and the second term is the unexplained part due to diffrences in regression coefficients.

In order to determine the role of independent variables especially technology diffusion, the comprehensive decomposition begins with a natural one-to-one matching of examples from both sets. Subsamples were taken from the groups with the highest inpatient healthcare rankings (male headed and rural households) and matched with the groups with the lowest rankings (female headed and urban households). In order to determine how much each factor contributes X_1 to gender and rural-urban healthcare gaps in inpatient settings, we use the following formulas.

$$\frac{1}{N^M}\sum_{i=1}^{N^M} F\left(\alpha + X_1^F \beta_1 + X_2^F \beta_2\right) - F\left(\alpha + X_1^M \beta_1 + X_2^F \beta_2\right) \quad (25)$$

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$$\frac{1}{N^U}\sum_{i=1}^{N^U} F\left(\alpha + X_1^R\beta_1 + X_2^R\beta_2\right) - F\left(\alpha + X_1^U\beta_1 + X_2^R\beta_2\right) \quad (26)$$

Similarly, the contribution of X_2 to the gender and rural-urban differences in inpatient healthcare can be calculated as follows:

$$\frac{1}{N^M}\sum_{i=1}^{N^M} F\left(\alpha + X_1^F\beta_1 + X_2^F\beta_2\right) - F\left(\alpha + X_1^M\beta_1 + X_2^M\beta_2\right) \quad (27)$$

$$\frac{1}{N^U}\sum_{i=1}^{N^U} F\left(\alpha + X_1^R\beta_1 + X_2^R\beta_2\right) - F\left(\alpha + X_1^U\beta_1 + X_2^U\beta_2\right) \quad (28)$$

Estimation Technique

The linear Blinder-Oaxaca decomposition was used to investigate the effect of technology diffusion on inequality in outpatient healthcare use. The method decomposes the disparity in outpatient healthcare utilisation by gender and rural/urban areas into two parts: one caused by differences in the distribution of the determinants of outpatient healthcare utilisation (covariates effect) and another caused by differences in the effect of these determinants (coefficient effect).

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Table 3: Description of Varables in the Effect of technology Diffusion on Gender and Rural-Urban inequalities in healthca Use models

Use Models

Variable	Definition and Measurement	Expected sign
Age	Age of the household head measured in years	+
Age Squared	Age squared of the household head measured in years	
Sex	Sex of the household head=1 if household is headed by a male and 0 otherwise.	+/-
Household Size	Number of people in the household	-
Employment	Employment status of household head=1 if a household head is employed and 0 otherwise	+
Education	Educational attainment of the household head=1 if household head has schooling record and 0 otherwise.	+
Mobile Phone	Ownership of mobile phone=1 if household owns a mobile phone and 0 otherwise.	-
Health Insurance	Health insurance status of the household head =1 if household head is covered under national health insurance scheme and 0 otherwise.	-
Wealth Quintile	Household wealth quintile=1 if household belong to the second, third, fourth, fifth wealth quintiles and 0 if otherwise.	-
Residence	Place of residence of the household =1 if the household is located in an urban area and 0 otherwise	+/-

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Table 3: Continued

Region	Region where household is located=1 if household is located in Central, Greater Accra, Volta, Eastern, Ashanti, Brong Ahafo, Northern, Upper East region, Upper West region and 0 if otherwise.	+/-
Meetings	Attendance of community meetings=1 if household head attended community meetings and 0 otherwise.	-
Voluntary Activity	Attendance of community meetings=1 if household head attended community meetings and 0 otherwise.	-
Respect	Attendance of community meetings=1 if household head attended community meetings and 0 otherwise.	-
Trust	Attendance of community meetings=1 if household head attended community meetings and 0 otherwise.	-

Source: Author's construct

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CHAPTER FIVE

NATURE AND DEGREE OF SOCIOECONOMIC INEQUALITIES IN THE UTILISATION OF OUTPATIENT AND INPATIENT HEALTHCARE SERVICES

Introduction

It is acknowledged that efforts to ensure universal health coverage must entail access to adequate healthcare services of acceptable quality (Mills et al., 2012). The third Sustainable Development Goal (SDG) aims to ensure healthy lives and promote well-being for all ages, with target 3.8 aimed at achieving Universal Health Coverage (UHC). Member countries of the United Nations adopted this goal to ensure equality in the utilisation of healthcare services (UN, 2014). Although member nations have made commitments to attaining the SDGs and Universal Health Coverage initiatives over the years, the question as to whether equality in the utilization of healthcare services has been achieved in these countries is yet to be answered.

The Ghanaian government recognizes the value of good health for its people as part of the country's priorities. As a result, numerous policy initiatives and programs have been carried out over time to enhance access and the quality of health of Ghanaians and achieve efficiency in the health care delivery system.

Though the topic of socioeconomic disparities in the utilisation of inpatient and outpatient healthcare in developing countries has been studied before (Ezzatabadi et al., 2017; Abouie et al., 2018; Abu Bakar et al., 2019; Mulynato et al., 2019; llinca et al., 2019; Vahedi, 2020), no such study has been conducted in Ghana. Recent empirical studies on socioeconomic

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inequalities in the use of healthcare services have focused mainly on maternal and child care (Novignon *et al*, 2019; Fenny *et al*, 2019). For example, Fenny et al (2019) looked into the patterns and causes of socioeconomic inequalities in antenatal time, antenatal visits, and place of delivery and found that the use these healthcare services were skewed favourably toward the rich. Comparable research by Novignon et al (2019) indicated that the wealthy were more likely to take advantage of at least four prenatal appointments and delivery supported by professional attendants. Although these studies are vital, it is unclear whether these maternal healthcare services constitute outpatient and or inpatient care.

The purpose of this research is to address this gap in the literature by analysing socioeconomic inequalities in utilisation of inpatient and outpatient healthcare. Using a wide range of independent measures of socioeconomic status (income, consumption, and educational attainment); this chapter contributes new empirical evidence on socioeconomic differences in the utilisation of outpatient and hospitalisation care. This offers the benefit of assessing and showing the socioeconomic disparities in the utilisation of inpatient and outpatient healthcare services from various points of view and judgment.

This section of the thesis presents empirical findings regarding the trends and nature of socioeconomic gaps in the utilisation of healthcare services and a decomposition analysis to identify the factors that contribute to these gaps. The study tests the hypothesis that household socioeconomic characteristics have no statistically significant influence on inequalities in the usage of health care.. The chapter is divided into three sections. In order to

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better understand the trends and causes of socioeconomic gaps in healthcare utilisation, the estimated WI and EI concentration indices and concentration curves are presented in the first part. In the second section, we decompose the socioeconomic inequalities in healthcare services utilisation based on the WI and EI indices. The conclusion and summary of the most important findings are presented in the third section.

Descriptive Statistics

Table 4 provides descriptive statistics for the variables used to analyse the degree of socioeconomic gaps in healthcare service consumption. From the results, about 13% of households consulted a health practitioner in 2013, and about 11% of households used outpatient healthcare in 2017. In 2013 about 7% of households were hospitalised, while 8% made inpatient visits in 2017. On average, the age of a household head was about 45 years in 2013, but this increased to about 48 years in 2017.

From the results, about 73% of households were headed by males, while females headed households were about 27% in 2013. However, in 2017, households headed by males constituted about 74%, and that of households headed by females was 26%. It can be realized that male-headed households increased from 73% in 2013 to 74% in 2017, but that of female-headed households decreased from 27% in 2013 to 26% in 2017. The above portrays the dominance of men in household decision-making and resource allocation in Ghana and most traditional African societies.

On average, about 63% of household heads possess national health insurance, which increased to about 74% in 2017. About 37% of household heads have not enrolled in the scheme in 2013, as against 26% in 2017. This

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indicates a fall in household heads not enrolled in the national health insurance scheme. On average, about 96.12% of household heads were employed in 2013, against 81.16% in 2017. This underscores the deteriorating employment situation in Ghana. In 2013, considering religious affiliation, about 7% of household heads were not affiliated with any religious norms and beliefs, about 61% were Christians, about 29% were Moslems, and 0.06% were traditionalists. In 2017, however, about 6% of household heads had no religious affiliation, about 61% subscribed to the Christian faith, 22% were Moslems, and 11% were traditionalists.

According to the descriptive statistics, about 29% of household heads in 2013 had no formal education, compared to 22% who had completed basic school, 36% who had completed secondary school, and 13% who had completed tertiary education. In 2017, about 33% of household heads were uneducated, 22% had completed primary education, 32% secondary school, and 13% had completed tertiary education. More so, in 2013, about 23% of households were found in the first income quintile, 19% in the second, 18% in the third, 19% in the fourth and 22% in the upper tail of the income quintile. However, in 2017, households within the lower tail of the income quintile increased from about 23% to about 32%, and those found in the second quintile also increased from 19% to about 22%. Those households within the third, fourth and fifth quintiles witnessed a reduction to about 17%, 15% and 13% in 2017, respectively.

Further, about 9% of households are from Western, Central, Volta, Eastern, Brong Ahafo, and Upper East regions of Ghana, about 10% are from

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Greater Accra, about 11% are from Ashanti and Upper West, and about 12% are from the Northern region.

Table 4: Descriptive Statistics of the Variables in the Causes of Socioeconomic Inequalities in Healthcare Utilization Models

Variable	Mean	Standard Deviation	Mean	Standard Deviation
	2013		2017	
Outpatient				
Yes	0.1276	0.1124	0.1072	0.1012
No	0.8724	0.3337	0.8928	0.3093
Hospitalisation				
Yes	0.0745	0.0251	0.0831	0.1033
No	0.9255	0.2626	0.9169	0.2761
Age	44.9216	14.6422	48.1879	13.9842
Gender				
Male	0.7341	0.4418	0.7428	0.4371
Female	0.2659	0.1012	0.2572	0.2804
NHIS				
Yes	0.6307	0.4826	0.7387	0.4393
No	0.3693	0.2421	0.2613	0.1922
Employment Status				
Employed	0.9612	0.1930	0.8116	0.3910
Unemployed	0.0387	0.0246	0.1884	0.1241
Religion				
No Religion	0.0701	0.2553	0.0572	0.2322
Christian	0.6419	0.4794	0.6099	0.4878
Islam	0.2873	0.4525	0.2249	0.4175
Traditional	0.0006	0.0254	0.1081	0.3105
Education				
No Education	0.2889	0.4533	0.3335	0.4715
Basic Education	0.2179	0.4129	0.2200	0.4143
Secondary Education	0.3601	0.4800	0.3210	0.4669
Higher Education	0.1329	0.3396	0.1254	0.3312
Wealth Quintile				
1st Quintile	0.2250	0.4176	0.3247	0.4683
2nd Quintile	0.1857	0.3888	0.2215	0.4152
3rd Quintile	0.1838	0.3873	0.1720	0.3774
4th Quintile	0.1895	0.3919	0.1496	0.3567
5th Quintile	0.2159	0.4115	0.1322	0.3387

Source: Authors' computations based on GLSS 6 and 7 data

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Table 4: Continued

Variable	Mean	Standard Deviation	Mean	Standard Deviation
	2013		2017	
Region				
Western	0.0948	0.2929	0.0884	0.2839
Central	0.0865	0.2811	0.0864	0.2810
Greater Accra	0.1001	0.3001	0.0835	0.2766
Volta	0.0920	0.2890	0.0940	0.2918
Eastern	0.0990	0.2988	0.0801	0.2715
Ashanti	0.1063	0.3082	0.0934	0.2909
Brong Ahafo	0.0956	0.2940	0.0876	0.2827
Northern	0.1217	0.3269	0.1414	0.3484
Upper East	0.0948	0.2929	0.1245	0.3302
Upper West	0.1093	0.3119	0.1206	0.3257
Residence				
Rural	0.5903	0.4918	0.6272	0.4836
Urban	0.4097	0.3996	0.3728	0.2565

Source: Authors' computations based on GLSS 6 and 7 data

Finally, the descriptive statistics indicate that in 2013 about 59% of households were located in rural areas, while 41% were urban dwellers. In 2017, rural household dwellers increased to 63%, with urban dwelers declining to 37%.

Nature of Socioeconomic Inequalities in the Use of Healthcare Services

In this study, the degree and changes in inequalities in healthcare utilisation were measured by concentration curves and concentration indices using three socioeconomic status variables: wealth index, log of consumption expenditure, and educational attainment. Table 5 provides results on the change in outpatient and inpatient healthcare services between 2013 and 2017. We observe from table 5 that the estimated concentration indices of outpatient healthcare services were positive and differed between the two-year periods. In 2013, the estimated concentration index based on wealth was 0.1071, and that of 2017 was 0.0679 showing a decline in inequality in the usage of outpatient

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care. The positive concentration indices for both year periods indicate pro-rich inequalities in outpatient healthcare services. With regard to inpatient care, the estimated concentration indices were 0.0734 and 0.0075 for 2013 and 2017, respectively. Again, pro- rich disparities in inpatient healthcare services are indicated by the positive concentration indices for both periods. According to the findings above, wealthier households are more likely to access and use outpatient and inpatient healthcare services.

To add, the estimated concentration index for outpatient care was 0.0948 in 2013 and declined to 0.0163 in 2017; this was calculated using consumption expenditure as a standard of living indicator. Consequently, in 2017, there was a reduction in the gap between rich and poor in the usage of outpatient treatment. But the positive concentration indices for 2013 and 2017 show that the rich are more likely to use outpatient medical service.

Now considering inpatient care, the concentration indices showed a decline from 0.0553 in 2013 to 0.0083 in 2017, suggesting a decline in consumption-related inequalities in the utilisation of inpatient within these periods of time. Obviously, the positive consumption-based concentration indices for inpatient healthcare services for both periods clearly show that well-off households are more likely to use these services.

Finally, when educational attainment is adopted as an indicator of socioeconomic level, the estimated concentration indices for outpatient care were -0.0153 and -0.0068 for 2103 and 2017 respectively.

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Table 5: Trends in Socio-economic Inequalities in Healthcare Services Utilization

Variable	Outpatient		Inpatient	
	2013	2017	2013	2017
Wealth	0.1071***(0.0119)	0.0679***(0.0138)	0.0734***(0.0161)	0.0075***(0.0009)
Consumption Expenditure	0.0948***(0.0122)	0.0163***(0.0035)	0.0553***(0.0165)	0.0083***(0.0010)
Educational Attainment	-0.0153*** (0.0034)	-0.0068***(0.0009)	-0.0078***(0.0013)	-0.0632***(0.0161)

Note: Figures in brackets are the standard errors; * significant at 10%; ** significant at 5%; *** significant at 1%.
Source: Authors' computations based on GLSS 6 and GLSS 7 data sets

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From the above, we observe a reduction in education-related disparities in the use of outpatient care between 2013 and 2017. The estimated negative concentration indices for 2013 and 2017 indicate pro-uneducated inequalities in outpatient healthcare services, implying that utilisation of outpatient care are concentrated among less educated households. On the contrary, the estimated concentration indices between 2103 and 2017 for inpatient care were -0.0078 and -0.0632 respectively showing an increase in education-related inequality in utilization of inpatient healthcare for the period under review.

The aforementioned findings support earlier research that demonstrates pro-rich and pro-poor inequalities in healthcare utilisation in emerging nations (Ilinca et tal, 2019; Liu et tal, 2021). These results highlight the importance of universal goals that aim to ensure that no one is left behind. In pursuance of this, SDGs outline objectives and strategies that are designed to help reduce these disparities. It is vital to note that this study's findings offer significant proof of the degree and magnitude of these healthcare disparities.

While the concentration index helps to measure the magnitude and trends in inequality, it does not show the degree if inequalities in healthcare utilisation. To address this, concentration curves for outpatient and inpatient were constructed using wealth quintile, consumption expenditure and educational attainment as indicators of socioeconomic status. Figures 1 through 6 display concentration curves illustrating the extent to which inpatient and outpatient care are utilised unequally. The purpose of this is to provide a visual representation of the differences between the rates at which people use inpatient and outpatient services. Based on the three indicators of

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socioeconomic position, we created the concentration curve for outpatient and inpatient visits for 2013 and 2017 for each panel.

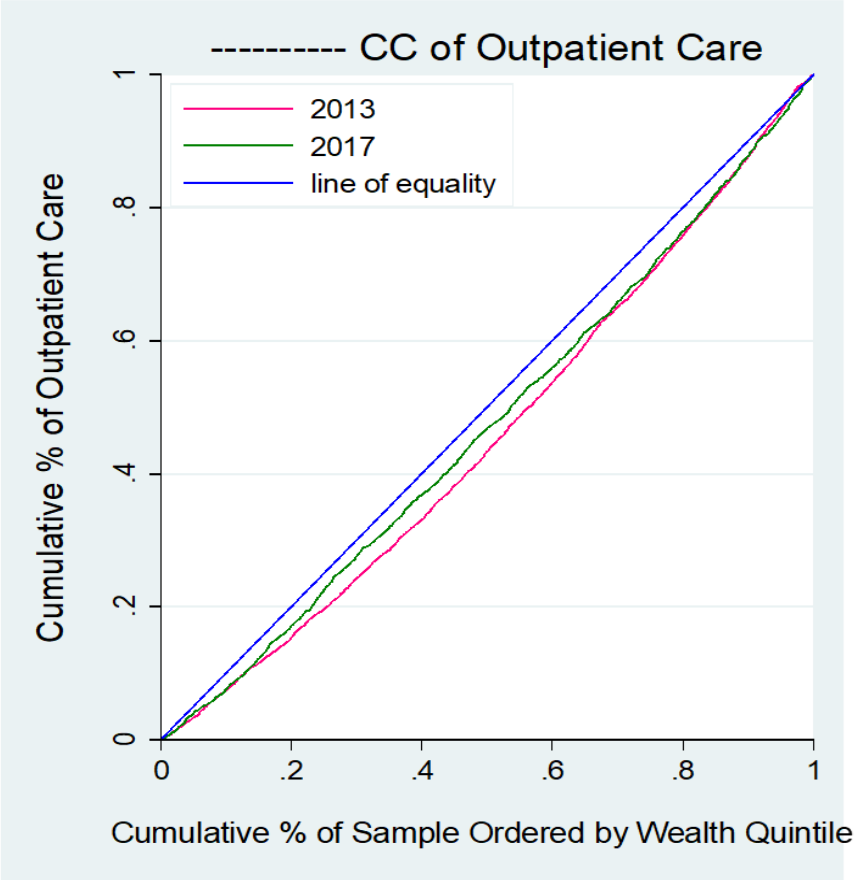

Figure 1: Wealth -Related Inequality in Outpatient Healthcare

Figure 1 portrays the concentration curves of outpatient visits based on wealth quintile for 2013 and 2017. We observe that both the concentration curves of outpatient care for 2013 and 2017 are lying to the right of the line of equality. The implication here is that utilisation of outpatient care is more prevalent among wealthy households. The concentration curve for outpatient care for 2017 is, however, closer to the line of equality than the concentration curve for 2013, which is farther from it. This means that inequality in utilisation of outpatient treatment in 2013 is greater than that of 2017. The

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nature of the concentration curves also show a decrease in inequality in the use of outpatient treatment during the period under consideration.

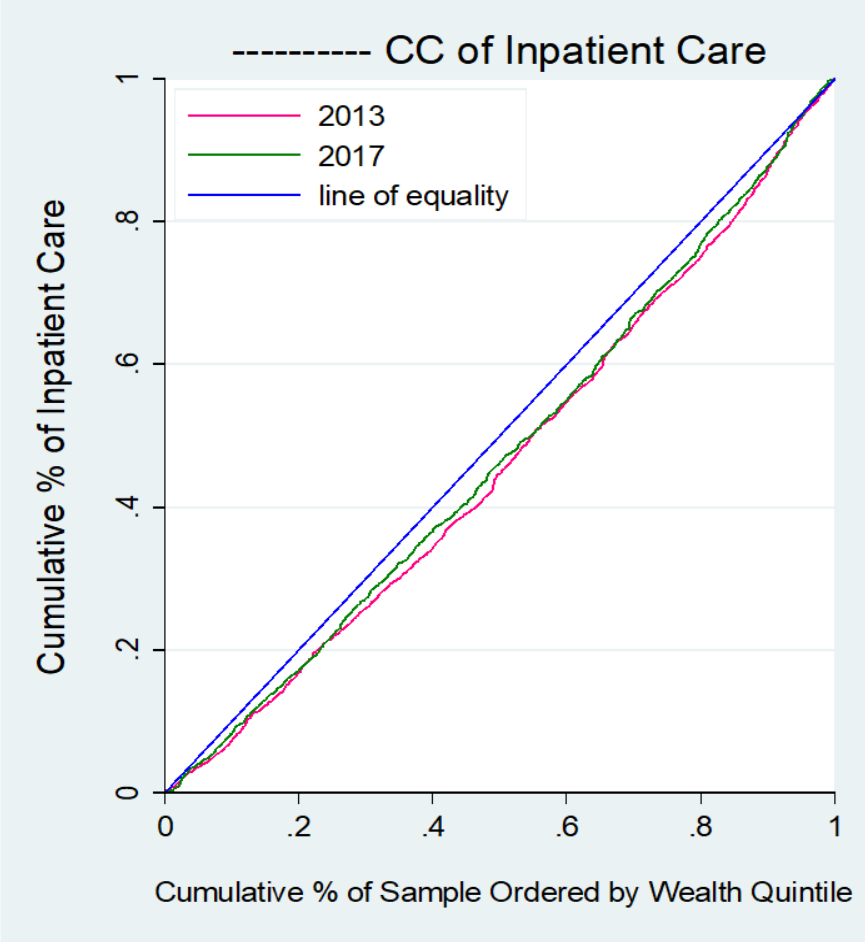

Figure 2:Wealth-Related Inequaliy in Inpatient Healthcare use

In Figure 2, the concentration curves of inpatient visits based on wealth quintile for 2013 and 2017 are presented. We observe that both the concentration curves of inpatient care for 2013 and 2017 lie to the right of the line of equality. The position of the concentration curves show that wealth-related inequality in inpatient visits was in favour of better-off households. Nonetheless, it can be observed from Figure 2 that the two concentration curves are close to each other. This suggest that though inequality in inpatient

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visits in 2013 is greater than that of 2017 the difference in inequality between the two periods is very small.

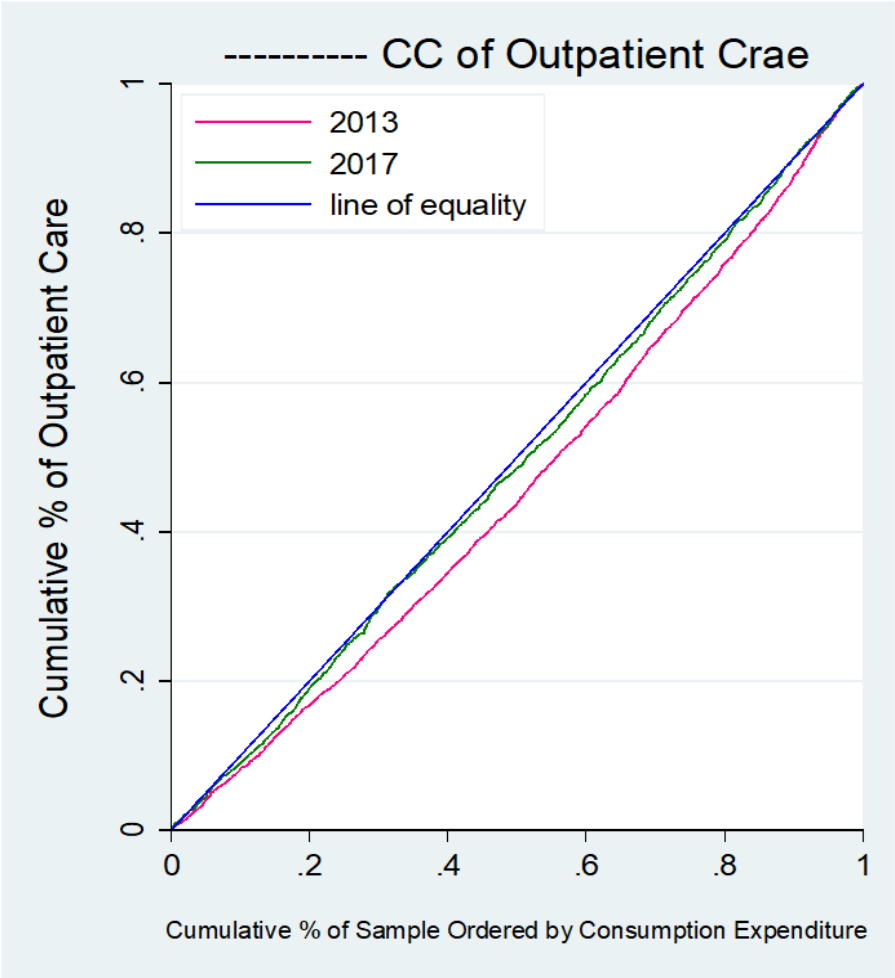

Figure 3: Consumption-Related Inequality in Outpatient Healthcare use

Consumption-related inequality in the usage of outpatient healthcare is depicted in Figure 3. It involves concentration curves of outpatient care for 2013 and 2017 respectively. It is clear that both curves are situated to the right of the line of equality, indicating that outpatient treatment is primarily used by wealthier households. From Figure 3, it can be seen that the concentration curve for 2013 is closer to the line of equality while the curve for 2017 is further away. This is an indication that inequality in the use of outpatient in 2013 witnessed a decline while that for 2017 widened.

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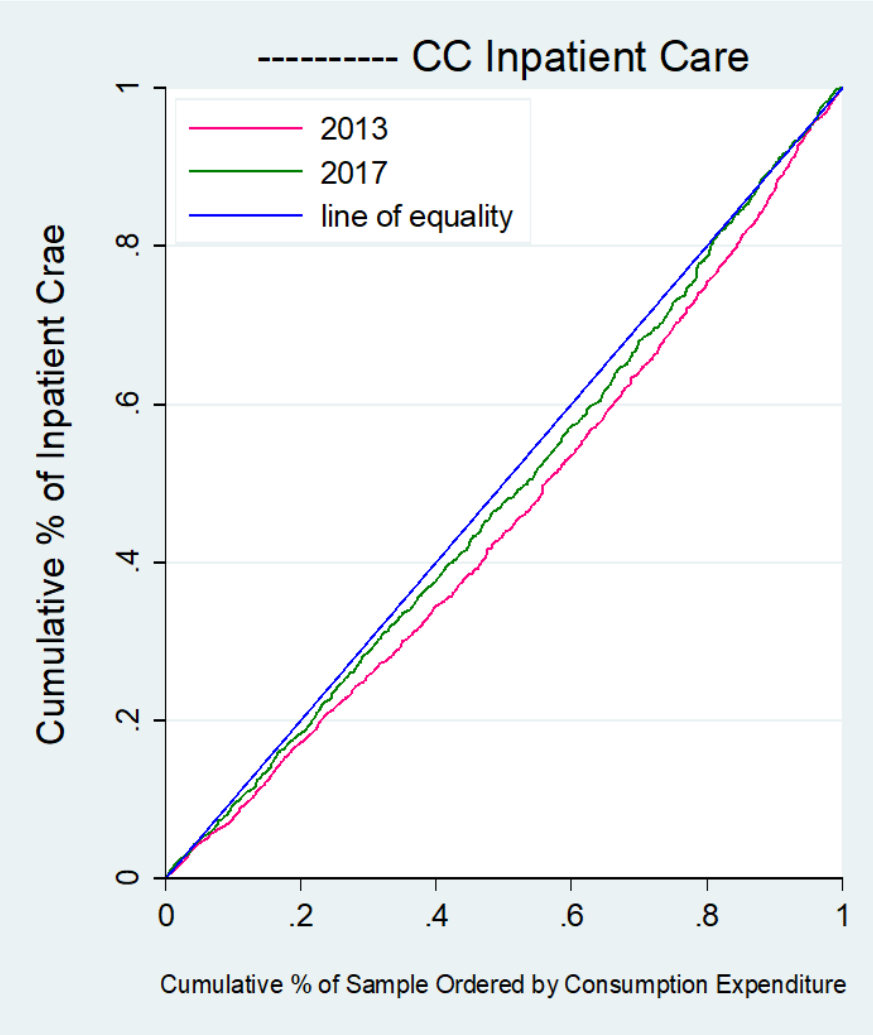

Figure 4: Consumption-Related Inequality in Inpatient Healthcare use

Figure 4 uses concentration curves for 2013 and 2017 to show the degree of consumption-related inequality in the usage of inpatient healthcare services. Because the two concentration curves are all situated on the right side of the line of equality, it is obvious that there is pro-rich disparity in the use of inpatient care. Therefore, usage of inpatient care is also more prevalent among households with higher incomes.

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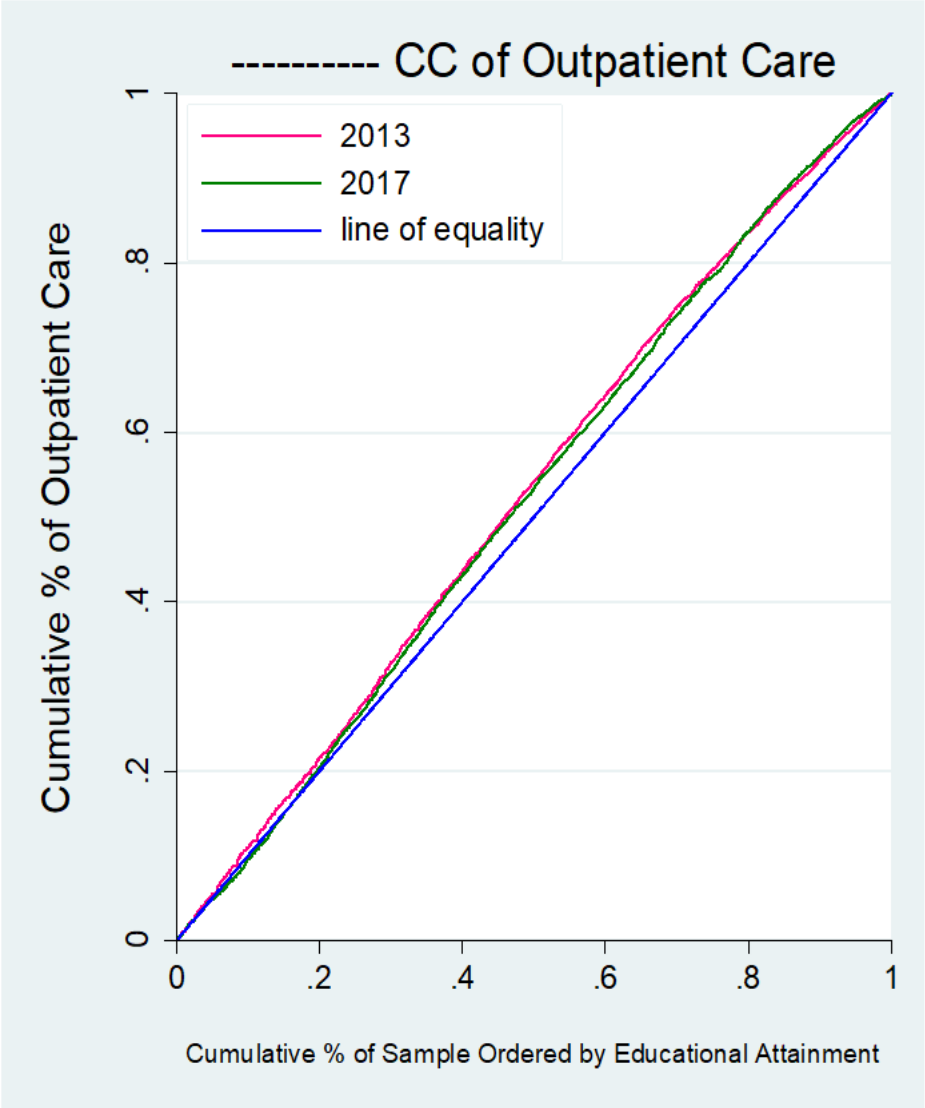

Figure 5: Education -Related Inequality in Outpatient Healthcare use

In Figure 5, the education-related inequalities in outpatient care utilisation for 2013 and 2017 are represented. The graph shows that the two concentration curves are situated on the left side of the line of equality, indicating that households with lower levels of education are more likely to use outpatient care during the time period under discussion.

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Decomposition of Socioeconomic Inequalities in the Use of Outpatient and Inpatient Healthcare Services

In this section, the researcher decomposed the Erreygers Index (EI) based on RIF-CI-OLS decomposition techniques to identify and describe the drivers contributing to inequalities in the utilisation of outpatient and inpatient healthcare services. We specifically look at changes in the contributions of the factors that influence inequalities in the utilisation of outpatient and inpatient care for the years 2013 and 2017, respectively

Wealth-Related Inequality in the Use of Outpatient and Inpatient Healthcare

The results of wealth-related inequalities in the utilization of outpatient and inpatient healthcare services for 2013 and 2017 are shown in Table 6. Outpatient care decomposition findings for 2013 and 2017 are shown in columns 2 and 3, while inpatient care decomposition results for 2013 and 2017 are shown in columns 4 and 5. The findings demonstrate that age greatly mitigates the wealth gap in the utilisation of both outpatient and inpatient healthcare services in 2013 and 2017, respectively.

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Table 6: Contributing Factors of Wealth-Related Inequalities in Outpatient and Inpatient Healthcare Use

	Outpatient		Inpatient	
Variable	**2013**	**2017**	**2013**	**2017**
Age	0.0039**(0.0012)	0.0056**(0.0017)	0.0036**(0.0012)	0.0058**(0.0017)
Gender (**Ref: Male**)				
Female	0.1868***(0.0333)	0.0658(0.0455)	0.1753***(0.0332)	0.0584(0.0444)
Employment Status (Ref: Unemployed)				
Employed	0.3651***(0.0590)	-0.0948*(0.0466)	0.3659***(0.0592)	-0.1165**(0.0445)
NHIS	-0.2192***(0.0332)	-0.1040**(0.0520)	-0.2136***(0.0323)	-0.0540**(0.0236)
Religion (Ref: No Religion)				
Christian	0.2192**(0.0643)	-0.1373(0.1172)	0.1915**(0.0623)	-0.1651(0.1136)
Islam	0.3009***(0.0673)	-0.0534(0.1208)	0.2741***(0.0651)	-0.0537(0.1185)
Traditional	-0.4567*(1.0469)	0.2447*(0.1309)	-0.1074*(1.0340)	0.2227*(0.1284)
Education (Ref: No Education)				
Basic	-0.2719***(0.0432)	-0.0932**(0.0365)	-0.2822***(0.0459)	-0.0849**(0.0423)
Secondary	-0.1424**(0.0453)	-0.2107***(0.0603)	-0.1460**(0.0457)	-0.1819**(0.0611)
Higher	-0.2222***(0.0505)	0.1707***(0.0612)	-0.2346***(0.0460)	0.1388***(0.0512)
Wealth Quintile (Ref: 1st Quintile)				
2nd Quintile	-0.2134**(0.0924)	0.0978*(0.0542)	-0.0907*(0.0517)	0.0874**(0.0380)
3rd Quintile	-0.2656***(0.0888)	0.2049***(0.0542)	-0.2022***(0.0520)	0.1039***(0.0361)
4th Quintile	-0.2251**(0.0901)	0.1646**(0.0577)	-0.1283*(0.0545)	0.0895**(0.0375)
5th Quintile	-0.1396(0.1089)	0.1116*(0.0661)	-0.0950(0.0653)	0.0479(0.0472)

Note: Figures in brackets are the standard errors; * significant at 10%; ** significant at 5%; *** significant at 1%.
Source: Authors' computations based on GLSS 6 and 7 data

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Table 6: Continued

	Outpatient		Inpatient	
Variable	**2013**	**2017**	**2013**	**2017**
Region (Ref: Western)				
Central	0.4903***(0.0721)	0.2735**(0.0870)	0.4276***(0.0695)	-0.2685**(0.0862)
Greater Accra	-0.4659***(0.0760)	-0.3215*(0.1342)	-0.4147***(0.0707)	-0.3001*(0.1307)
Volta	-0.6646***(0.0634)	-0.4135***(0.0863)	-0.5966***(0.0588)	-0.4007***(0.0849)
Eastern	-0.4649***(0.0589)	-0.3630***(0.0937)	-0.4084***(0.0562)	-0.3688***(0.0915)
Ashanti	-0.0465(0.0556)	-0.2900**(0.0976)	-0.0180(0.0542)	-0.2673**(0.1011)
Brong Ahafo	-0.9140***(0.0616)	-0.0645(0.1000)	-0.8651***(0.0601)	-0.0774(0.1036)
Northern	0.5655***(0.0703)	0.1786*(0.0974)	-0.5329***(0.0699)	0.1756*(0.0940)
Upper East	-0.4921***(0.0606)	- 0.0306(0.0858)	-0.4479***(0.0549)	-0.0084(0.0840)
Upper West	-0.6309***(0.0809)	0.3914***(0.1094)	-0.5803***(0.0781)	0.3772***(0.1056)
Residence (Ref: Rural)				
Urban	-0.1376***(0.0345)	-0.0055(0.0433)	0.1318***(0.0321)	0.0022(0.0451)
Constant	-0.4057**(0.1226)	0.2099(0.1738)	-0.3814**(0.1169)	0.1903(0.1634)
Observations	6285	4860	6285	4860

Note: Figures in brackets are the standard errors; * significant at 10%; ** significant at 5%; *** significant at 1%.
Source: Authors' computations based on GLSS 6 and 7 data

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As a result, we discover that between 2013 and 2017, there was a correlation between age at birth and wealth-related inequalities in the use of both outpatient and inpatient healthcare services. This shows that the role of age in wealth-related inequities in both outpatient and inpatient care grew during the time period under consideration. Furthermore, we demonstrate that gender has a positive effect on disparities in utilisation of outpatient and inpatient between 2013 and 2017. Thus, being a female household head exacerbated wealth-related inequalities in using outpatient and inpatient healthcare services during the period under review.

Indicators of a family's access to resources include the household head's employment status and the income he or she recieves. According to the results, being employment exacerbated the wealth gap in outpatient care utilization in 2013 and 2017 compared to being unemployed. In the case of inpatient medical visits, having a job decreases the wealth-related differences when compared to the unemployed for both 2013 and 2017.

The results show significance negative contribution of health insurance to measured wealth-related inequalities in the utilisation of healthcare services in 2013 and 2017. This indicates that relative to those who are not covered under the national health insurance scheme, the proportion of the population covered by health insurance helps to reduce inequalities in utilisation of both outpatient and inpatient care. If national health insurance reduces inequities, it is because more people, especially those from lower-income families, have access to health insurance and, in turn, make greater use of healthcare services.

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Relative to household heads with no religious affiliation, belonging to the Christian and Islamic faith was found to considerably increase wealth-related inequalities in outpatient and inpatient care use in 2013. However, being affiliated with Christian or Islamic beliefs considerably reduces wealth-related inequalities in the utilisation of outpatient and inpatient care in 2017 compared to household heads with no religious beliefs. One possible explanation for this is the long-standing role that religious organisations in Ghana have played in the country's healthcare delivery system through the provision of medical facilities and health education for members. In addition, the interactions that flourish within religious communities foster the exchange of knowledge and experience concerning medical care.

The level of education a person has attained is a significant factor influencing the decision to seek medical care. The results indicate that the having basic, secondary and higher education contributed to reducing wealth-related inequalities in seeking outpatient and inpatient care for both years.

When analysing the causes of healthcare access disparities, we took into account people's wealth quintiles. The contributions of wealth quintile to inequalities in healthcare utilisation was mixed. We find that relative to belonging to first income quintile, belonging to second, third, fourth and fifth qunitle ameliorates inequalities in both outpatient and inpatient for 2013. However, in 2017, belonging to the second, third, fourth, and fifth socioeconomic quintiles widens wealth-related health care disparities in both outpatient and inpatient care.

The contribution of households' region of residence to inequalities in outpatient and inpatient healthcare services yielded different outcomes.

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Greater Accra, the Volta, the Eastern, the Ashanti, the Brong Ahafo, and the Upper East regions were shown to be inversely linked with disparities in both outpatient and inpatient treatment in 2013, whereas living in the Central and Northern areas was positively associated with inequalities in these health care services. Therefore, the positive values of the Erreygers indices in the Central and Northern regions indicate a higher concentration of people from economically advantageous households who use outpatient and inpatient healthcare facilities in those areas in 2013. The negative values of the Erreygers indices of Greater Accra, Volta, Eastern, Ashanti, Brong Ahafo, and Upper East regions indicate that a higher number of people from low-income households from these region used hospitalisation and outpatient treatment in 2013.

Disparities in the utilisation of both outpatient and inpatient care are positively associated with residency in the Central, Northern, and Upper West regions in 2017. Greater Accra, Volta, Eastern, Ashanti, Brong Ahafo, and Upper East regions, on the other hand, were found to have an inverse relationship with health care disparities in both outpatient and inpatient services use in 2017.

Finally, we find a place of residence to exert different effects on wealth-related inequalities in healthcare utilisation. Our results show that being in an urban area worsened inpatient healthcare inequities in 2013 and 2017, notwithstanding recent attempts to expand healthcare access to rural areas. Nonetheless, we discover that urban residence reduced inequalities in outpatient healthcare utilisation for 2013 and 2017 respectively. Healthcare availability and quality in Ghana vary by region and for that matter these

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disparities contribute to and exacerbate differences in healthcare access, utilisation, and outcomes. Pfeiffer and Mwaipopo (2013) state that people in urban areas with well-developed public transportation options have easier access to medical care. Furthermore, Abor et al. (2011) and Ameyaw et al. (2017) found that access to healthcare is better for Ghanaians in urban areas than rural areas.

Consumption-Related Inequality in Outpatient and Inpatient Healthcare Utilisation

Table 7 displays the results of consumption-related differences in the utilisation of outpatient and inpatient treatment between 2013 and 2017. Results showed a statistically significant positive correlation between age and consumption-related differences in the utilisation of healthcare services in 2013 and 2017. The results also suggest a positive correlation between gender and the quantified consumption-related inequalities in healthcare utilization in 2013 and 2017 respectively. Female-headed households were more likely to experience outpatient and inpatient healthcare use disparities during the study period. This may be because women are more likely to report discomfort early and seek medical attention. Aslo, due to their reproductive responsibility women tend to utilize more health care services thereby widening inequality in utilization of healthcare.

The contribution of employment status to inequalities in the utilization of healthcare services exerted different influences over the period under review. While the household head's employment status contributed to increasing inequalities in outpatient and inpatient healthcare in 2013, the reverse is true for both healthcare services in 2017. According to the findings,

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access disparities in medical treatment decreased as more people signed up for public health insurance. Inequalities in access to healthcare services for outpatients and hospitalised patients decreased after people enrolled in the national health insurance programme in 2013 and again in 2017.

We observe from the results that in 2013, compared to household heads who do not identify with any religion, having Christian, Islamic, or traditional

religious affiliation significantly reduced consumption-related disparities in outpatient and inpatient treatment. However, in 2017, being affiliated with Christian, Islamic or traditional beliefs significantly increases inequalities in outpatient and inpatient care utilization compared to household heads with no religious affiliation.

Both outpatient and inpatient healthcare disparities were shown to be related to educational attainment, but in different ways. Consistent with wealth-related inequalities, attaining basic, secondary and tertiary levels of education significantly contribute to decreasing the consumption-related inequalities in the usage of outpatient and inpatient care in 2013. However, in 2017 obtaining basic, secondary and tertiary education contributed in increasing inequalities in outpatient and inpatient care use among households.

In 2013, the wealth quintile had a positive effect on health care access disparities in terms of both outpatient and hospitalisation services, but this trend was reversed by 2017. The results indicate that, in comparison to the first (lowest) socioeconomic quintile, belonging to the second, third, fourth, and fifth quintiles increased the degree of consumption-related inequalities in the utilization of outpatient and inpatient healthcare in 2013. Being in the

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second, third, fourth, or fifth socioeconomic quintiles reduced consumption-related disparities in the use of outpatient and inpatient healthcare in 2017 compared to the first (lowest) quintile.

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Table 7: Contributing Factors of Consumption-Related Inequalities in Outpatient and Inpatient Healthcare Use

	Outpatient		Inpatient	
Variable	**2013**	**2017**	**2013**	**2017**
Age	0.0599**(0.0298)	0.0061***(0.0015)	0.0662*(0.0346)	0.0044***(0.0011)
Gender (Ref: Male)				
Female	0.0720*(0.0366)	0.0012(0.0492)	0.0813*(0.0339)	0.0027(0.0369)
Employment Status (Ref: Unemployed)				
Employed	0.3289***(0.0659)	-0.1367**(0.0483)	0.3254***(0.0623)	-0.0910*(0.0384)
NHIS	-0.0530(0.0385)	-0.0678(0.0740)	-0.0005(0.0377)	-0.0481(0.0532)
Religion (Ref: No Religion)				
Christian	-0.1453*(0.0618)	0.2372*(0.1163)	-0.1469*(0.0598)	0.1577*(0.0877)
Islam	-0.2628***(0.0671)	0.3715**(0.1224)	-0.2683***(0.0635)	0.2431**(0.0895)
Traditional	-1.9643*(0.8607)	0.1320(0.1280)	-1.8463*(0.8096)	0.0893(0.0979)
Education (Ref: No Education)				
Basic	-0.4968***(0.0454)	-0.2045**(0.0598)	-0.4841***(0.0417)	-0.1258**(0.0469)
Secondary	-0.1541**(0.0489)	-0.0778(0.0686)	-0.1318**(0.0447)	-0.0235(0.0528)
Higher	-0.2869***(0.0496)	0.2648**(0.0794)	-0.2637***(0.0424)	0.2420***(0.0582)
Wealth Quintile (Ref: 1st Quintile)				
2nd Quintile	0.0580(0.0549)	0.0250(0.0700)	0.0776(0.0507)	-0.0001(0.0579)
3rd Quintile	0.1307*(0.0558)	-0.0326(0.0746)	0.0998*(0.0505)	-0.0344(0.0579)
4th Quintile	0.0657(0.0581)	-0.0434(0.0899)	0.0652(0.0517)	-0.0713(0.0728)
5th Quintile	0.1398*(0.0684)	0.1232(0.1256)	0.1506*(0.0606)	0.0335(0.0938)

Note: Figures in brackets are the standard errors; * significant at 10%; ** significant at 5%; *** significant at 1%.
Source: Authors' computations based on GLSS 6 and 7 data

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Table 7: Continued

	Outpatient		Inpatient	
Variable	**2013**	**2017**	**2013**	**2017**
Region (Ref: Western)				
Central	0.7963***(0.0744)	0.1305(0.1119)	0.6630***(0.0673)	0.1002(0.0827)
Greater Accra	0.7056***(0.0847)	0.3317*(0.1603)	0.6327***(0.0793)	0.2362*(0.1042)
Volta	0.6487***(0.0722)	0.0528(0.1031)	0.5462***(0.0639)	0.0335(0.0758)
Eastern	0.4740***(0.0720)	0.3250**(0.1222)	0.3992***(0.0654)	0.2357**(0.0881)
Ashanti	0.1979*(0.0820)	-0.0131(0.1161)	0.1896**(0.0702)	-0.0044(0.0848)
Brong Ahafo	0.4977***(0.0730)	-0.0699(0.1258)	0.4407***(0.0663)	-0.0495(0.0919)
Northern	0.4475***(0.0837)	0.0036(0.1190)	0.4022***(0.0752)	0.0122(0.0860)
Upper East	0.4611***(0.0718)	-0.0889(0.1060)	0.4233***(0.0651)	-0.0514(0.0776)
Upper West	0.7066***(0.0880)	-0.4921***(0.1290)	0.6639***(0.0829)	-0.3632***(0.0931)
Residence (Ref: Rural)				
Urban	0.0656*(0.0351)	0.0093(0.0528)	0.0573*(0.0323)	0.0093(0.0379)
Constant	-0.3425**(0.1242)	0.1838(0.1852)	-0.2711*(0.1106)	0.1405(0.1449)
Observations	6230	4975	6230	4975

Note: Figures in brackets are the standard errors; * significant at 10%; ** significant at 5%; *** significant at 1%.
Source: Authors' computations based on GLSS 6 and 7 data

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The effect of region of residence to inequalities in outpatient and inpatient healthcare services are different for 2013 and 2017. Consumption-related inequalities in outpatient and inpatient treatment increased in 2013 among those living in the Central, Greater Accra, Volta, Eastern, Ashanti, Brong Ahafo, Northern, Upper East, and Upper West regions. Living in the Central, Greater Accra, Volta, and Eastern regions were shown to increase consumption-related disparities in outpatient and inpatient care utilisation in 2017, but living in the Ashanti, Brong Ahafo, Upper East, and Upper West regions was found to decrease such disparities.

Further, the study shows that place of residence positively affects consumption-related inequalities in health care utilization care. Urban residence contributed to widening inequalities in outpatient and inpatient healthcare in 2013 and 2017 respectively.

Education-Related Inequality in Outpatient and Inpatient Healthcare Utilisation

The results of education-related disparities in outpatient and inpatient care utilization for 2013 and 2017 are shown in Table 8. The findings indicate that between 2013 and 2017, age played a statistically significant negative role on the distribution of educational gaps between users of outpatient and inpatient healthcare services. Thus, age at birth significantly contributed to reducing education-related inequalities in utilizing outpatient and inpatient healthcare services over the period under review. Consistently, the study results reveal a positive relationship between gender and education-related inequalities in healthcare utilization in 2013 and 2017, respectively. Thus, the contribution of female-headed households to disparities in outpatient and

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inpatient health care usage increased across the period under study but only became significant with disparities in outpatient and inpatient treatment in 2017.

The study demonstrates that membership in the National Health Insurance Scheme (NHIS) had a statistically significant positive impact on education-related disparities in outpatient and inpatient treatment use in 2013 and 2017, respectively. Given that NHIS exerts a positive effect, the variable exacerbates education-related disparities in the use of outpatient and inpatient healthcare services between 2013 and 2017.

It is noted from the study results in that compared to those who are unemployed, having a job is positively correlated with education-related disparities in outpatient and inpatient visits in 2013. However, being employed is negatively associated with education-related inequalities in the use of healthcare in 2017. This suggests that being employed exacerbates education-related disparities in the use of healthcare with respect to the unemployed in 2013. On the other hand, the variable contributed to reducing education-related inequalities in inpatient and outpatient treatment with respect to the unemployed in 2017.

Religious affiliation significantly positively influences education-related inequalities in seeking inpatient and outpatient treatment over 2013 and 2017 respectively. The implication here is that household heads who identify as Christian, Islamic, or traditional religious believers significantly increase education-related disparities in inpatient and outpatient care compared to household heads who do not share any religious beliefs.

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Table 8: Contributing Factors of Education-Related Inequalities in Outpatient and Inpatient Healthcare Use

	Outpatient		Inpatient	
Variable	**2013**	**2017**	**2013**	**2017**
Age	-0.0009**(0.0004)	-0.0013**(0.0004)	-0.0012***(0.0003)	-0.0011**(0.0004)
Gender (Ref: Male)				
Female	0.0169(0.0130)	0.0187(0.0122)	0.0267*(0.0117)	0.0252*(0.0121)
NHIS	0.3908***(0.0785)	0.2948***(0.1001)	0.1662***(0.0380)	0.0933***(0.0357)
Employment Status (Ref: Unemployed)				
Employed	-0.1103***(0.0299)	-0.0313*(0.0153)	-0.1088***(0.0297)	-0.0228(0.0143)
Religion (Ref: No Religion)				
Christian	0.1125***(0.0240)	0.0064(0.0263)	0.1077***(0.0218)	0.0088(0.0258)
Islam	0.1640***(0.0258)	0.0645*(0.0280)	0.1554***(0.0232)	0.0694*(0.0277)
Traditional	0.3106***(0.0804)	0.1084**(0.0333)	0.2994***(0.0762)	0.1101**(0.0325)
Education (Ref: No Education)				
Basic	-0.0230(0.0157)	-0.0241(0.0171)	-0.0322*(0.0156)	-0.0118(0.0162)
Secondary	-0.0168(0.0163)	-0.0217(0.0161)	-0.0361*(0.0149)	-0.0127(0.0152)
Higher	0.3108***(0.0190)	0.1018***(0.0194)	0.2580***(0.0180)	0.1129***(0.0186)
Wealth Quintile (Ref: 1st Quintile)				
2nd Quintile	-0.1095***(0.0173)	-0.1024***(0.0138)	-0.1080***(0.0173)	-0.1154***(0.0143)
3rd Quintile	-0.1503***(0.0167)	-0.1056***(0.0161)	-0.1452***(0.0168)	-0.1265***(0.0161)
4th Quintile	0.1490***(0.0194)	0.0423*(0.0213)	0.1419***(0.0188)	0.0601**(0.0212)
5th Quintile	0.0284(0.0241)	0.1124***(0.0263)	0.0350(0.0233)	0.0967***(0.0278)

Note: Figures in brackets are the standard errors; * significant at 10%; ** significant at 5%; *** significant at 1%.
Source: Authors' computations based on GLSS 6 and 7 data

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Table 8: Continued

Variable	Outpatient 2013	Outpatient 2017	Inpatient 2013	Inpatient 2017
Region (Ref: Western)				
Central	0.0443*(0.0244)	0.0046(0.0250)	-0.0594**(0.0219)	-0.0002(0.0248)
Greater Accra	-0.3795***(0.0262)	-0.3921***(0.0316)	-0.3317***(0.0246)	-0.3889***(0.0308)
Volta	0.0912***(0.0238)	0.0479*(0.0240)	0.0787***(0.0217)	0.0423*(0.0240)
Eastern	0.2955***(0.0225)	0.0950***(0.0242)	0.2805***(0.0204)	-0.1041***(0.0239)
Ashanti	0.1207***(0.0229)	0.0666**(0.0239)	0.1166***(0.0212)	0.0669**(0.0237)
Brong Ahafo	0.0156(0.0220)	-0.0186(0.0231)	0.0034(0.0203)	-0.0241(0.0231)
Northern	-0.0054(0.0257)	0.0605*(0.0274)	-0.0125(0.0240)	0.0584*(0.0265)
Upper East	-0.1145***(0.0228)	-0.1321***(0.0245)	-0.1295***(0.0219)	-0.1251***(0.0251)
Upper West	-0.3467***(0.0267)	-0.2297***(0.0247)	-0.3540***(0.0240)	-0.2281***(0.0256)
Residence (Ref: Rural)				
Urban	0.0299*(0.0117)	0.0591***(0.0121)	0.0248*(0.0108)	0.0573***(0.0126)
Constant	0.1644**(0.0476)	0.2110***(0.0438)	0.1889***(0.0463)	0.2062***(0.0435)
Observations	7985	6525	7985	6525

Note: Figures in brackets are the standard errors; * significant at 10%; ** significant at 5%; *** significant at 1%.
Source: Authors' computations based on GLSS 6 and 7 data

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The study results demonstrate the different effects of educational attainment on education-related inequalities in inpatient and outpatient treatment usage in 2013 and 2017 respectively. From the results, attaining basic and secondary levels of education negatively influenced education-related differences in the usage of outpatient and hospital care in 2013 and 2017. However, attainment of a tertiary level of education is significantly and positively associated with education-related disparities in the use of outpatient and inpatient care in 2013 and 2017. The above results imply that obtaining basic and secondary education contributes to reducing education-related disparities in outpatient and inpatient care in 2013 and 2017 while attaining tertiary education contributes to increasing disparities in healthcare use among households.

In 2013 and 2017, we find that households in the second- and third-income quintiles negatively influenced the degree of education-related inequalities in the use of healthcare services, whereas households in the fourth and fifth quintiles influenced educational inequalities in the use of healthcare positively. We find that between 2013 and 2017, those in the second and third quintiles of schooling contributed to narrowing the education-related gap in the use of outpatient and inpatient healthcare. The degree of education-related differences in outpatient and inpatient healthcare use in 2013 and 2017 is exacerbated by being in the fourth and fifth socioeconomic quintiles.

It was found that inequalities in utilization of outpatient and inpatient care based on educational attainment varied by area of residency between 2013 and 2017. Education-related inequalities in outpatient and inpatient care increased in the Central, Volta, Eastern, Ashanti, and Brong Ahafo regions in

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2013 and decreased in the Greater Accra, Northern, Upper East, and Upper West regions. The Central, Greater Accra, Northern, Upper East area, and Upper West regions saw a decrease in education-related disparities in their usage of both outpatient and inpatient treatment in 2017, whereas the Volta, Eastern, Ashanti, and Brong Ahafo regions saw an increase. In 2017, it was found that the Central, Greater Accra, Northern, Upper East, and Upper West regions had the lowest levels of educational inequality in regard to the usage of both outpatient and inpatient therapy, while the Volta, Eastern, Ashanti, and Brong Ahafo regions had the highest.

Finally, we observe from the results that location of residence exerts a positive effect on education-related inequalities in the use of healthcare services. Thus, having urban residence contributed to exacerbating education-related inequalities in outpatient and inpatient healthcare in 2013 and 2017 respectively.

Discussion

Undoubtedly, there is cause for concern when it comes to the widening gaps in healthcare access and utilization, particularly among lower socioeconomic groups in Ghana. In order to facilitate appropriate policy direction., examining the variation in healthcare usage across various socioeconomic categories might help clarify our understanding of the pattern or trend and magnitude of these inequalities.

In this chapter of the thesis, we first analyse the nature and degree of inequalities in outpatient and inpatient care utilisation using three different measures of socioeconomic status (wealth index, consumption expenditure and education) by employing the concentration index and concentration

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curves. This was done to ensure the consistency and robustness of the findings. Second, we used RIF-CI-OLS decomposition approaches to identify and describe the underlying drivers of inequalities or disparities in outpatient and inpatient care utilisation by employing the Erreygers Index.

The study reveals estimated EI ranked by wealth index and consumption expenditure to be positive in the case of inpatient and outpatient treatment for 2013 and 2017. Thus, the study demonstrates pervasive pro-rich inequalities in inpatient and outpatient treatment, implying that people from well-to-do households in Ghana were better at utilizing these healthcare services compared to their less-endowed counterparts. The negative estimate of the EI ranked by education reveals pro-uneducated inequalities in the utilisation of inpatient and outpatient treatment for 2013 and 2017, respectively. This means that the utilisation of these healthcare services favours household heads with a low educational background in Ghana. The results corroborate previous studies showing pro-rich and pro-poor inequalities in healthcare utilisation in advanced and developing countries (Sortoso et al., 2017; Mosquera at al, 2017; Petrelli et al., 2020; Mahapato et al., 2020).

Inequalities in the utilisation of outpatient and inpatient care were consistently found to be higher in 2013 among the selected socioeconomic status indicators in relation to 2017. The reduction in outpatient and inpatient healthcare utilization in 2017 observed in our study could be related to the prioritisation of investment and improved allocation of health facilities and workforce.

These findings highlight the importance of universal goals that ensure no one is left behind. In pursuance of this, the SDGs outline goals, objectives,

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strategies and targets designed to ameliorate these disparities. It is worthy of note that findings from the current study offer crucial evidence regarding the trend and nature or degree of inequalities in the use of healthcare and the contributing drivers of these inequalities.

The research shows significant factors that lead to healthcare access discrepancies. The study found age to widen degree of socioeconomic disparities outpatient and inpatient care usage during the period under consideration. Numerous studies have shown that healthcare utilisation increases with age. For instance, Vrhovec and Tajnikar (2016) noted that the requirement for medical care increases with age due to the rising incidence of diseases associated with older age groups in society. Elderly people's increased usage of healthcare services may be due to their greater familiarity with the community's facilities, particularly its health facilities.

The positive effect of gender on wealth, consumption, and educational disparities, demonstrates that the variable contributed in exacerbating inequalities in healthcare us. In line with this, Gyasi and Philips (2018) showed that women are far more likely to use formal public healthcare services compared to men. As in the rest of the world, women in Ghana typically outlive their male counterparts. Despite this, women face a greater number of health risks and difficulties than males, requiring more medical attention (WHO, 2015; Kinsella and Philips, 2005).

In addition, the decomposition study emphasises the importance of national health insurance as a means of reducing socioeconomic inequalities in healthcare utilisation. Inequalities in both outpatient care and hospitalisation care utilisation are greatly mitigated when household heads have access to

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health insurance. Several prior studies have underlined the importance of health insurance on healthcare utilisation (Blanchet et al., 2012). Health insurance has the potential to have a more equitable and economic impact on healthcare utilisation and health outcomes for the wealthy and the poor alike (Awoke et al., 2017). Out-of-pocket costs, which remain a substantial contributor to healthcare funding in many LMICs, have historically discouraged healthcare utilisation, especially among low-income families (Blanchet et al., 2012; Xu et al., 2007; Atim et al., 2001; McCracken and Phillips, 2017). One strategy to obtain universal healthcare coverage without charging patients out-of-pocket is through the expansion of health insurance (WHO, 2010).

Engagement in the labor market shows the potential opportunity cost of time utilization in terms of lost wages. Largely, the current study reveals labour market engagement of the household head to significantly ameliorate observed inequalities in outpatient and inpatient care use. A household head who has a job may be better placed to have access and control of resources than the one who does not. As a result, they can better manage the indirect cost associated with healthcare utilisation, such as time spent travelling to and from treatment facilities.

Cultural, religious, and societal norms and behaviours all impact healthcare service utilisation (Mwase et al., 2018; Gebrehiwot et al., 2014; Chama-Chiliba and Koch, 2015). In particular, if there exist religious differences with respect to the use of healthcare services may exacerbate existing socioeconomic gaps in healthcare access. The findings of this study show that religious disparities contribute to socioeconomic differences in

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healthcare utilisation. According to the findings, being Christian, Muslim, or traditionalist greatly helps eliminate healthcare disparities. Religion may influence a person's propensity of accessing healthcare since believers may be less likely to seek medical care because they may regard it as a sign of weakness in their faith, as demonstrated by a study by Tiruneh, Chuang, and Chuang (2017). Meanwhile, religious groups have played a key role in providing health services in sub-Saharan Africa through managing healthcare facilities and member-focused health promotion efforts for decades.

Furthermore, our findings provide insight into the relationship between educational attainment and healthcare utilisation disparities. Our research confirms that educational attainment help ameriolate disparities in health care use. Recent research has demonstrated the importance of education in promoting health-related literacy, giving communities access to the resources they need to better manage their health (Nutbean, 2008; Amoah and Phillips, 2017). Therefore, it is generally accepted that those with more knowledge tend to use preventative health care more frequently (Glanz et al.., 2008; Howard et al.., 2006). In contrast to previous studies that have found an inverse relationship between education and health-related behaviours (Lee et al., 2010; Lleras-Muney, 2005), this study’s results support previous research showing that higher education is associated with increased access to quality of diagnostic testing, pharmaceuticals, and healthcare use in general (Wilf-Miron et al., 2010; Clegg et al., 2009).

Besides, the study observes the importance of the wealth quintile in explaining inequalities in inpatient and outpatient healthcare usage. The above findings have implications for public policies aimed at creating appropriate

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financial incentives for the very poor to help alleviate their economic burden of health care costs. One such public policy tool in low-income countries has been the establishment of health insurance schemes. By combining risks and resources, health insurance guarantees improved access and risk mitigation for low-income households against expenditure on illness (Preker et al., 2002; Ekman, 2004; Carrin et al., 2005). For instance, implementing the NHIS in Ghana has increased access to and use of health services, particularly among the underprivileged (National Health Insurance Authority, 2011).

Considering the significance of NHIS in ensuring that healthcare is available to the underprivileged and the poor, calls for periodic and holistic assessment of the opportunities and challenges inherent in the scheme's functionning to improve its operations to serve its intended purposes better. The number of healthcare facilities and the quality of healthcare services is unevenly distributed throughout Ghana. As a result of these inequalities, attitudes and behaviors about the use of healthcare vary among localities as well as the regions. In Ghana, there have been reports of regional variances or differences in the utilization of healthcare services (Arthur, 2012). The findings support considerable regional effects on socioeconomic disparities in healthcare utilization.

Due to the prevalence of regional impacts on the degree of inequalities in healthcare usage, policy direction which focuses on improving accessibility and equity in healthcare delivery is necessary to reduce regional differences in the distribution and quality of healthcare facilities and services. Pfeiffer and Mwaipopo (2013) state that people living in metropolitan areas have better access to healthcare facilities because of the availability of reliable public

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transportation. It has also been noted that those living in the cities of Ghana have more access to medical treatment than those living in the countryside (Abor et al., 2011; Ameyaw et al., 2017). People living in cities are responsible for a substantial portion of the widening gap in healthcare access. Therefore, the results of the current study show the differences in the distribution and quality of healthcare facilities and services between urban and rural locations. Therefore, increasing funding for investments in the health delivery system will enhance people's ability to get medical treatment in underserved and low-income areas.

Conclusion

This section of the thesis aimed to investigate the trend, degree, and correlates of socioeconomic disparities in health care utilization in Ghana. Overall, the study reveals pervasive pro-rich inequalities in the use of healthcare services. Thus, higher-income families or households made up a disproportionate share of those who used healthcare services in Ghana. These results suggest that recent health sector changes in Ghana, including eliminating user fees for healthcare, have not yet accomplished their goals of ensuring equity and inclusion in healthcare usage.

A decomposition study of the determinants of socioeconomic differences in healthcare service utilisation reveals the importance of socioeconomic and geographical characteristics of households. We find that gender, health insurance, income, region, and urban location contribute to socioeconomic disparities in healthcare utilisation in Ghana. The findings of the current study serve as guide to formulating pertinent policy initiatives and strategies to mitigate socioeconomic disparities in healthcare utilization.

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However, it is important to understand that the observed inequalities are not driven by inequalities in ill-health. It is worth noting that policy intervention that lays emphasis on empowering women and improving access to healthcare services should be pursued since women face greater health challenges than men.

Besides, national health insurance coverage should be expanded by removing or eliminating all barriers that hinder vulnerable groups and the rural poor from enrolling in the scheme. Again, efforts should be made to improve the income levels of the poor, as this can improve their access to and use of healthcare services. Finally, there should be an allocation of health services resources in such a way that they will be in proximity to people, especially those in rural settings.

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CHAPTER SIX

SOCIOECONOMIC INEQUALITIES IN HEALTHCARE UTILISATION: THE RELATIVE IMPORTANCE OF PHYSICAL, HUMAN AND SOCIAL CAPITAL

Introduction

The United Nations General Assembly recognised health as a basic human right in its 1943 Universal Declaration of Human Rights (UN, 1948). It has since been reaffirmed in constitutions, treaties, internal laws, policies, and programmes in countries all over the world (Pillay, 2008), illustrating the unique importance societies place on health. The importance of health stems from the fact that it contributes to well-being through the enjoyment of life and happiness among households and individuals regardless of their social standing (Grossman, 1972). Besides, good health promotes economic growth and development in countries (Bloom et al., 2004; Boachie, 2017). Thus, while good health benefits an individual by raising his or her market value, it also boosts national output (Grossman, 1972; World Bank, 1993).

A common objective among many policymakers is to provide equal treatment for people with the same healthcare needs, without respect to their cultural and economic standing (Culyer and Wagstaff, 1993; Van Doorslaer et al., 2000). This is because health plays a crucial role in socioeconomic development. This calls for policymakers to ensure that health systems make quality healthcare accessible to all individuals, irrespective of socioeconomic circumstances. The crucial role of physical (health facilities) and human (health workforce) resources is essential to achieving this aim. However, there is a lack of supply and a geographical imbalance in health facilities and

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workforce distribution. These pose major hindrances or obstacles to using these health services, especially by resource-constrained individuals residing in remote areas (O'Donnell, 2007; Peters *et al.*, 2008), thereby impeding efforts to achieve universal healthcare coverage.

Similarly, in Ghana, there is a shortage and unbalanced distribution of health facilities and workforce, leading to low use of healthcare services (Buor, 2004). This maldistribution and uneven access to health facilities (physical capital) and workforce (human capital) imply that certain categories of people, especially vulnerable and less privileged populations, are being denied the opportunity to utilise healthcare. This would cause a gap in the health of the population as a whole and the proportion of people who seek medical attention.

The present study argues that knowledge of the relative significance or relevance of physical, human and social capital in influencing inequalities in outpatient and inpatient healthcare use remains imperative for health promotion and improvement toward a healthy and productive life. Additionally, trustworthy and credible information on issues like the magnitude of these forms of capital contributing to socioeconomic inequalities in utilisation of healthcare services may be essential not only to promote the effectiveness of the health delivery system but also to inform the development of policy strategies to curb the widening gaps in the utilization of medical services.

Unfortunately, research efforts have not been devoted to investigating the potential roles of physical, human and social capital in inequalities in the healthcare utilisation of the general population. These capital components may

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play out in healthcare use among various groups as access and distribution. The current research breaks new ground by closely examining the extent to which these types of capital influence inequalities in the utilisation of healthcare services of people from different socioeconomic backgrounds.

This empirical chapter of the thesis seeks to make at least two contributions to the body of knowledge. First, this study is the first to consider various dimensions of capital: physical capital (health facilities), human capital (health professionals) and social capital in a single study to examine their relative contributions to socioeconomic disparities in the use of inpatient and outpatient care. Second, by analyzing the relative contributions of each capital and the effects of various compositions of capital, we seek to contribute to a deeper understanding of the mechanisms behind disparities in the utilization of outpatient and inpatient healthcare. This is particularly important in light of the expanding demand for healthcare services and the potential for worsening disparities in appropriate healthcare access if these forms of capital are inadequately allocated and provided since they are vital in healthcare provision.

Descriptive Statistics

Table 9 provides descriptive statistics of the variables used to assess the relative importance of physical, human, and social capital in articulating socioeconomic disparities in the use of healthcare services. From the results, 48% of communities sampled have a health professional available to meet their healthcare requirements. The descriptive results show that each community has an average of 6 health professionals. On average, about

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32.16% of communities have a health facility where they can seek healthcare heads. There are 4 health facilities on average in communities in Ghana.

Table 9: Descriptive Statistics

Variable	Frequency	Percentage	Mean	Standard Deviation
Availability of Human Capital				
Yes	6,673	48.25		
No	7,157	51.75		
Amount of Human Capital			5.6867	0.4208
Availability of Physical Capital				
Yes	4,448	32.16		
No	9,383	67.84		
Amount of Physical Capital			3.6419	0.3945
Social Capital				
Meeting				
Yes	3,611	40.43		
No	5,320	59.57		
Volunteer				
Yes	4,066	45.93		
No	4,787	54.07		
Trust				
Yes	7,404	82.89		
No	1,528	17.11		
Respect				
Yes	8,742	97.81		
No	196	2.19		

Source: Authors' calculations based on GLSS 7 data

We observe from the descriptive statistics that about 40% of the household heads attended community meetings as against 60% who did not attend any community meeting. From the results, about 46% of household heads engaged in some form of voluntary activities, while 54% did not participate in any voluntary activity. According to the descriptive statistics,

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around 83% of household heads trusted people in their community, and 98% indicated they were respected. Further, about 43 percent of households live in urban areas, compared to about 57 percent in rural areas.

Relative Importance Physical, Human, and Social Capital to Socioeconomic Inequalities in the Use of Healthcare Services

This section of the thesis analysed the relative significance of physical capital (health facilities), human capital (health professionals) and social capital in explaining inequalities in the utilisation of both inpatient and outpatient healthcare services using the concentration index based on wealth quintile, per capita consumption expenditure and education as living standard variables.

Contributions of Physical, Human, and Social Capital to Wealth-Related Inequality in Healthcare Utilization

Table 10 presents the relative contributions of physical, human and social capital in explaining the observed wealth-related inequalities in healthcare utilisation. The elasticity demonstrates how sensitive the use of healthcare is to a change in the determinant. When an indicator has a positive elasticity, households with that attribute are more likely to use outpatient and inpatient healthcare services.

Concentration indices were calculated for each explanatory variable, and a positive value signifies that the variable is pro-rich (is impacted by) income inequality. In the same way, a negative sign signifies that the variable has pro-poor (is not impacted by) income-related inequality. The column under the heading “Contribution” is the product of elasticity and the concentration index of individual variables, which portrays each covariate’s

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contribution to the overall concentration index. If a factor has a positive contribution, then the disparity in outpatient and inpatient healthcare use would decrease if that specific variable were evenly distributed across income level.

In this study, physical capital was conceptualised as the availability of health facilities and the number of health facilities in a district. From the results, the positive elasticities for availability and the number of health facilities signify a positive association between physical capital and utilisation of outpatient and inpatient healthcare services. Thus, an increase in physical capital results in more healthcare services utilisation. The estimated concentration indices of availability of health facilities and a number of medical facilities (physical capital) are positive, implying that these healthcare resources are largely concentrated among the better-off in society.

In absolute terms, the availability of physical capital (health facilities) contributed about 0.0220 and 0.0078 to increasing wealth-related disparities in the utilisation of outpatient and inpatient healthcare, respectively. Again, the amount of physical capital (number of health facilities) contributed about 0.0095 and 0.0088 in exacerbating wealth-related inequalities in the utilisation of both outpatient and inpatient healthcare services. When compared to other factors, physical capital accounted for around 0.0315 in exacerbating wealth-related differences in the usage of outpatient services and 0.0166 of the variance in inpatient services.

Additionally, the present study conceptualised measured human capital in terms of the availability of medical professionals and a number of health professionals in a district.

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Table 10: Contributions of Physical, Human and Social Capital to Wealth-Related Inequalities in Healthcare Use

Variable	Outpatient Elasticity	CI	Contribution	Inpatient Elasticity	CI	Contribution
Health Facility	0.3351	0.0656	0.0220	0.3831	0.0204	0.0078
Number of Health Facilities	1.8589	0.0051	0.0095	1.9057	0.0046	0.0088
Sub-total			**0.0315**			**0.0166**
Health Professional	0.3882	0.0171	0.0066	0.5938	0.0194	0.0115
Number of Health Professionals	0.4432	0.0140	0.0062	1.3036	0.0022	0.0029
Sub-total			**0.0128**			**0.0144**
Meetings	0.0962	-0.1801	-0.0173	0.0587	-0.0573	-0.0034
Volunteered	0.0348	-0.1227	-0.0042	0.0061	-0.0209	-0.0001
Sub-total			**-0.0215**			**-0.0035**
Trust People	-0.0750	-0.0182	0.0013	-0.0138	-0.0100	0.0001
Respect	0.1245	0.0020	0.0002	0.2849	0.0007	0.0002
Sub-total			**0.0015**			**0.0003**
CI		**-0.1128**			**-0.0469**	
Residual		**-0.0617**			**-0.0416**	
Observations		**4768**			**2994**	

Source: Authors' computations based on GLSS 7 data

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From Table 10, we observe positive elasticities for human capital (availability and a number of health professionals), implying a positive association between human capital and healthcare services.The estimated concentration indices of the number of medical professionals and their availability (human capital) are positive, implying that these forms of human capital are largely concentrated among wealthy households. The results show that the availability of human capital (health professionals) contributed about 0.0066 and 0.0115 in exacerbating wealth-related disparities regarding the utilisation of outpatient and inpatient healthcare, respectively.

On the other hand, the amount of human capital (number of health professionals) contributes about 0.0062 and 0.0029 in widening wealth-related inequalities in the utilisation of outpatient and inpatient healthcare services, respectively. The results show that overall, the contribution of human capital in widening wealth-related disparities with respect to outpatient and inpatient healthcare utilization are about 0.0128 and 0.0144, respectively.

More so, the study sought to assess the roles of social capital in explaining inequalities in healthcare service utilization by employing structural and cognitive social capital indicators. Structural social capital indicators adopted in the study are attendance at community meetings and undertaking voluntary activities, while indicators of cognitive social capital were trusted in people in the village and respect one command in the community.

The decomposition analysis shows that the structural social capital indicators have negative concentration indices. Thus, attendance at community meetings and volunteering in community activities are more prevalent among

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poor households. The results reveal negative contributions of attendance at community meetings and voluntary activities to wealth-related disparities in the usage of outpatient care to the tune of about -0.0173 and -0.0042. Similar results were obtained in the inpatient visits, where attendance at community meetings and voluntary activities contributed about 0.0034 and 0.0001 towards reducing wealth-related inequalities in this healthcare service.

Importantly, in absolute terms, the aggregate contribution of attendance at community meetings and voluntary activities is negative, signifying that these structural social capital indicators contributed to reducing wealth-related inequalities in the utilisation of outpatient and inpatient care by 0.0215 and 0.0035 respectively.

Turning to cognitive social capital indicators, the positive elasticities for trust in people and respect one commands in the community signify a positive association between cognitive social capital and the use of outpatient and inpatient healthcare services. Ideally, trusting community members will, by extension, result in having trust in the system for delivering healthcare, thereby influencing the use of healthcare services. In the same vein, the level of respect one commands in the community in which he/she lives will likely influence the kind of treatment he/she will receive from health professionals and hence any future healthcare decision.

The estimated concentration index of trust in people was negative, suggesting that trust in people is more prevalent among households of low socioeconomic status. On the contrary, the positive estimated concentration index for respect enjoyed in the community implies that this variable is concentrated among well-off households. The combined contribution of trust

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and respect to wealth-related inequality is positive for outpatient and inpatient care. The implication of these results are that cognitive social capital contributed in increasing wealth-related disparities in outpatient and inpatient utilisation.

Finally, the residual parts which reflect the unexplained portion of inequality in outpatient healthcare use is -0.0617, and that of inpatient care is -0.0416, demonstrating that variables in the decomposition model explained all the measured wealth-related inequalities in utilisation healthcare.

Contributions of Physical, Human and Social Capital to Consumption-related inequality in Utilisation of Healthcare

Table 11 presents the results of the contributions of physical, human and social capital to consumption-related differences in healthcare utilisation. This is to help explain the relative importance of these forms of capital to the measured consumption-related variations in outpatient and inpatient care use. The study shows positive elasticities for physical capital (measured in terms of availability and number of health facilities) which suggest a direct relationship between physical capital and utilisation of outpatient and inpatient healthcare services.

Also, the results reveal estimated concentration indices of physical capital to be positive implying that these healthcare resources are largely prevalent among households of high socioeconomic status. Besides, availability of physical capital (health facilities) contributed about 0.0006 and 0.0035 in widening consumption-related inequalities in the utilisation of both outpatient and hospitalisation services respectively. Similarly, the amount of physical capital (number of health facilities) contributed about 0.0011 and

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0.0001 in increasing consumption-related inequalities in the utilisation of outpatient and inpatient healthcare services, respectively. Overall, physical capital accounts for 0.0017 and 0.0036 of the difference in outpatient and inpatient care usage that is attributable to differences in consumption.

Moreover, the estimated elasticities for human capital (availability and a number of health professionals) are positive, indicating a positive correlation between human capital and medical services. It can be noted from the results that human capital (availability of health professionals) contributed about 0.0017 and 0.0032 in increasing consumption-related inequalities regarding the usage of both outpatient and inpatient healthcare, respectively. The amount of physical capital (number of health facilities) contributed about0.0024 and 0.0004 in increasing consumption-related inequalities in seeking inpatient and outpatient healthcare, respectively. The aggregate contribution of human capital to consumption-related inequalities in outpatient and inpatient visits are 0.0021 and 0.0056. The positive combined contribution of human capital to consumption-related inequalities indicates that this form of capital exacerbates consumption-related inequalities in healthcare use.

The decomposition analysis reveals attendance at community meetings contributed to reducing consumption-related inequalities in seeking outpatients by 0.0003 but led to an increase in inequalities in inpatient care by about 0.0008. The results show that participation in voluntary activities increases inequalities in outpatient and hospitalisation by 0.0002 and 0.0017. The overall contribution of attendance at community meetings and voluntary activities to consumption-related inequalities in outpatient care is -0.0001. The negative value signifies that these structural social capital indicators reduce

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consumption-related inequalities in seeking outpatient care.

Furthermore, the contribution of trust and respect to consumption-related inequalities in outpatient visits are -0.0003 and -0.0001. This implies that these cognitive social capital indicators reduce inequalities in seeking outpatient care. On the other hand, the contribution of trust and respect to inequalities in inpatient visits are 0.0009 and 0.0001, meaning that these cognitive social capital indicators contribute to increasing inequalities in seeking inpatient care.

In sum, the contribution of trust and respect to consumption-related inequality is -0.0004 for outpatient and 0.0010 for inpatient treatment. These results imply that cognitive social capital contributed to decreasing consumption-related inequalities in the use of outpatient healthcare but increased inequality in the use of inpatient care.

Finally, the residual parts which reflect the unexplained portion of inequality in outpatient healthcare use are -0.0012, and that of inpatient care is -0.0015, demonstrating that variables in the decomposition model explain all the measured consumption-related inequalities in utilisation healthcare.

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Table 11: Contributions of Physical, Human and Social Capital to Consumption-Related Inequalities in Healthcare Use

	Outpatient			Inpatient		
Variable	**Elasticity**	**CI**	**Contribution**	**Elasticity**	**CI**	**Contribution**
Health Facility	0.0771	0.0078	0.0006	0.0705	0.0500	0.0035
No. Health Facilities	0.1673	0.0067	0.0011	0.0311	0.0026	0.0001
Sub-total			**0.0017**			**0.0036**
Health Professional	0.1278	0.0137	0.0017	0.1377	0.0233	0.0032
No. Health Professionals	0.1005	0.0044	0.0004	0.3631	0.0067	0.0024
Sub-total			**0.0021**			**0.0056**
Meetings	0.0065	-0.0504	-0.0003	-0.0083	-0.0951	0.0008
Volunteered	-0.0061	-0.0442	0.0002	-0.0341	-0.0495	0.0017
Sub-total			**-0.0001**			**0.0025**
Trust People	-0.0450	0.0056	-0.0003	-0.0476	-0.0195	0.0009
Respect	0.0335	-0.0026	-0.0001	0.0596	0.0019	0.0001
Sub-total			**-0.0004**			**0.0010**
CI		**0.0143**			**0.0073**	
Residual		**-0.0012**			**-0.0015**	
Observations		**4813**			**3201**	

Source: Authors' calculations based on GLSS 7 data

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Contributions of Physical, Human and Social Capital to Education-Related Inequality in the Utilisation of Care

Table 12 shows the relative contributions of physical, human and social capital to education-related inequalities in healthcare utilisation. We observe negative elasticities for physical capital (expressed in terms of availability and a number of health facilities), that point to an inverse relationship between physical capital and the need for outpatient healthcare. The implication is that availability of these categories of health resources results in less utilisation of outpatient care. It is seen that the concentration indices of availability and amount of physical capital are positive in value, signifying that these healthcare resources are concentrated among relatively more educated households.

Similar results are obtained regarding the availability and amount of human capital; thus, these are also concentrated among households with higher educational levels. Availability of physical capital (medical facilities) and the amount of physical capital (number of medical facilities) contribute about -0.0003 and -0.0002 in reducing education-related inequalities in outpatient utilisation. However, with respect to inpatient care, while the availability of physical capital contributes about 0.0067, the amount of physical capital (number of health facilities) contributes about -0.0025. In sum, the contribution of physical capital to education-related disparities in outpatient and inpatient utilisation are -0.0005 and 0.0042 respectively.

Further, the study results indicate that the availability of human capital (health professionals) contributed about 0.0023 and 0.0007 in increasing education-related inequalities in utilizing outpatient and inpatient care,

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respectively. Similarly, the amount of physical capital (number of health facilities) contributed about 0.0012 and 0.0025 in increasing education-related inequalities in making outpatient and inpatient visits. The total contribution of human capital to education-related inequalities in outpatient and inpatient visits are 0.0035 and 0.0032, respectively. The positive combined contribution of human capital to education-related inequalities points to the fact that this form of capital widens education-related disparities in healthcare usage.

Also, the results reveal that the contribution of community meetings to education-related disparities regarding outpatient and inpatient care used to be about -0.0001 and -0.0019. These negative values show that attending community meetings reduces education-related inequalities in healthcare use. Similarly, the contribution of participation in voluntary activities to education-related differences in the use of outpatient and inpatient care are about -0.0003 and -0.0004.

Overall, the combined contribution of structural social capital to education-related inequalities in the utilisation of outpatient and inpatient care are -0.0004 and -0.0023, implying that this type of social capital contributed to minimising disparities in the utilisation of these healthcare services.

Considering cognitive social capital indicators, the estimated contribution of trust in people to inequalities in outpatient care is 0.0004, and that of inpatient care is 0.0024. However, respect is negative for -0.0002 outpatient while that of inpatient care is 0.0001. From the results, the overall contribution of these cognitive social capital indicators is -0.0006 and 0.0025 for outpatient and inpatient care.

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Table 12: Contributions of Physical, Human and Social Capital to Education-Related Inequalities in Healthcare Use

Variable	Outpatient Elasticity	CI	Contribution	Inpatient Elasticity	CI	Contribution
Health Facility	-0.1031	0.0027	-0.0003	0.3297	0.0204	0.0067
No. Health Facilities	-0.0455	0.0043	-0.0002	-0.5496	0.0046	-0.0025
Sub-total			**-0.0005**			**0.0042**
Health Professional	0.2015	0.0115	0.0023	0.3189	0.0023	0.0007
No. Health Professionals	0.5309	0.0022	0.0012	0.1315	0.0194	0.0025
Sub-total			**0.0035**			**0.0032**
Meetings	0.0122	-0.0088	-0.0001	0.0344	-0.0573	-0.0019
Volunteered	0.0499	-0.0053	-0.0003	0.0177	-0.0209	-0.0004
Sub-total			**-0.0004**			**-0.0023**
Trust People	0.0697	-0.0057	-0.0004	-0.2368	-0.0100	0.0024
Respect	-0.0873	0.0019	-0.0002	0.1680	0.0008	0.0001
Sub-total			**-0.0006**			**0.0025**
CI		**-0.0445**			**-0.0634**	
Residual		**-0.0407**			**-0.0524**	
Observations		**4089**			**2625**	

Source: Authors' calculations based on GLSS 7 data

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Finally, the residual parts representing the unexplained portion of inequality in outpatient and inpatient healthcare use were -0.0407 and -0.0524 for outpatient and inpatient care, demonstrating that those variables incorporated into the models adequately explain the estimated education-related inequalities in outpatient and inpatient healthcare utilisation.

Robustness Checks

To evaluate the robustness of our results, the decomposition analysis was bootstrapped at 1,000 replications to provide standard errors and p-values for the statistical significance of the absolute contributions of the explanatory variables. Table 13 presents the results of elasticities, concentration indices and contributions of physical, human and social capital with their standard errors and significant levels. The results reveal significant positive elasticities for physical capital (expressed in terms of availability and a number of health facilities), which suggest a direct relationship between physical capital and utilisation of outpatient and inpatient healthcare.

The study shows the concentration indices of physical capital to be positive in value and significance. Availability of physical capital and the amount of physical capital are found to contribute about 0.0980 and 0.0012 to wealth-related inequalities in the utilisation of outpatient care. The contribution of the availability of physical capital and the amount of physical capital to wealth-related inequalities in inpatient care is found to be 0.0269 and 0.0025. In a nutshell, the contribution of physical capital to wealth-related differences in outpatient and inpatient healthcare services utilisation are 0.0992 and 0.0294, respectively.

We observe the estimated elasticities for human capital to be positive in values and statistically significant at 1% levels with respect to outpatient

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and inpatient care. Additionally, the estimated concentration indices for human capital are positive and statistically significant in outpatient and inpatient visits. The study results reveal the contribution of the availability of human capital (health professionals) to wealth-related differences in outpatient and inpatient healthcare utilization to be about 0.0077 and 0.0020, respectively.

On the other hand, the amount of human capital (number of health professionals) to wealth-related inequalities in outpatient and inpatient care use is found to be about 0.0018 and 0.0010 at significant levels of 10%, respectively. The aggregate contribution of human capital to wealth-related inequalities in outpatient and inpatient visits are 0.0095 and 0.0031, respectively. Considering structural social capital, the results indicate that the estimated elasticities of community meetings are about 0.0145 and 0.0076 at significant levels of 10%, respectively. Also, the estimated elasticities of participation in voluntary activities are found to be about 0.0556 and 0.0439 at significant levels of 1%, respectively.

The concentration indices of community meetings and participation in voluntary activities are estimated to be -0.0262 and -0.0449, with statistically significant levels of 1%, respectively, in the case of outpatient care. In the case of inpatient care, the concentration indices of community meetings and participation in voluntary activities are estimated to be -0.6312 and -0.0500 at significant levels of 10%, respectively. The contribution of community meetings to wealth-related disparities in outpatient and inpatient care utilisation is found to be about -0.0013 and -0.0016.

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Table 13: Bootstrap Results of Contributions of Physical, Human and Social Capital to Wealth-Related Inequalities in Healthcare Use

Variable	Outpatient Elasticity	CI	Contribution	Inpatient Elasticity	CI	Contribution
Health Facility	0.1184***	0.1000***	0.0980***	0.1183***	0.1089***	0.0269***
	(0.0352)	(0.0343)	(0.0172)	(0.0351)	(0.0203)	(0.0047)
No. Health Facilities	0.0400***	0.0930**	0.0012	0.0999***	0.0745*	0.0025
	(0.0135)	(0.0423)	(0.0008)	(0.0121)	(0.0414)	(0.0015)
Sub-total			**0.0992**			**0.0294**
Health Professional	0.1575***	0.1476**	0.0077**	0.1217***	0.0500*	0.0020*
	(0.0124)	(0.0629)	(0.0032)	(0.0157)	(0.0272)	(0.0011)
No. Health Professionals	0.0372***	0.1476**	0.0018*	0.0087***	0.3446***	0.0010*
	(0.0130)	(0.0629)	(0.0010)	(0.0032)	(0.0823)	(0.0005)
Sub-total			**0.0095**			**0.0031**
Meetings	0.0145*	-0.2627***	-0.0013*	0.0076*	-0.6312*	-0.0016
	(0.0079)	(0.0498)	(0.0007)	(0.0039)	(0.3424)	(0.0014)
Volunteered	0.0556***	-0.0449**	-0.0008*	0.0439***	-0.0500*	-0.0007*
	(0.0163)	(0.0205)	(0.0005)	(0.0136)	(0.0272)	(0.0004)
Sub-total			**-0.0021**			**-0.0023**
Trust People	0.0087***	0.3321***	0.0009**	0.0432***	0.0415	0.0006
	(0.0032)	(0.0798)	(0.0005)	(0.0051)	(0.0658)	(0.0008)
Respect	0.0018	0.0930**	0.0001	0.1000***	0.0242	0.0008
	(0.0112)	(0.0423)	(0.0004)	(0.0343)	(0.0461)	(0.0016)
Sub-total			**0.0010**			**0.0014**
Observations		**4768**			**2994**	

Note: Figures in brackets are the standard errors; * significant at 10%; ** significant at 5%; *** significant at 1

Source: Authors' calculations based on GLSS 7 data

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The contribution of participation in voluntary activities to wealth-related differences in the use of outpatient and inpatient care are about -0.0008 and -0.0007. It is seen that the combined contribution of structural social capital to wealth-related inequalities in the utilisation of outpatient and hospitalisation care are -0.0021 and -0.0023.

Turning to cognitive social capital, the study results show estimated elasticities of trust and respect to be about 0.0087 and 0.0018 under outpatient care, while inpatient care is about 0.0432 and 0.1000. The concentration indices of trust and respect are estimated to be 0.3321 and 0.0930 under outpatient visits, and that of inpatient visits are estimated to be 0.0425 and 0.0242. The estimated contribution of trust in people to inequalities in outpatient care is 0.0009, and that of inpatient care is 0.0006. In the case of outpatient care, the contribution of respect is 0.0001, while that of inpatient care is 0.0008. From the results, the overall contribution of these cognitive and social capital indicators is 0.0010 and 0.0014 for outpatient and inpatient care.

Table 14 reports the bootstrapped results of relative contributions of physical, human and social capital to consumption-related inequalities in healthcare utilisation. Consistent with wealth-related inequalities, the results indicate statistically significant positive elasticities for physical capital with regard to the utilisation of outpatient and inpatient healthcare. The concentration indices of physical capital are also positive in value and significance. The study estimates the contribution of the availability of physical capital and the amount of physical capital to consumption-related inequalities in the utilisation of outpatient to be about 0.0009 and 0.0012.

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Notably, these contributions are statistically significant at 10% and 1% respectively. Similarly, the contribution of the availability of physical capital and the amount of physical capital to consumption-related inequalities in inpatient care are estimated to be 0.0029 and 0.0057 at significant levels of 10% and 5%, respectively. The overall contribution of physical capital to consumption-related inequalities in the utilisation of outpatient and inpatient healthcare are 0.0021 and 0.0086, respectively.

Now considering human capital, the estimated elasticities are positive in values and statistically significant at 1% levels with respect to outpatient and inpatient care. The estimated concentration indices for human capital are positive and statistically significant in outpatient and inpatient visits. The study results reveal the contribution of the availability of human capital (health professionals) to consumption-related inequalities in the utilisation of outpatient and inpatient healthcare services to be about 0.0027 and 0.0018 at significant levels of 5% and 1% respectively.

The amount of human capital has a substantial and beneficial effect on the usage disparities between outpatient and inpatient visits, with values of 0.0014 and 0.0024, respectively. Human capital is shown to contribute between 0.0041 and 0.0042 percentage points to observed consumption related differences in the utilisation of outpatient and inpatient care, respectively.

Consistent with wealth-related inequalities, the results show the estimated elasticities of community meetings to be significant and positive at about 0.1820 and 0.0076, respectively. Again, the estimated elasticities of participation in voluntary activities are about 0.1222 and 0.0178 at significant levels of 1%, respectively.

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Table 14: Bootstrap Results of Contributions of Physical, Human and Social Capital to Consumption-Related Inequalities in Healthcare Use

Variable	Outpatient Elasticity	CI	Contribution	Inpatient Elasticity	CI	Contribution
Health Facility	0.1369***	0.0204*	0.0009*	0.2857***	0.0312*	0.0029*
	(0.0294)	(0.0118)	(0.0005)	(0.0206)	(0.0163)	(0.0015)
No. Health Facilities	0.0128***	0.2873***	0.0012***	0.0782***	0.2208**	0.0057**
	(0.0035)	(0.0633)	(0.0005)	(0.0059)	(0.1015)	(0.0027)
Sub-total			**0.0021**			**0.0086**
Health Professional	0.1835***	0.0449**	0.0027**	0.0184***	0.2873***	0.0018***
	(0.0143)	(0.0205)	(0.0013)	(0.0057)	(0.0633)	(0.0007)
No. Health Professionals	0.0128***	0.3321***	0.0014***	0.0042**	0.3878***	0.0024*
	(0.0035)	(0.0798)	(0.0005)	(0.0021)	(0.0902)	(0.0013)
Sub-total			**0.0041**			**0.0042**
Meeting	0.1802***	-0.0806***	-0.0209***	0.0076***	-0.0235***	-0.0243***
	(0.0137)	(0.0170)	(0.0044)	(0.0021)	(0.0066)	(0.0068)
Volunteered	0.1222***	0.0500***	0.0088***	0.0178***	0.2941***	0.0017**
	(0.0116)	(0.0179)	(0.0031)	(0.0054)	(0.0685)	(0.0007)
Sub-total			**-0.0121**			**-0.0226**
Trust People	0.0044**	-0.7482***	-0.0011*	0.0145***	-0.1462	-0.0007
	(0.0021)	(0.2205)	(0.0006)	(0.0016)	(0.3649)	(0.0018)
Respect	0.0004	0.7982***	0.0001	0.1215***	0.0213	0.0008
	(0.0023)	(0.2214)	(0.0006)	(0.0124)	(0.0308)	(0.0013)
Sub-total			**-0.0010**			**-0.0001**
Observations		**4813**			**3201**	

Note: Figures in brackets are the standard errors; * significant at 10%; ** significant at 5%; *** significant at 1

Source: Authors' calculations based on GLSS 7 data

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Taking concentration indices into consideration, community meetings have estimated values of -0.0806 and -0.0235 with statistically significant levels of 1%, respectively, in the use of both outpatient and hospitalisation care. In the case of participation in voluntary activities, the concentration indices are estimated to be about 0.0500 and 0.2941 at significant levels of 1%, respectively.

The contribution of community meetings to consumption-related disparities in outpatient and inpatient care utilization is shown to be significant (at a 1% level) but negative at about -0.0209 and -0.0243. On the contrary, the contribution of participation in voluntary activities to consumption-related differences in outpatient and hospitalisation care usage is significant and positive at about 0.0088 and 0.0017. We observe the overall contribution of structural social capital to consumption-related inequalities in the utilisation of outpatient and inpatient care to about -0.0121 and -0.0226.

Regarding cognitive social capital, the study reveals that estimated elasticities of trust are significant and positive in values at about 0.0044 and 0.0145 under outpatient and inpatient care. The estimated elasticities of respect are 0.0004 and 0.1215 for outpatient and hospitalisation care. The results show that trust's contribution to consumption-related disparities in outpatient and inpatient visits is about -0.0011 and -0.0007. On the contrary, the contribution with respect to consumption-related inequalities in outpatient and inpatient care is estimated at 0.0001 and 0.0008, respectively. The overall contribution of cognitive social capital to consumption-related inequalities in outpatient and inpatient care is found to be -0.0010 and -0.0001 respectively.

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Table 15 presents the bootstrapped results of relative contributions of physical, human and social capital to education-related inequalities in healthcare utilisation. The study reveals significant positive elasticities for physical capital. The estimated concentration indices of availability and amount of physical capital are positive in value and statistically significant. The positive concentration indices point to the fact that these healthcare resources are prevalent among more educated households. It is seen from the results that the estimated contributions of availability and amount of physical capital to education-related inequalities in the utilisation of outpatient are 0.0017 and 0.0906.

Regarding inpatient care use, the contribution of availability and amount of physical capital to education-related inequalities are estimated to be 0.0077 and 0.3546. In sum, the contribution of physical capital to education-related inequalities in the usage of both outpatient and inpatient visits are 0.0094 and 0.4452. Turning to human capital, we observe the estimated elasticities to be positive in values and statistically significant at 1% levels with respect to outpatient and inpatient care.

Similarly, the estimated concentration indices of human capital are positive and statistically significant for both outpatient and inpatient treatment. The contribution of the availability of human capital to education-related inequalities with respect to outpatient and inpatient care utilisation is estimated to be about 0.0044 and 0.0303 at a significant level of 10%, respectively. Physical capital contributes about 0.0644 and 0.0011 to education-related inequalities in seeking outpatient and inpatient treatment.

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Table 15: Bootstrap Results of Contributions of Physical, Human and Social Capital to Education-Related Inequalities in Healthcare Use

Variable	Outpatient Elasticity	CI	Contribution	Inpatient Elasticity	CI	Contribution
Health Facility	0.0178***	0.2873***	0.0044*	0.1253*	0.0673**	0.0906
	(0.0054)	(0.0633)	(0.0026)	(0.0756)	(0.0227)	(0.0778)
Number of Health Facilities	0.0797***	0.0674***	0.0644**	0.0239	0.3423**	0.3546**
	(0.0128)	(0.0164)	(0.0280)	(0.0297)	(0.1113)	(0.1189)
Sub-total			**0.0688**			**0.4452**
Health Professional	0.0129***	0.0136***	0.0017***	0.0259*	0.0128**	0.0303*
	(0.0019)	(0.0024)	(0.0006)	(0.0136)	(0.0042)	(0.0140)
Number of Health Professionals	0.1176***	0.1718***	0.0077***	0.1172***	-0.0325	0.0011
	(0.0195)	(0.0323)	(0.0020)	(0.0198)	(0.1145)	(0.0040)
Sub-total			**0.0094**			**0.0314**
Meeting	0.1802***	-0.0485**	-0.0029**	0.0019	-0.4514***	-0.0013
	(0.0137)	(0.0213)	(0.0013)	(0.0012)	(0.1649)	(0.0009)
Volunteered	0.0144***	-0.1664	-0.0008	0.0178***	-0.1484	-0.0015
	(0.0015)	(0.4741)	(0.0023)	(0.0054)	(0.1494)	(0.0020)
Sub-total			**-0.0037**			**-0.0028**
Trust People	0.0128***	-0.0592**	-0.0010	0.0218***	-0.1568	-0.0005
	(0.0035)	(0.0299)	(0.0241)	(0.0031)	(0.2848)	(0.0024)
Respect	0.0169***	-0.1575	-0.0038	0.1223***	-0.0262	-0.0011
	(0.0015)	(0.1267)	(0.0031)	(0.0116)	(0.0334)	(0.0014)
Sub-total			**-0.0048**			**-0.0016**
Observations		**4089**			**2625**	

Note: Figures in brackets are the standard errors; * significant at 10%; ** significant at 5%; *** significant at 1

Source: Authors' calculations based on GLSS 7 data

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The researcher recognize the estimated contribution of community meetings to education-related inequalities in visiting outpatient and inpatient facilities to be about -0.0029 and -0.0013. Similarly, the contribution of participation in voluntary activities to education-related inequalities in using both outpatient and inpatient care is estimated to be about -0.0008 and -0.0015. Overall, structural social capital contributes about -0.0037 and -0.0028 to education-related inequalities in the utilisation of outpatient and inpatient treatment.

In this study, trust contributes -0.0010 and -0.0005 to inequalities in making use of outpatient and inpatient treatment, while respect contributes -0.0038 and -0.0011 to disparities in outpatient and inpatient care utilisation. Finally, from the results, cognitive social capital contribute -0.0046 and -0.0016 to education-related inequalities in seeking outpatient and inpatient care.

Discussion

In order to improve population health outcomes, equitable use of healthcare services is essential in all healthcare systems (Kim et al., 2016). This may be achieved by ensuring fair physical and human healthcare resource allocation among people across different geographical locations. This chapter of the thesis examined the relative contributions of capital in terms of physical, human and social in elucidating socioeconomic inequality in the utilisation of outpatient and inpatient healthcare services.

Striking differences were found regarding the role of physical, human and social capital in contributing to disparities in the use of medical care. In this study, availability and amount of physical (availability and number of

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health facilities) positively contribute to wealth-related inequalities in outpatient and inpatient healthcare utilisation.

Similarly, the study established that the availability and amount of human capital (availability and the number of health professionals) positively contribute to wealth-related inequalities in outpatient and inpatient care utilisation. The combined contributions of these forms of capital to inequalities are positive, thus exacerbating the wealth-related inequalities in healthcare utilization. Again, with regard to consumption-related inequalities, the study reveals the availability and amount of capital, both physical and human, to make positive contributions. Turning to education-related inequalities, we observe the availability and amount of physical and human capital to make positive contributions. With positive combined contributions of these forms of capital, we observe widening consumption and education-related disparities in healthcare use.

Importantly, the contribution of availability and amount of physical in widening wealth and education-related inequalities regarding healthcare use were greater than human capital. Whereas availability and amount of human capital contributed most significantly to increasing consumption-related differences in the utilisation of healthcare services compared to physical capital. The above findings point to the concentration of these forms of health capital among people of high socioeconomic status who largely dwell in urban areas. Thus, the unavailability or inadequacy of health facilities and health professionals, given the population at a particular location, can be a real burden. Therefore, specific policy priority should be placed on appropriate investments to ensure targeted and progressive development and an increase in

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different types of physical capital and the development of human capital to help ease access to healthcare.

The study revealed that all indicators of structural social capital, measured in terms of attendance at meetings and participation in voluntary activities, contributed to reducing wealth, consumption and education-related disparities in outpatient and hospitalisation care utilisation. The study reveals participation in community meetings as the major factor contributing to reducing disparities in outpatient and hospitalisation care utilization. We find the combined contribution of indicators of structural social capital to be negative, demonstrating their role in reducing disparities in the use of outpatient and hospital care.

Social capital may affect the utilisation of healthcare services through the information pathway (Deri, 2005; Prentice, 2006; Devillanova, 2008). This means that increased social capital can encourage the exchange of information, such as knowledge on the availability of health services, and that information subsequently becomes an enabling factor that influences the use of healthcare (Devillanova, 2008).

We observe from the study that participation in social organisation or activities such as community meetings and voluntary activities lead to reduced inequality in the utilisation of healthcare services. This is because, through these connections or linkages, people within communities may communicate with one another and share information and opinions about the availability of healthcare services. Besides, participation in community meetings and voluntary activities may link people to influence, which gives individuals a chance to influence community healthcare provision or encourage individuals

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to adhere to the local healthcare system.

Further, the study showed that indicators of cognitive social capital measured in terms of trust in community members and respect contributed to reducing consumption and education-related inequalities in outpatient and hospitalization care utilisation. However, trust in community members and respect contributed to increasing wealth-related inequality in healthcare services. The reason may be that households with stronger levels of trust in the people in the community are more likely to have higher confidence in the healthcare system leading to improved utilisation of healthcare services.

Besides, having trust in the people in the community implies that information on the availability of healthcare services and the need for treatment would be trusted in making health decisions. According to a study by Rowe & Calnan (2006), trust promotes the utilisation of healthcare services. Again, reliable sources of information are important in making informed healthcare use decisions (Marrie *et al.*, 2013).

Considering the types of social capital examined in this study and their influence on inequalities in healthcare utilisation, promoting diverse, heterogeneous networks can provide households with more convenient access to information and resources on available healthcare sources and more opportunities to facilitate healthcare use decisions. Expanding these networks would be especially helpful for underprivileged families who lack resources and have limited access to healthcare, lowering healthcare inequities (Carroll, 2001; Wakefield & Poland, 2005).

In order to gain a deeper understanding of the role of social capital in healthcare utilisation, an evaluation of relationship types, densities, and

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structures at the community and individual levels is necessary to determine which relationships are most helpful in overcoming inequalities in healthcare utilisation. Further research is required to characterize the different forms of social relations and how this influences resource mobilisation to address inequalities in healthcare utilisation.

Conclusion

This chapter of the thesis adds to existing knowledge by analysing the relative importance of physical, human and social capital in explaining the causes of socioeconomic inequalities in outpatient and inpatient healthcare services in Ghana. Overall, the study revealed striking differences with respect to the role of different types of capital in contributing to inequalities in how healthcare services are used. Particularly, the study found physical and human capital (healthcare facilities and health workforce) as the most important forms of capital which drive inequalities in outpatient and inpatient healthcare utilisation.

Additionally, structural social capital is seen as the next important form of capital that explains disparities in healthcare services. Further research should aim to generate a deeper understanding of the relative importance of physical, human and social capital in explaining inequality in not only the decision to seek and frequency of inpatient and outpatient care use but the choice of provider and use of more specialised health service.

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CHAPTER SEVEN

TECHNOLOGY DIFFUSION AND INEQUALITIES IN HEALTHCARE UTILISATION

Introduction

According to the World Health Organisation (WHO), health is essential for accelerating development and reducing poverty (Mugila *et al.*, 2005). It has been observed that healthcare utilization is a major determinant of health (Girma *et al.*, 2011; Saeed *et al.*, 2013; Owusu, 2014). This has become an important public health and a policy issue, thereby warranting measures to ensure improvement in health outcomes by facilitating access to healthcare. In recognition of this, the WHO (1978) has suggested accessibility and uptake of healthcare for disadvantaged and underprivileged people as a necessary primary healthcare concept. Consequently, ensuring equality in healthcare access and utilisation has become a topical health policy matter, particularly in less developed economies where unequal healthcare access and distribution impede productivity and growth (Hosseinpoor *et al.*, 2015).

Worldwide, the availability of mobile phones has increased significantly in recent years, and this has been described as the leading form of communication. Mobile phone ownership is estimated at 85% across all Low-Middle Income Countries (LMICs) (Rowntree, 2019), with 75–95% of Africans (Silver and Johnson, 2018) and two-thirds of Asians estimated to own mobile phones. The World Bank (2017) acknowledges that in Africa, the mobile phone has emerged as the most important infrastructural development, and this goes beyond road networks and water systems, with several rural households possessing this digital device. The International

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Telecommunication Union (2019) estimates that the mobile-cellular subscription rate in Ghana is around 140% per 100 citizens. More than 36.6% of the population now has a mobile phone subscription (National Communications Authority, 2016), allowing for increased opportunities for interaction across a wide range of social media platforms.

These developments have invariably caused countries to adopt mobile phone-aided technology in endeavours such as health care, agriculture and education. Regarding healthcare, digital technology involving the use of mobile phone have been found to foster healthcare use (Braun *et al.*, 2013), as the sick normally depend on this technology to obtain information concerning healthcare (Krebs & Duncan, 2015). Thus, harnessing the actual capacity of mobile phones may prove to be a more effective mechanism for achieving global development goals. The third and fifth Sustainable Development Goals, which respectively aim to ensure healthy lifestyles and promote well-being for all at all ages and to achieve equality in gender via the empowerment of girls and women, can both benefit greatly from the use of this digital gadget (Agel *et al.*, 2016; Lutz, 2017), especially in LMICs.

The excitement and enthusiasm emanating from narratives to the effect that mobile phone technology can be a huge impetus for population health and tremendous avenues point to the fact that this technology should not go untapped (Agarwal & Labrique, 2014). Despite this enthusiasm, an important question as to how mobile phone diffusion exacerbates or bridge gender and locational inequalities in the utilisation of healthcare services have remained unanswered.

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Extant research interests in mobile phones commonly centre on health implications of mobile phone use (for example, brain tumors, stress, emotional instability and depression and sleep disorder, etc.) and disease prevention and management (for example spread of the Ebola virus, chronic disease management, etc); but virtually no research effort has been devoted to exploring the extent to which mobile phone account for gender and locational differences in health care use. The present research fills the knowledge gap by examining the role of mobile phone technology in accounting for male-female and rural-urban inequalities regarding the use of healthcare. This is to facilitate the adoption of broad-based health interventions that could help reduce inequalities in the use of healthcare services between urban and rural dwellers.

Descriptive Statistics

Results of descriptive statistics of the variables adopted to analyse the role of mobile phones in explaining gender and rural-urban differences in the utilisation of healthcare services are presented in table 16. From the results, 55.7% of households sampled consulted a health practitioner for treating illness or injury, and 8.53% were admitted. The descriptive results show that the mean age of the head of a household is about 46 years, and each household is made up of 4 persons on average. Males head about 69% of households, while females head about 31%. On average, about 79.15% of household heads were employed as against 20.85% who remain unemployed. Again, with respect to the national health insurance scheme, the results indicate that about 45% of household heads are enrolled. About 55% have not enrolled in the scheme.

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Regarding education, about 25% of household heads have no education, compared to about 75% with some level of education. Furthermore, about 19% of households are found in the first income quintile, with 81% of household heads falling within the second, third, fourth and upper tail of the income quintile. Also, 78% of households own mobile phones, as against 22% without mobile phones. What is emerging from the above is an indication that most Ghanaian households have access to mobile phones. This increase in access to and use of mobile phones may be a pointer to better information access with its attendant effect on the use of healthcare.

We observe from the descriptive statistics that about 40% of the household heads attended community meetings as against 60% who did not attend any community meeting. From the results, about 46% of household heads engaged in some form of voluntary activity, while 54% did not participate in any voluntary activity.

Results from the descriptive statistics show that about 83% of household heads trusted people in their community, and 98% indicated that they are respected in the community. It can be observed that about 57% of households reside in rural areas as compared to 43% who reside in urban areas of the country. Finally, about 10% of households are located in the Western region as against 90% of households in the Greater Accra, Central, Volta, Ashanti, Brong Ahafo, Northern, Upper East, and Upper West regions of the country.

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Table 16: Descriptive Statistics

Variable	Frequency	Percentage	Mean	Standard Deviation
Consultations			0.557	3.197
Admission				
Yes	1,195	8.53		
No	12,814	91.47		
Age			46.241	15.912
Hhsize			4.200	2.867
Gender				
Male	9,619	68.81		
Female	4,361	31.19		
Employment Status				
Employed	11,088	79.15		
Unemployed	2,921	20.85		
Health Insurance				
Yes	6,365	45.44		
No	7,644	54.56		
Education				
Uneducated	2,215	24.88		
Educated	6,686	75.12		
Wealth Quintile				
1st Quintile	1,665	18.62		
Other Quintiles	7,277	81.38		
Mobile Phone				
Yes	10,916	78.07		
No	3,066	21.93		
Meeting				
Yes	3,614	40.43		
No	5,324	59.57		
Volunteer				
Yes	4,071	45.95		
No	4,789	54.05		
Trust				
Yes	7,409	82.88		
No	1,530	17.12		
Residence				
Rural	7,991	57.04		
Urban	6,018	42.96		
Region				
Western	857	9.58		
Other Regions	8,085	90.42		

Source: Authors' calculations based on GLSS 7 data

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Role of Mobile Phone Technology in Accounting for Gender Inequality in Outpatient Healthcare Utilisation

Table 17 presents gender differential in the utilisation of healthcare. It reports the mean value of outpatient consultations of male and female household heads in Ghana and the variation between them. The contribution that is due to gaps in endowments (E), the coefficients (C), and the interaction (CE) are also displayed in Table 17. In Table 17, the threefold Blinder–Oaxaca decomposition of the mean outcome difference of outpatient healthcare utilisation levels by gender is presented. The endowment terms (E) connote the gaps that exist due to differences in the explanatory factors across groups (males and females). On the other hand, the coefficients (C) capture the part of the gap due to group differences in the estimated coefficients. The interaction (CE) involves some portion of the gap owing to cross-group contrasts in the explanatory variables and the coefficients that can occur simultaneously.

Table 17 shows that the mean value for outpatient healthcare utilisation of females and males was 0.617 and 0.293, respectively. We observe a gender gap with regard to the use of healthcare, and this favours female-headed households. This means the gap between male and female household heads when it comes to outpatient healthcare utilisation is 0.324. In the present study, the gap in coefficient (0.177) is responsible for a greater part of the gap in utilisation of outpatient care between male and female-headed households.

Table 18 reveals the extent to which the explained and unexplained portions of the gap in outpatient care utilisation differ as a result of the kind of decomposition adopted. From table 18, the first and second columns depict the

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Oaxaca decomposition in equations 6, where D=0 and D=1, respectively. Besides, columns three and four relate to Cotton's and Reimers' decompositions, where D equals 0.5 and 0.878, respectively. The final column labelled "*" corresponds to Neumark's decomposition. However, it should be noted that qualitatively, the main results do not change after calculating the counterfactuals in different ways in consonance with a study by Armah *et al*. (2016) and Armah *et al*. (2013).

Table 17: Summary of Decomposition Results on Gender

Mean Prediction High (Female):	0.617
Mean Prediction Low (Male):	0.293
Raw Differential (Gap) {H-L}:	0.324
Due to Endowments (E):	0.043
Due to Coefficients (C):	0.177
Due to Interaction (CE):	0.104

Source: Authors' calculations based on GLSS 7 data

The current study revealed that differences in the computation of counterfactuals do not change the main results qualitatively. Clearly, no matter the decomposition technique utilised, the difference in the mean values of the estimated coefficients or $\beta^{'s}$ (unexplained component) accounts for a greater portion of the difference in outpatient care utilisation between male and female household heads in Ghana. Based on the Oaxaca decomposition D=1, the unexplained component or estimated coefficients accounts for 54.7% of the variation in the mean values of outpatient care utilisation between the male and female household heads.

Considering Cotton's decomposition, variations in the mean values of $\beta^{'s}$ (gaps in coefficients) account for 70.7% of the differences in outpatient visits between male and female heads of the family. According to the results, about 58.6% and 70.2% of the differentials in outpatient care utilization

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between male and female household heads in Ghana are accounted for by the mean values of $\beta^{'s}$ based on Reimer's and Neumark's decompositions.

Table 18: Proportion of Explanined and Unexplained Components

D:	0	1	0.5	0.878	*
Unexplained (U) {C+(1-D)CE}:	0.281	0.177	0.229	0.190	0.096
Explained (V) {E+D*CE}:	0.043	00.147	0.095	0.134	0.228
% Unexplained {U/R}:	86.8	54.7	70.7	58.6	70.2
% Explained (V/R):	13.2	45.3	29.3	41.4	29.8

Source: Authors' computations based on GLSS 7 data

Thus, from table 18, all four decomposition techniques indicate that most of the outpatient care utilisation gender differences can be accounted for through mean values of the $\beta^{'s}$ (unexplained component).

The characteristics of the variables that help explain the difference between men and women's use of outpatient treatment are shown in Table 19. The gender disparity in male and female household heads' usage of outpatient treatment increases when variables with positive numbers are more common than those with negative ones. It was observed from the results that age squared, household size, health insurance, education, wealth and urban residence contributed to widening the overall unexplained gap in outpatient care between males and females for all four decompositions. On the other hand, ownership of a mobile phone, employment, participation in community meetings and voluntary activities and trust in community members contributed to reducing the unexplained gap.

Now, considering the Oaxaca decomposition with weight (D) 1, age, age square, household size, health insurance, education, wealth and urban residence contributed to widening the overall unexplained gap in outpatient care between male and female-headed households to the tune of 0.074, 0.073,

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0.134, 0.020, 049, 0.002 and 0.024 respectively. With respect to Cotton decomposition (weight=0.5), age squared, household size, health insurance, education, wealth, region, and urban residence contributed 0.082, 0.082, 0.018, 0.067, 0.004, 0.007 and 0.003 respectively in increasing the overall unexplained gap in outpatient care but age, mobile phone ownership, employment, meeting and trust contributed -0.012, -0.111, -0.016, -0.026 and -0.002 respectively in reducing the unexplained gap between male and female household heads.

Under Reimer decomposition (weight=0.878), age, age squared, household size, health insurance, education, wealth, urban residence and trust contributed 0.053, 0.075, 0.121, 0.020, 0.053, 0.003 and 0.020, respectively in exacerbating the unexplained gap in outpatient care use between male and female household heads. However, ownership of the mobile phone, employment status, region, meeting, participation in voluntary activities and trust contributed to decreasing -0.108, -0.021, -0.027, -0.035, -0.016 and -0.003, respectively, the unexplained gap in utilisation of outpatient care between male and female household heads.

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Table 19: Role of Mobile Phone in Accounting for Gender Inequality in Outpatient Care

Variables	E(D=0)	C	CE	1	0.5	0.878	*
Age	-0.097	0.073	0.171	0.074	-0.012	0.053	0.156
Age Square	0.090	0.102	-0.018	0.073	0.082	0.075	0.072
Household Size	0.030	-0.216	0.104	0.134	0.082	0.121	0.110
Mobile Phone	-0.115	-0.069	0.007	-0.108	-0.111	-0.108	-0.105
Health Insurance	0.016	0.026	0.004	0.020	0.018	0.020	0.020
Education	0.085	-0.013	-0.036	0.049	0.067	0.053	0.048
Wealth	0.006	-0.008	-0.004	0.002	0.004	0.003	0.006
Employment	-0.008	-0.195	-0.014	-0.023	-0.016	-0.021	-0.020
Region	0.042	0.217	-0.079	-0.036	0.003	-0.027	-0.023
Urban	-0.011	0.013	0.034	0.024	0.007	0.020	0.019
Meeting	-0.014	0.055	-0.025	-0.038	-0.026	-0.035	-0.036
Volunteered	0.020	0.128	-0.040	-0.021	-0.000	-0.016	-0.016
Trust	-0.002	0.030	-0.002	-0.003	-0.002	-0.003	-0.003
Constant	0.000	0.034	0.000	0.000	0.000	0.000	0.000
Total	0.043	0.177	0.104	0.147	0.095	0.134	0.228
Observations	5,958						

Source: Authors' calculations based on GLSS 7 data

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Finally, with Neumark decompositions (*) age, age squared, household size, health insurance, education, wealth and urban residence contributed 0.156, 0.072, 0.110, 0.020, 0.048, 0.006 and 0.019, respectively, in increasing the unexplained gap in outpatient care between male and female household heads. On the contrary, ownership of the mobile phone, employment, region, community meeting attendance, participation in voluntary activities and trust in community members contributed -0.105, -0.020, -0.023, -0.036, -0.016 and -0.003 in reducing the unexplained gap in outpatient care use between male-female household heads.

Table 20 presents the estimates of the coefficients, means and prediction for every explanatory variable (X's) for each group, higher (females) and lower (males) groups. By analysing columns 2 and 3 of table 19, we may determine how the gap in each of the β's contributes to the overall unexplained disparity in outpatient care use based on the first Oaxaca decomposition. In terms of the other decompositions, one may calculate the contribution of the individuals β's by subtracting the explained fraction given in table 20 from the group difference in the variable-specific predictions given in table 19.

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Table 20: Coefficients, Means and Predictions

	High (men)			Low (women)			Pooled
Variables	Coef.	Mean	Pred.	Coef.	Mean	Pred.	Coef.
Age	0.022	43.346	0.942	0.023	48.293	1.119	0.021
Age Square	-0.0002	131.171	-0.347	-0.0002	577.874	-0.522	-0.000
Household Size	-0.051	2.832	-0.144	-0.011	5.465	-0.062	-0.042
Mobile Phone	0.008	0.861	0.007	0.021	0.596	0.013	0.022
Health Insurance	0.326	0.436	0.142	0.257	0.374	0.096	0.313
Education	0.045	1.468	0.066	0.078	0.377	0.029	0.044
Wealth	0.026	3.975	0.105	-0.035	1.186	-0.041	0.056
Employment	-0.404	0.824	-0.333	-0.150	0.768	-0.115	-0.359
Region	0.019	3.346	0.064	-0.022	5.253	-0.117	0.012
Urban	0.053	0.614	0.033	-0.024	0.168	-0.004	0.043
Meeting	0.155	0.303	0.047	0.056	0.550	0.031	0.145
Volunteered	0.118	0.382	0.045	-0.113	0.556	-0.063	0.090
Trust	0.072	0.821	0.059	0.037	0.865	0.032	0.074
_constant	-0.070	1.000	-0.070	-0.103	1.000	-0.103	-0.204
Total			0.617			0.293	

Source: Authors' calculations based on GLSS 7 data

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Role of Mobile Phone Technology in Accounting for Locational Inequality in Outpatient Healthcare Utilisation

The mean values and disparities between urban and rural residents' outpatient care utilisation levels are shown in Table 21.

Table 21: Summary of Decomposition Results by Locality

Mean Prediction High (Urban):	0.618
Mean Prediction Low (Rural):	0.525
Raw Differential (Gap) {H-L}:	0.093
Due to Endowments (E):	0.090
Due to Coefficients (C):	0.074
Due to Interaction (CE):	-0.071

Source: Authors' calculations based on GLSS 7 data

The mean outpatient care utilisation value for urban household heads is 0.618, and that of rural is 0.525**.** Obviously, we observe a locational gap of 0.093 with respect to the use of outpatient health care, and it is in favour of urban households. From the results, the value for the endowments (E) is 0.090, while the value for coefficients (C) is 0.074, and that of the interaction (CE) is -0.071. Therefore, the gap in endowments (0.090) explains a greater portion of the utilisation of outpatient care between households in rural and urban areas.

Table 22 presents the decomposition into explained and unexplained aspects of the gap in utilisation of outpatient care in terms of the locality (urban and rural). The Oaxaca decomposition is represented by the first two columns of the output, with D=0 and D=1, respectively. Further, the third, fourth and fifth columns also relate to Cotton's, Reimers' and Neumark's decompositions, where D equals 0.5, 0.560 and the label "*" respectively.

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Table 22: Proportion of Explained and Unexplained Components

D:	0	1	0.5	0.560	*
Unexplained (U){C+(1-D)CE}:	0.004	0.074	0.039	0.043	0.023
Explained (V){E+D*CE}:	0.090	0.019	0.054	0.050	0.070
% Unexplained {U/R}:	4.0	20.5	41.7	46.3	24.8
% Explained (V/R):	96.0	79.5	58.3	53.7	75.2

Source: Authors' computations based on GLSS 7 data

It be seen from across all four decomposition estimations that the difference in the estimated mean values of the X's (explained component) accounts for the vast majority of the variance in outpatient care utilisation between urban and rural household heads in Ghana. Considering the results from table 23, the age of the household head contributed to reducing the explained gap in outpatient care between urban and rural dwellers to the tune of -0.055 (Cotton decomposition: weight = 0.5), -0.054 (Reimer decomposition=0.560) and -0.053 (Neumark decomposition *) respectively.

Focusing on the explained gap in outpatient utilisation, the contribution of age squared was -0.022(Oaxaca decomposition: weight (D) 1), 0.046 (Cotton decomposition: weight = 0.5), 0.038(Reimer decomposition=0.560) and 0.046(Neumark decomposition *).

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Table 23: Role of Mobile Phone in Accounting for Locational Inequalities in Outpatient Care

Variables	E(D=0)	C	CE	1	0.5	0.560	*
Age	-0.130	-1.961	0.135	0.005	-0.055	-0.054	-0.053
Age Square	0.115	1.012	-0.137	-0.022	0.046	0.038	0.046
Gender	0.009	-0.096	0.005	0.014	0.012	0.012	0.012
Household Size	0.009	-0.204	0.042	0.051	0.030	0.033	0.027
Mobile Phone	-0.050	0.018	-0.011	-0.061	-0.063	-0.056	-0.060
Health Insurance	0.014	-0.026	-0.003	0.011	0.012	0.012	0.012
Education	0.008	0.000	-0.000	0.008	0.008	0.008	0.008
Wealth	0.099	-0.315	-0.107	-0.009	0.045	0.039	0.053
Employment	-0.002	0.067	-0.017	-0.019	-0.011	-0.012	-0.015
Region	0.024	-0.128	-0.035	-0.011	0.006	0.004	0.014
Meeting	0.027	0.058	0.051	0.078	0.052	0.055	0.057
Volunteered	-0.032	-0.027	0.013	-0.019	-0.025	-0.025	-0.027
Trust People	-0.001	0.088	-0.006	-0.007	-0.004	-0.004	-0.004
Constant	0.000	1.588	0.000	0.000	0.000	0.000	0.000
Total	0.090	0.074	-0.071	0.019	0.054	0.050	0.070
Observations	4,350						

Source: Authors' calculations based on GLSS 7 data

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From the results, the contribution of gender to the explained gap in outpatient care use among urban and rural households is positive for all four decomposition techniques. Being a male household head contributed to exacerbating the explained gap in the use of outpatient care by 0.014(Oaxaca), 0.012(Cotton), 0.012(Reimer) and 0.012(Neumark). In the case of household size, the contributions under all four decomposition techniques were positive, indicating that this variable contributed to widening the explained gap in the use of outpatient care among households in urban and rural areas. We found household ownership of mobile phones to cause a reduction in the explained gap in outpatient health care use under all four decomposition techniques. In particular, mobile phones decreased the explained gap in outpatient healthcare use by 0.061(Oaxaca), 0.063(Cotton), 0.056(Reimer) and 0.060(Neumark), respectively.

Health insurance was found to increase the explained gap in outpatient care utilization under all four decomposition techniques. Specifically, health insurance increased the explained gap by 0.011(Oaxaca), 0.012(Cotton), 0.012(Reimer) and 0.012(Neumark). Besides, educational attainment increased the explained gap in the utilization of outpatient healthcare by 0.008(Oaxaca), 0.008(Cotton), 0.008(Reimer) and 0.008(Neumark).

The contribution of wealth to the explained gap in outpatient care use between urban and rural dwellers was negative in the case of Oaxaca(-0.009) but positive for Cotton(0.045), Reimer(0.039) and Neumark(0.053) decompositions respectively. Also, employment status was observed to increase the explained gap in outpatient care use. Being employed contributed

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to reducing the explained gap in outpatient healthcare utilization by 0.019(Oaxaca), 0.011(Cotton) and 0.012(Reimer) and 0.015(Neumark).

Region of residence is seen to decrease the explained gap in outpatient care utilization to the tune of -0.015(Oaxaca) but increased the gap by -0.006(Cotton), -0.004(Reimer), and -0.016(Neumark), respectively. Further, the contribution of attendance at community meetings was found to increase the explained gap in outpatient care utilisation between urban and rural households by 0.078(Oaxaca), 0.052(Cotton), 0.055(Reimer) and 0.057 (Neumark). Again, participation in voluntary activities contributed -0.019 (Oaxaca), -0.025(Cotton), -0.025(Reimer) and -0.027(Neumark) respectively, in reducing the explained gap with respect to outpatient care use among households in urban and rural settings.

Finally, it was observed from the study that trust in community members decreased the explained gap in outpatient healthcare between urban and rural households by -0.007(Oaxaca), -0.004(Cotton), -0.004(Reimer) and -0.004(Neumark) respectively. From table 24, we observe that the estimates for the coefficients, means and prediction of each explanatory variable (X's) for every group, higher (urban) and lower (rural), are presented.

Looking at the initial Oaxaca decomposition, columns 2 and 3 of table 23 helps to recognize the extent to which the gap in each of the β's contributes to the general unexplained gap of outpatient care utilisation. In the case of the other decompositions, the contribution of the individual β's can be obtained by subtracting the explained portion given in table 24 from the group difference in the variable-specific predictions given in table 23.

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Table 24: Coefficients, Means and Predictions

	High (Urban)			Low (Rural)			Pooled
Variables	Coef.	Mean	Pred.	Coef.	Mean	Pred.	Coef.
Age	-0.002	42.564	-0.068	0.041	45.716	1.888	0.019
Age Square	0.000	2044.999	0.141	-0.000	2364.947	-0.848	-0.000
Gender	-0.414	0.594	-0.246	-0.261	0.629	-0.165	-0.345
Household Size	-0.070	2.831	-0.198	-0.013	3.562	-0.045	-0.037
Education	0.099	1.678	0.167	0.034	0.898	0.031	0.073
Health Insurance	0.220	0.450	0.099	0.285	0.402	0.115	0.250
Employed	-0.328	0.807	-0.264	-0.328	0.831	-0.273	-0.340
Wealth	-0.008	4.092	-0.034	0.095	3.053	0.290	0.051
Region	0.018	3.113	0.057	0.002	4.171	0.009	0.014
Mobile Phone	-0.057	0.916	-0.053	0.120	0.719	0.086	0.073
Meeting	0.198	0.198	0.039	0.162	0.505	0.082	0.172
Volunteered	0.074	0.291	0.021	0.124	0.547	0.068	0.105
Trust People	0.113	0.800	0.090	0.010	0.859	0.009	0.076
_constant	0.867	1.000	0.867	-0.722	1.000	-0.722	0.003
Total			0.618			0.525	

Source: Authors' calculations based on GLSS 7 data

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The Role of Mobile Technology in Explaining Gender Inequality in the Use of Inpatient Healthcare

The gender gap or difference in utilization of inpatient care among households which is decomposed further according to the contribution of each explanatory variable, is presented in table 25. In addition, table 25 presents results on the likelihood of using inpatient healthcare for our sample of male and female-headed households. We observe that the predicted likelihood of using inpatient healthcare was 0.073 for men and 0.103 for women. Therefore, this shows that a difference of 0.029 exists between these two groups.

We observe from the results that household size, health insurance, wealth, region of residence, ownership of mobile phones and trust in community members significantly explained gender inequalities in inpatient healthcare utilisation. Health insurance made the largest positive significant contribution to existing gender disparities in inpatient healthcare utilisation, suggesting that if women have similar insurance characteristics to men, inpatient care use would have increased for women, thereby reducing the disparity by 43.1%.

Mobile phone ownership made the second largest positive significant contribution to gender inequalities in utilisation of inpatient healthcare, implying that if women possess the same mobile phone use and ownership characteristics as men, utilisation of inpatient care will increase for women, hence reducing inequality by about 24.0 percentage points. Household wealth is the third largest significant contributor to gender inequality concerning inpatient care use, followed by household size, region of residence and attendance of community meetings.

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Table 25: Mobile Technology and Gender Inequality in Inpatient Healthcare Use

Probability of Receiving Inpatient care by Women			**0.10307084**
Probability of Receiving Inpatient care by Men			**0.07318405**
Difference in Inpatient care use			**0.02988679**
Variable	**Estimate**	**Standard Error**	**Present**
Age	-0.0025	0.0036	-9.1538
Age2	0.0026	0.0035	9.5399
Household size	-0.0029*	0.0017	-12.6623
Education	0.0007	0.0017	2.0408
Health Insurance	0.0077***	0.0018	43.105
Employed	0.0001	0.0006	0.3424
Wealth	0.0039*	0.0022	22.3488
Urban	-0.0004	0.0011	-1.0304
Region	0.0018*	0.0008	6.0312
Mobile Phone	0.0038**	0.0014	24.0287
Meeting	0.0012*	0.0006	3.4335
Volunteered	-0.0011	0.0014	-2.0408
Trust People	-0.0013	0.0012	-4.8030
Observations	7,958		

***p<0.01, **p<0.05, *p<0.1
Source: Authors' calculations based on GLSS 7 data

In particular, household wealth, household size, and region of residence made 22.3%, -12.7%, 6% and 3.4% contributions to gender disparities in healthcare use. Though insignificant, age squared, educational attainment and employment status positively contributed to disparities in inpatient care utilization. Thus, age squared, educational attainment, and

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employment status contributed to exacerbating the inequalities in inpatient care utilisation between male and female household heads by 9.5%, 2.0% and 0.34%, respectively.

On the contrary, the age of the household head, urban residence, participation in voluntary activities and trust in community members contributed negatively to the existing gender disparities in inpatient care use. Specifically, the age of the household head, urban residence, participation in voluntary activities and trust in community members contributed to reducing inequalities in the utilisation of inpatient visits between male and female household heads by -9.2%, -1%, -2% and -4.8%, respectively.

Role of Mobile Technology in Explaining Locational Inequality in the Use of Inpatient Healthcare

Table 26 presents the results of the rural-urban gap or inequalities in the use of inpatient care among households. The results show that the estimated probability of utilising inpatient care was 0.0868 for rural and 0.0812 for urban households. This demonstrates that a gap of 0.0056 exists among urban and rural dwellers regarding inpatient healthcare utilisation. Also, the results show that gender, household size, health insurance, wealth quintile, mobile phone and trust significantly explained rural-urban inequalities in inpatient healthcare utilization.

Again, our study results reveal health insurance as making the largest positive contribution to rural-urban inequalities in inpatient care utilisation. This suggests that if rural households have similar health insurance characteristics as their urban counterparts, utilisation of inpatient healthcare

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services would have increased for rural households, thereby reducing the disparity by 34.8%.

Table 26: Mobile Technology and Localitional Inequality in the Use of Inpatient Healthcare

Probability of Receiving Inpatient Care by Rural Households			**0.08683303**
Probability of Receiving Inpatient Care by Urban Households			**0.0812354**
Difference in Inpatient Care Use			**0.00559763**
Variable	**Estimate**	**Standard Error**	**Present**
Age	-0.0013	0.0017	-1.8104
Age2	0.0018	0.0015	2.4432
Gender	0.0015*	0.0008	1.9432
Household size	-0.0039**	0.0012	-10. 8104
Education	0.0023	0.0023	3.4432
Health Insurance	0.0077*	0.0033	34.8430
Employed	0.0002	0.0002	0.5344
Wealth	0.0026**	0.0007	5.2824
Region	0.0028	0.0030	7.0323
Mobile Phone	0.0138**	0.0044	19.7252
Meeting	-0.0011*	0.0004	-1. 1612
Volunteered	-0.0010	0.0021	-0.9106
Trust People	-0.0003	0.0023	-0.6344
Observations	9,569		

***p<0.01, **p<0.05, *p<0.1
Source: Authors' calculations based on GLSS 7 data

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Consistently, household ownership of mobile phones made the second largest positive significant contribution to locational inequalities in the utilization of inpatient healthcare, implying that if rural households possess similar mobile phone use and ownership characteristics as their urban counterparts, utilisation of inpatient care will increase for rural households thereby leading to a reduction in inequality by about 19.7 percentage points.

Region of residence made the third largest positive contribution though statistically insignificant, to rural-urban inequalities in the utilization of inpatient healthcare, implying that if rural households had similar regional features to urban dwellers, the use of inpatient healthcare services would have increased for rural households resulting in a reduction in the rural-urban gap in inpatient healthcare utilisation by 7.03 percentage points. This is followed by educational attainment and age squared, making 3.44% and 2.44% contributions to the observed rural-urban inequalities in inpatient visits. Significantly, gender contributed 1.94% to the rural-urban inequalities in inpatient care utilization.

We observe that household size contributes significantly but negatively to rural-urban inequalities in inpatient healthcare services use. This indicates that if rural households possess similar household characteristics as their urban counterparts, inpatient care utilization will decrease for rural households, thereby exacerbating inequality by -10.81 percentage points. Additionally, variables such as age, attendance at community meetings, participation in voluntary activities and trust in people from the community contributed to reducing the gap in inpatient care utilisation among rural and urban dwellers by -1.8104, -1.1612, -0.9106 and -0.6344 percentage points respectively.

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Discussion

This chapter of the thesis sought to analyse the effect of technology diffusion on inequalities in outpatient and inpatient care utilisation. The study used both linear and nonlinear Blinder-Oaxaca decomposition techniques to analyse the influence of technology diffusion measured in terms of mobile phone ownership on disparities in outpatient and inpatient healthcare use between male-female household heads and rural-urban households.

In the first instance, four counterfactual decomposition techniques were used to examine the extent to which technology diffusion accounts for inequalities in outpatient healthcare utilisation across male and female-headed households and rural-urban households in Ghana. The gap in outpatient and inpatient healthcare services between these groups was divided into a portion that is due to group differences in the levels of explanatory variables (covariate effects or explained component) as well as an aspect that is due to differences in magnitudes of the regression coefficients (coefficient effects or unexplained component). This is essential in formulating appropriate strategies, measures, and policies to help ameliorate healthcare use inequalities.

Overall, the gap in utilisation of outpatient healthcare services between male and female-headed households is mainly due to differences in magnitudes of regression coefficients instead of the levels of explanatory variables. By implication, the unexplained part of the mean gap in utilization of outpatient care among male and female household heads may be attributed to discrimination in outpatient utilisation. However, unobserved variables may also account for this discrimination.

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As a result, the gender gap in healthcare utilisation could not be closed even if we improve the explanatory factors. Instead, interventions should focus on increasing the use of outpatient care among male and female families through behavioural and awareness-building programmes that boost the effect of the coefficient. We observed that differences in the mean values of the levels of explanatory variables, rather than changes in the magnitudes of regression coefficients, account for a higher proportion of the disparity in outpatient healthcare service utilisation between rural and urban families.

The contribution of each variable to the whole explained gap based on different decomposition techniques points to each variable's relevance in the model. In particular, technology diffusion measured by mobile phone ownership made the largest contribution to overall unexplained and explained gaps in outpatient healthcare utilisation between males and females and urban and rural households. Specifically, mobile phones alone accounted for 73.5% (Oaxaca's decomposition), 116.8% (Cotton's decomposition), 80.6% (Reimer's decomposition) and 46.1% (Neumark's decomposition) of the whole unexplained gap in outpatient care utilization between male and female household heads.

Regarding explained gaps in outpatient healthcare utilisation between urban and rural households, mobile phones accounted for 321.1% (Oaxaca's decomposition), 116.7% (Cotton's decomposition), 112% (Reimer's decomposition) and 85.7% (Neumark's decomposition) respectively. Additionally, the non-linear decomposition models found the existence of gender and rural-urban inequalities in inpatient healthcare utilisation with a mobile phone as a major driver of inequalities in utilisation of inpatient

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healthcare. The above lays credence to the importance of mobile phones in reducing the gap in utilisation of outpatient healthcare services between male and female-headed and rural-urban households.

The significant contribution of the mobile phone in reducing inequalities in outpatient care may be explained by its wide usage and ability to perform different functions, including sending messages, payment, internet, video, etc. The interactive functionality of mobile phones may help reduce opportunity costs, including travel time to health facilities, facilitate access to health-related information, etc. Thus, there could be a significant improvement in access to and use of healthcare, especially in resource-constrained environments and that segment of the population that may otherwise be left behind.

In low-middle-income countries, studies have found mobile phone calls and text messages in healthcare delivery to increase the probability of visiting clinics (Guy *et al.*, 2012; Beratarrechea *et al.*, 2014; Percac-Lima *et al.*, 2016). Besides, digital communication has created interpersonal relationships between health workers and patients in low-resource settings (Hoffman et al. 2010; Leon et al. 2015), resulting in enhanced healthcare service use. Ultimately, mobile phone adoption and acceptability contribute to achieving global health agendas such as universal health coverage by addressing healthcare disparities among the privileged and underprivileged, including well-endowed and resource-constrained settings (Budd *et al.*, 2020).

In Ghana, the Government is devoted to digitizing healthcare systems and expanding mobile networks, especially in rural areas (UNDP, 2013). This is imperative since the ability of the healthcare delivery system to provide

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effective and accessible healthcare is constrained by inadequate health infrastructure, travelling long distances for healthcare, lack of good roads, etc., which may lead to disparities in healthcare utilisation. Therefore, the increased penetration of mobile phones coupled with their innovativeness in Ghana may be an effective mechanism for facilitating healthcare provision and reducing the gap in healthcare accessibility and utilisation.

The Mobile Technology for Community Health (MOTECH) programme was launched in 2009 as a direct response to this problem of inequality in healthcare utilisation. The goal of MOTECH is to use mobile technology to increase client understanding of vital health issues, thereby promoting positive behaviour change and the appropriate, timely utilisation of healthcare services.

Apart from mobile phones, the age of the household head, education, wealth and participation in community meetings were found to significantly contribute to the explained gap in patient healthcare utilisation care between urban and rural households. The above finding points to the vital role of the socioeconomic, health system and social capital variables in enabling or impeding the use of outpatient care. Educated individuals are better placed to obtain good employment opportunities and earn higher incomes, making them use more healthcare services since they can afford them.

In urban centres, where most educational institutions are concentrated with better employment avenues, income levels are much better compared to rural settings. This makes healthcare access and utilisation higher in urban areas, resulting in disparities in healthcare use between urban and rural dwellers. Although various governments have sought to build more health

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facilities in Ghana, accessing healthcare has been constrained by insufficient and lack of balance in the skill mix of the needed health professionals (Ministry of Health MOH, 2016). This is partly a result of inequitable health facilities and worker allocation among urban and rural dwellers.

Social capital offers an opportunity for individuals to interact among themselves in a community as well as different heterogeneous groups of people, and this may positively influence healthcare utilisation by making information about modern preventive healthcare services readily available (Vickram *et al.*, 2012) and enhancing access to these services and other health resources (Kawachi & Berman, 2000). However, Paek *et al.* (2008) observed social capital to negatively influence family planning behaviors due to pre-existing societal norms and values that do not motivate people to use family planning methods. By way of policy, initiatives that facilitate and expand heterogeneous networks would help less endowed households with limited resources and access health services, thereby reducing healthcare inequities (Caroll, 2001; Wakefield & Poland, 2005).

Further, in the male-female non-linear decomposition model, we found health insurance, mobile phone, household size, wealth and attendance at community meetings to be significant drivers of inequalities in inpatient healthcare utilization. The rural-urban non-linear decomposition model also revealed health insurance, mobile phone, household size, wealth and attendance at community meetings as the significant drivers of disparities in inpatient healthcare use. Our study revealed health insurance as the biggest significant positive driver of gender and locational inequalities in inpatient healthcare services. Health insurance has been recognised as one of the

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important means of financing healthcare to achieve Universal Health Coverage, especially in resource-constrained environments.

In most communities in Ghana, women are expected to be submissive to men in terms of household decision-making including decision on who should take custody of resources. Men, therefore, appear to have control over household resources hence the capacity of women to access healthcare depends on men. This hinders access to and use of healthcare by women who generally experience poor health conditions coupled with their reproductive role which use of more healthcare than men. Thus, enrolment of women unto the national health insurance will position them to access and use the required healthcare services they need without having to depend on men. This will help bridge the gap between male and female in terms of healthcare utilisation.

It has been observed that a major challenge which inhibits people living in rural areas from accessing healthcare is their inability to afford the cost of healthcare (Lu et al, 2010). This may be due to low-income levels of rural dwellers because of low economic activities in such areas compared to urban centres. By pooling resources together, national health insurance provides financial risk protection for majority of the population especially people from rural areas and the urban poor to access healthcare thereby reducing the rural-urban inequality in healthcare utilisation. Hence, policy initiatives geared towards equality in health insurance enrollment should be paramount to facilitate health equity in Ghana, no matter where people are located and their gender.

The other contributor to both male-female and rural-urban gaps in inpatient care utilisation was participation in community meetings. The study

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found participation in community meetings to significantly reduce both male-female and the rural-urban gap in inpatient care use. Regular attendance at community meetings is likely to offer opportunities for people to interact with heterogenous groups, thereby leading to the exchange of information on the availability of healthcare services, which may increase healthcare services utilisation. This resonates with a study that observed that individuals who participate actively in formal groups or social activities are less likely to face problems when accessing healthcare than those who do not engage in such activities (Islam, 2019).

Like many African countries, social capital has been recognized as an integral part of community life in Ghana (Arhinful, 2003). Strong social bonds exist in extended families where patriarchs preside over critical decisions (Arhinful, 2003). Furthermore, in rural and urban areas, well-organised community groupings, include women groups, church organisations, professional bodies groups and savings groups. Notably, these community social structures serve as important mechanisms in decision-making, including healthcare decisions (Erikson, 2011; Gilson, 2003).

Besides, our study found the household size to significantly close the gender gap with respect to inpatient care utilisation. Thus, most women in the household are gainfully employed and can afford healthcare rather than rely on men for their healthcare needs. The present study, however, found household wealth to exacerbate the gender gap with respect to inpatient care use, and this may be understood by the wide or greater income disparity between men and women.

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Finally, the region of residency expanded the disparity between urban and rural people in terms of healthcare usage. This may be due to differences in the areas where people reside, such as resource endowment, work prospects, the concentration of healthcare services, etc. For many years, one of the most effective measures for increasing access to healthcare in Ghana has been improving healthcare delivery. Even though Ghana has made great strides in this direction, policy strategies aimed at building an equitable healthcare system in the country should put more emphasis on expanding the geographical coverage of healthcare delivery and ensuring that it is evenly distributed across all regions, districts, and localities, with a particular emphasis on developing the capacity for healthcare delivery in areas with low standards of living.

Conclusion

Based on various decomposition techniques, this thesis chapter sought to examine the effect of technology diffusion on gender and rural-urban disparities in the utilization of outpatient and inpatient healthcare. This is aimed at informing and guiding policies targeted at minimising inequalities in healthcare use in Ghana. In the linear decompositions, the gender disparity in outpatient utilisation was mostly attributable to variations in the coefficient magnitudes (unexplained), whereas the rural-urban disparity is explained primarily differences in the level of determinants (endowments or explained).

Regardless of the decomposition technique used, less than 46% of the gender disparity may be explained by changes in the strength of determinants. The implication is that gender inequalities in the use of outpatient care may not be sufficiently addressed by initiatives that would raise the level of

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determinants. To close the gender gap in outpatient care utilisation, interventions that would promote behavioural change are required. Since differences in the level of determinants primarily accounted for the rural-urban disparity in the use of outpatient care, policy interventions that involve mobile network expansion to cover all rural areas in the nation and the creation of a special airtime or call credit regime by telecommunications companies to support the poor and vulnerable in society, particularly rural residents, as a form of social responsibility, should be pursued. This is due to the fact that to a very large extent, technology diffusion was found to account for significant gender and locational gaps in healthcare utilization. Besides, redistribution of wealth and healthcare resources in deprived settings will likely reduce rural-urban inequalities in outpatient care utilisation.

Based on the non-linear decomposition, technology diffusion significantly influences gender and a rural-urban gap in inpatient healthcare utilisation. Following from the above, health systems or health providers could adopt more current media options, such as mobile telephony channels, to disseminate relevant information on the location and availability of healthcare services to people in need. Information of this kind is likely to expose users to various healthcare options and stimulate the utilisation of healthcare services, thereby bridging disparities in healthcare use. This is relevant, especially in the face of high mobile phone penetration in Ghana's rural and urban areas.

Also, possession of health insurance and region of residence participation in community meetings significantly influenced gender and the locational gap in inpatient care utilisation. Policy strategies that minimise or close these gaps should seek to ensure equality in national health insurance

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enrollment and make health services accessible, especially in rural settings, by expanding coverage of healthcare facilities and their even distribution based on population.

Finally, significant social capital, including participation in community meetings, should be facilitated by way of appropriate policy in such a manner that is in accordance with the values of the people. This is likely to impact healthcare decisions and reduce inequalities in the utilization of healthcare services.

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CHAPTER EIGHT

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This section entails a summary of the whole thesis and presents the key findings of the empirical research on socioeconomic inequalities in healthcare utilisation in Ghana. This chapter consists of five sections: summary, conclusions, recommendations, limitations of the study and implications for further studies.

Summary

The main of objective of this thesis is to explore socioeconomic inequalities in the utilisation of healthcare services in Ghana. Specifically, the thesis sought to:

i. examine the nature of socioeconomic inequalities in the use of outpatient and inpatient healthcare.
ii. analyse the influence of physical, human and social capital on socioeconomic inequalities in the utilisation of outpatient and inpatient health care.
iii. assess the role of technology diffusion in explaining gender and rural-urban inequalities in the use of outpatient and inpatient health care.

This study adopted the quantitative approach and is cross-sectional by design. Hence, the study is underpinned by the positivist philosophy within the tenets of liberal economics. The analyses used data from the 2013 and 2017 Ghana Living Standards Surveys. In addition, information on health facilities and personnel were obtained from the Ministry of Health (MoH).

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The first objective, which focused on the nature of socioeconomic inequalities in outpatient and inpatient healthcare, was measured by concentration curves and concentration indices using three socioeconomic status variables: wealth index, log of per capita consumption expenditure and educational attainment. We found pro-rich inequality regarding outpatient and inpatient visits in 2013 and 2017. The generalised decomposition technique based on RIF regressions recently developed by Heckley *et al.* (2016) was applied to analyse the causes of socioeconomic inequalities in healthcare use.

It was found that age, being a woman in charge of the home, and work status exret significant positive impact on pro-rich disparities in healthcare when decomposition analysis based on household wealth quintile was used. The pro-rich disparities in the use of healthcare services were, however, considerably negatively impacted by having national health insurance, having a college degree, and having wealth. According to the decomposition based on consumption expenditure , age of the household head, being a female household head, and living in an urban area are positively associated with inequalities in healthcare services. However, enrollment in national health insurance and educational attainment was found to be negatively associated with inequalities in healthcare services.

The study discovered that the gender of the household head, having access to national health insurance, and having a particular religion were all positively associated with disparities in health care use when the decomposition was done using educational attainment as an indicator of living standards. Contrarily, differences in the usage of healthcare services were negatively impacted by age, household wealth, and work status.

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The second objective was to analyse how different types of capital—physical, human, and social—affect socioeconomic disparities in healthcare utilization. Using the Wagstaff decomposition method, we assessed the impact and extent to which these kinds of capital account for socioeconomic gaps in healthcare utilisation. According to the study, physical and human capital exacerbated wealth-related disparities in outpatient and inpatient care usage. Also, the study revealed physical and human capital to play influential roles in widening consumption-related inequalities in connection with outpatient and inpatient visits but contributed to reducing education-related disparities with respect to the use of outpatient and inpatient care, respectively.

Further, the study revealed that all indicators of structural social capital, expressed as attendance at meetings and participation in voluntary activities, contributed to reducing wealth-related inequalities in outpatient care utilisation. Consistent with our findings from wealth-related inequalities, we realise that all indicators of structural social capital contributed to reducing the consumption-related disparities in the utilisation of outpatient care. However, indicators of structural social capital contributed in exacerbating wealth related inequalities regarding the use of inpatient healthcare but resulted in reducing consumption related inequalities inpatient care use. We discover that structural social capital indicators contribute positively, highlighting their role in escalating education-related disparities in the use of both outpatient and inpatient treatment.

Additionally, the study indicated all indicators of cognitive social capital measured in terms of trust in members of a community and respect contributed in reducing wealth and consumption-related disparities in the use

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of outpatient care. However, trust in community members and respect contributed in increasing education-related inequalities in outpatient. In our observation, these measures of cognitive social capital exacerbate wealth- and consumption-related disparities in the utilisation of inpatient healthcare. Contrarily, the combined impact of measures of cognitive social capital led to a decrease in education-related disparities in the utilisation of inpatient treatment.

Finally, our study considered the effect of technology diffusion on gender and rural-urban inequalities concerning the use of healthcare. The Blinder-Oaxaca linear decomposition methods were applied to estimate and decompose the gap in the utilisation of outpatient healthcare services between male-female household heads and rural-urban households. However, gender and rural-urban inequalities in the use of inpatient healthcare were analysed using the current extension of the Blinder-Oaxaca decomposition technique for non-linear dependent variables. It was revealed that the gap in utilisation of outpatient healthcare services between male and female-headed households was mainly accounted for by differences in magnitudes of the coefficients instead of the levels of explanatory variables.

With respect to rural-urban households, the study showed that variations in the mean values of the explanatory variables are responsible for a greater portion of the gap in the utilisation of outpatient healthcare services between rural and urban households. The non-linear decomposition indicated the existence of gender and rural-urban inequalities in inpatient healthcare utilisation. The gender and locational decomposition models found mobile phone technology to be the major driver of disparities in healthcare use. Other

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drivers of inequalities include household size, health insurance, wealth and attendance at community meetings.

Conclusions

Based on the study results and findings, it is concluded that there are pervasive pro-rich inequalities in the use of outpatient and inpatient healthcare services. The decomposition analysis demonstrates significant contributions of age, gender, income, education and insurance to socioeconomic inequalities in outpatient and inpatient healthcare utilisation.

Also, the study concludes that physical (healthcare facilities), human (health workforce) and social capital are very important in explaining socioeconomic inequalities in the use of healthcare in Ghana.

Finally, the thesis concludes that mobile phone technology significantly contributed to the explained gender and rural-urban inequalities in healthcare utilisation.

Recommendations

The following suggestions are offered as a result of the findings and conclusions presented in this thesis.

The study found pro-rich inequalities in the use of outpatient and inpatient healthcare services.. Thus, the Ministry of Health and Ghana Health Service should prioritise improving access to healthcare service especially for the vulnerable and the poor in soceity.

The study found that possession of health insurance significantly influences inequalities in healthcare use. Therefore, the study recommends that the Ministry of Health and Ghana Health Service introduce policy initiatives geared towards ensuring equality in enrollment in the health

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insurance scheme to help reduce health equity in Ghana, no matter where people are located and their gender. This can be achieved by removing or eliminating all barriers that hinder vulnerable groups and the rural poor from enrolling in the scheme. This may call for periodic and holistic assessment of the opportunities and challenges inherent in the scheme's operations to effectively improve operations to serve its intended purposes.

Further, physical, human and social capital were observed to be vital in accounting for disparities in healthcare use. Thus, the Ministry of Health and Ghana Health Service should place emphasis on directing appropriate investments to ensure targeted and progressive development and expansion of various forms of healthcare infrastructure and training of medical professionals and ensure that they are equitably distributed in the regions, districts and localities, focusing on developing the delivery capacity of the healthcare system, especially in disadvantaged settings.

Besides, it is recommended that the National Commission for Civic Education should introduce initiatives that facilitate or promote diverse and heterogeneous social relationships and networks that are beneficial, especially for deprived households with limited resources and access to healthcare.

Further, the Ministry of Gender. Children and Social Protection should come out with policy initiatives to mitigate gender-based discrimination regarding healthcare utilisation.

Finally, the study found mobile phone technology to significantly reduce disparities in healthcare use. Therefore, by way of recommendation, the Ministry of Communications should put measures to expand the mobile network to cover all rural areas in the country. Again, the Ministry of

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Communications should facilitate and provide a policy environment that would motivate Telecommunications Companies to develop special airtime or call credit regimes to support the poor.

Limitations of the Study

Even though secondary data sets were used in the present study, they are cross-sectional data, limiting the ability to draw causal inferences accompanied by good reasoning and logic to validate the findings.

Besides, recall bias is bound to occur as study subjects would provide information on previous happenings regarding their use of healthcare services.

Again, the analysis in this thesis is relatively static, allowing to compare different variables at the same time.

Implications for Further Inquiry

The current thesis is concerned with exploring socioeconomic inequalities in the use of healthcare. To a large extent, this research gives a description or expatiated on a number of possible variables, including mechanisms that contributed to differences in healthcare use. Based on the findings of this study, some policy implications and actions, this thesis has identified the following research areas:

The current thesis attempted to analyse inequality in healthcare utilization based on wealth, consumption and education as socioeconomic status dimensions. Future studies can employ more socioeconomic status dimensions, such as employment and social class, in the analyses.

Furthermore, future research should endeavour to use a common index to compute the total socioeconomic disparity in healthcare utilisation

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compared to the contribution of every socioeconomic status to the whole inequality.

Besides, future studies could focus on researching disparity in unmet healthcare needs, which has not received the attention of researchers.

Finally, a study into inequality in healthcare, which entails the life-course dimension, could reveal a deeper understating of the inequality level in Ghana's healthcare delivery system.

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APPENDICES

Appendix 1: Odd Ratios of Logit Analysis of Outpatient and Inpatient care use

Variable	Outpatient	Inpatient
Age	1.0194***(0.0025)	1.0145***(0.0030)
Gender (Ref: Male)		
Female	0.5364***(0.0407)	0.8386*(0.0823)
Employment (Ref: Unemployed)		
Employed	0.6969**(0.0778)	0.5338***(0.0690)
NHIS (Ref: No)		
Yes	1.5347***(0.1123)	2.5965***(0.2581)
Wealth Quintile (Ref: First)		
Second	1.8456***(0.1703)	1.4041**(0.1620)
Third	1.5332***(0.1593)	1.7197***(0.2110)
Fourth	1.8264***(0.1983)	2.5741***(0.3217)
Fifth	2.2709***(0.2804)	2.2582***(0.3487)
Education (Ref: No Education)		
Basic	1.2051*(0.1092)	0.9177(0.0996)
Secondary	1.1112(0.1052)	0.8531(0.0963)
Tertiary	1.0533(0.1490)	0.4205***(0.0821)
Religion (Ref: No Religion)		
Christianity	1.4403*(0.2076)	1.2997(0.2287)
Islam	1.4855*(0.2271)	1.3616*(0.2491)
Traditional	1.5306(1.1954)	2.3467(1.9045)
Residence (Ref: Rural)		
Urban	0.8339*(0.0621)	1.0349(0.0926)
Region (Ref: Western)		
Central	0.5580***(0.0912)	0.8111(0.1792)
Greater Accra	0.4601***(0.0774)	0.3842***(0.0978)
Volta	1.1344(0.1478)	2.2920***(0.3764)
Eastern	1.0640(0.1434)	0.9229(0.1812)
Ashanti	1.0724(0.1366)	1.0376(0.1851)
Brong Ahafo	0.6348**(0.0916)	1.0276(0.1875)
Northern	0.8509(0.1219)	1.4586*(0.2620)
Upper East	1.6990***(0.2288)	2.8624***(0.4877)
Upper West	0.7686*(0.1186)	1.1395(0.2203)
_Cons	0.0426***(0.0108)	0.0175***(0.0055)
	Number of obs = 11,483	Number of obs = 11,411
	Prob > chi2 = 0.0000	Prob > chi2 = 0.0000
	Pseudo R2 = 0.0598	Pseudo R2 = 0.0816
	Log likelihood = -3647.3256	Log likelihood = -2622.9401

Source: Author's Computations based on GLSS 7 data

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Appendix 2: Marginal Effects of Logit Analysis of Outpatient and Inpatient care use

Variable	Outpatient	Inpatient
Age	0.0017***(0.0002)	0.0009***(0.0002)
Gender (Ref: Male)		
Female	-0.0563***(0.0069)	-0.0107*(0.0060)
Employment (Ref: Unemployed)		
Employed	-0.0326**(0.0101)	-0.0382***(0.0079)
NHIS (Ref: No)		
Yes	0.0387***(0.0066)	0.0581***(0.0062)
Wealth Quintile (Ref: First)		
Second	0.0554***(0.0084)	0.0207**(0.0070)
Third	0.0386***(0.0094)	0.0330***(0.0075)
Fourth	0.0544***(0.0098)	0.0575***(0.0077)
Fifth	0.0741***(0.0112)	0.0496***(0.0095)
Education (Ref: No Education)		
Basic	0.0169*(0.0082)	-0.0052(0.0066)
Secondary	0.0095(0.0086)	-0.0097(0.0069)
Tertiary	0.0047(0.0128)	-0.0527***(0.0119)
Religion (Ref: No Religion)		
Christianity	0.0330*(0.0130)	0.0160(0.0107)
Islam	0.0358*(0.0138)	0.0188*(0.0111)
Traditional	0.0385(0.0706)	0.0519(0.0494)
Residence (Ref: Rural)		
Urban	-0.0164*(0.0067)	0.0021(0.0054)
Region (Ref: Western)		
Central	-0.0527***(0.0148)	-0.0127(0.0134)
Greater Accra	-0.0701***(0.0152)	-0.0582***(0.0156)
Volta	0.0114(0.0118)	0.0505***(0.0100)
Eastern	0.0056(0.0122)	-0.0049(0.0119)
Ashanti	0.0063(0.0115)	0.0022(0.0109)
Brong Ahafo	-0.0411**(0.0130)	0.0017(0.0111)
Northern	-0.0146(0.0129)	0.0230*(0.0109)
Upper East	0.0479***(0.0122)	0.0640***(0.0104)
Upper West	-0.0238*(0.0139)	0.0079(0.0118)

Source: Author's Computations based on GLSS 7 date

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