SIMON DIEDONG DOMBO UNIVERSITY OF BUSINESS AND INTEGRATED DEVELOPMENT STUDIES

DEMAND AND SUPPLY-SIDE FACTORS OF HEALTHCARE UNDER NATIONAL HEALTH INSURANCE IN GHANA: IMPLICATIONS FOR UNIVERSAL HEALTH COVERAGE IN THE WA MUNICIPALITY

JUSTINE GUGUNENI TUOLONG

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THESIS SUBMITTED TO THE DEPARTMENT OF GOVERNANCE AND DEVELOPMENT MANAGEMENT, FACULTY OF PUBLIC POLICY AND GOVERNANCE, SIMON DIEDONG DOMBO UNIVERSITY OF BUSINESS AND INTEGRATED DEVELOPMENT STUDIES, IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF DOCTOR OF PHILOSOPHY DEGREE IN DEVELOPMENT MANAGEMENT AND GOVERNANCE.

JUNE, 2023

Declaration

Student

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

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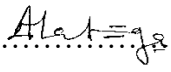
Supervisors' Signature:  …… Date: **28/08/2023**

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Abstract

This study examines the interaction between demand and supply-side models of national health insurance in Ghana. The purpose of the study was to examine how the supply of healthcare influences insured persons' access and use of primary healthcare services under Ghana's NHIS in the Wa Municipality. An explanatory sequential mixed methods design was used. The cluster sampling technique was used to select 413 insured persons at the community level and in 47 health care facilities using a questionnaire, for quantitative analysis. Purposive sampling technique was used to select 17 healthcare providers and 20 insured key informants for further qualitative investigations using an interview guide. The quantitative data were analysed using descriptive statistics, inferential statistics and structural equation model (SEM). The qualitative data were analysed based on themes to further explain the quantitative results. The results show that determinants of supply of healthcare (SoHDs) positively influenced NHIS utilisation. Insured persons' who have active membership were able to demand access and used (DAU) primary health care (PHC) services in accredited health facilities, with the exception of private laboratory diagnostic centres and pharmacies. The study found that dimensions of access to PHC; availability, acceptability, affordability, and accommodation as provided by healthcare providers were important factors influencing insureds' decision to renew membership. The frequency with which the insured used NHIS to access PHC services had a positive impact on their decision to renew membership. SoHDs and DAU were positive reverse causality factors influencing each other and insured persons' decision to utilise NHIS for PHC services. Taking into account socio-demographic, economic, and health characteristics (SEHCs); gender, education level, average monthly income, location, health seeking behaviour, average distance in minutes to the health facility, and cost to and from the health facility were significant factors affecting insureds' perceptions regarding SoHDs, their access to and use of NHIS for PHC. The study concludes that SEHCs, SoHD and DAU are critical factors affecting NHIS in Ghana. The study recommends that NHIA implements policies that keep an eye on SoHD and DAU with SEHC to achieve UHC and SDG 3, which is health for all by 2030.

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Dedication

This thesis is dedicated to my wife and children, Ms. Evelyn Kutaar, Joel Walieryir Tuolong, and Justin (Jnr) Mwinebangme Tuolong for their encouragement and support.

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List of Abbreviations

AHRQ	Agency for Healthcare Research and Quality
CBHIS	Community-based Health Insurance Scheme
CHAG	Christian Health Association of Ghana
CHC	Central Health Capabilities
CHPS	Community-based Health Planning and Services
DAU	Demand for Access and Utilisation
FMH	Free Maternal Health
GDP	Gross Domestic Product
GHS	Ghana Health Services
GSS	Ghana Statistical Service
HCP	Health Capability Paradigm
IHI	Institute for Healthcare Improvement
IRB	Institutional Review Board
JHS	Junior High School
KII	Key Informant Interview
LCSs	Licensed Chemical Shops
LEAP	Livelihood Empowerment Against Poverty
LMCs	Low-to-Middle Countries
LMICs	Low-to-Middle Income Countries
MoH	Ministry of Health
MSL	Middle School Level
nCOVID-19	Novel Corona Virus – 2019

NGOs	Non-Governmental Organizations
HI	Health Insurance
NHI	National Health Insurance
NHIA	National Health Insurance Authority
NHIL	National Health Insurance Levy
NHIS	National Health Insurance Scheme
NHRCIRB	Navrongo Health Research Centre Institutional Review Board
OOP	Out – of – Pocket Payment
PHC	Primary Health Care
SDD-UBIDS	Simon Diedong Dombo University of Business and Integrated Development Studies
SDG	Sustainable Development Goal
SEHCs	Socio-Economic, and Health Characteristics
SES	Socio-Economic Status
SHI	Social Health Insurance
SHS	Senior High School
SoHDs	Determinants of Supply of Healthcare
SPSS	Statistical Package for Social Science
SSNIT	Social Security Nation Insurance Trust
UHC	Universal Health Coverage
UK	United Kingdom
UN	United Nations
US	United States

Wa MHIA	Wa Municipal Health Insurance Authority
WHO	World Health Organization
WTP	Willingness to Pay

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Achieving universal health coverage (UHC) is a key global health policy goal enshrined in the Sustainable Development Goals (SDGs), particularly Goal 3 which is health for all by 2030. The primary purpose of Health Insurance (HI) is one of the key policy tools to achieve UHC, as it improves access to healthcare and protects policyholders from financial risk. However, countries around the world that have adopted HI have struggled for decades to find a secure healthcare funding system that can accommodate rising healthcare costs (Thuilliez et al., 2020). Currently, the novel coronavirus-19 (COVID-19) outbreak has worsened the situation and underscored the need for a rapid response; as governments around the world have faced gaps in their public health management (Amadu et al., 2021).

There is evidence that rising healthcare costs are exceeding government capacities in both developed and developing countries (Thuilliez et al., 2020), which is a cause for concern to policy-maker. According to Thuilliez et al. (2020), while pledges from donors to save additional lives in the event of a pandemic are encouraging, finding an effective way to bolster global resources to support health systems to improve the path to universal health coverage funding is difficult, particularly in Africa. For example, the literature has previously pointed out that in developing countries there is a pervasiveness of inequality and inequity in access and use of health care between the rich and the poor (Domapielle, 2014; World Bank., 2013). It is reasonable to suggest that in crisis situations such as the

COVID-19 pandemic, the gap in access to healthcare between the rich and the poor could widen due to high costs of financing the pandemics.

Health insurance holds a great potential to bridge the health inequity gap between the rich and poor; because health insurance increases access to, and use of healthcare and provides financial risk protection (see e.g., Adusei & Phillips, 2018; Fenny et al., 2021; Han et al., 2018; Hawthorne & Kwan, 2012; Joarder et al., 2019; Tungu et al., 2020). To achieve UHC, a health system involves the delivery of health care in completeness (Tian & Pan, 2021), referred to in this study as determinants of supply of healthcare. That is, making available and functional provisions for health care facilities, equipment, capable and qualified health professionals, and drugs at all times by providers (see e.g., Abiiro et al., 2014; Amoro et al., 2021; Trottmann et al., 2012). In turn, the insureds' demand for primary health services must be readily available, affordable, responsive, acceptable and safe for those who need them (see e.g. Domapielle, 2014; Gulliford et al., 2002; Levesque et al., 2013). In this study, the above factors are categorised as demand-side factors to be studied from the perspective of insureds, although they could be viewed as supply-side factors from a healthcare provider's perspective.

Ghana, like many other countries around the world, has introduced a variety of health financing programs in recent years (Andersen & Newman, 2005; Nkansah-Amankra et al., 2013). The expansion goes beyond many types of health financing systems, such as free, pre-payment and pooling mechanisms (Sanyare & Tuolong, 2018). The literature suggests that social health insurance (SHI) programs have attracted attention, particularly in low-to-middle countries (LMCs), due to their potential to provide financial risk protection while increasing access to health care and utilisation, especially for the poor (Alatinga &

Williams, 2019; Mebratie et al., 2015a). Despite its potential, some scholars have identified gaps in the implementation of the National Health Insurance Scheme (NHIS) policy in Ghana (Adusei & Phillips, 2018; Kwarteng et al., 2020; Sanyare & Tuolong, 2018). Some of the gaps identified include: the National Health Insurance Authority (NHIA) delays in reimbursing providers for their services rendered, provider fraudulent practices in submitting claims, delays in accessing healthcare services, and poor quality of service among others (Kwarteng et al., 2020; Sanyare & Tuolong, 2018).

While Ghana is moving towards UHC in different ways and at different speeds (Mcintyre et al., 2008), it faces challenges including resource constraints (World Health Organization [WHO], 2008). The Institute for Healthcare Improvement [IHI] (2022) has found that most healthcare systems/organisations fail to successfully implement healthcare policies due to gaps between demand and supply of health indicators in meeting patient needs. In comparing demand and supply of health services within the NHIS, this study finds that they are under-reported in the literature. However, such studies are necessary as they allow for targeted attempts to match demand with supply and/or to increase (or decrease) supply at times of high (or low) demand for services to meet the needs of patients (IHI, 2022). Accordingly, improving access to primary health care is about re-balancing supply and demand, which means there should be no excessive appointments and no delay between triggering demand and delivering the service. Therefore, understanding the demand and supply patterns for primary health care within the NHIS is crucial at this time. The contribution of this study is to address inefficiencies and avert administrative delays and wasted resources in health policy management.

So far, synergies have increased the likelihood of bridging the gap between health inequalities and inequalities that primarily affect the poor. It is argued that equity in health is a two-pronged approach, encompassing both demand and supply models (Alatinga, 2014; Bonfrer, 2015). Furthermore, assessing SHI schemes and their implications for UHC necessitates the examination of these models to effectively think through the process and make complete predictions (Zweifel, 2007). The supply of health care in the developed world is better positioned to combat illness, relative to the supply of healthcare in developing countries (Thuilliez et al., 2020). For example, in developing countries, there is a high demand for people to use social insurance for health care due to its low cost, which hurts policy implementation in the long run due to financial constraints to fund the policy by government (World Bank, 2013). Though the researcher acknowledges that studies in this field have been conducted in Ghana (see. e.g., Agbanyo & Peprah, 2021; Alawode & Adewole, 2021; Christmals & Aidam, 2020; Kipo-sunyehzi et al., 2019), the argument remains that these studies largely focus on the demand for healthcare under the NHIS with little focus on the supply of healthcare. Thus, the study aims to investigate the interaction between demand and supply-side factors of health care under national health insurance in the Wa Municipality, and the implications for UHC in Ghana. The aim of this research was to contribute knowledge that fills this gap in health policy management of Ghana's national health insurance. Theoretically, this study used the social justice theory, the health capability paradigm, and demand and supply theory to explain how the interaction between demand and supply-side factors affects health care under NHIS in Ghana, because studies of this type are scarce in the literature.

1.2 Problem Statement

The study examines the interaction between health care demand and supply under Ghana's NHIS and implications for UHC. In particular, the study sheds light on the supply of healthcare, how it influences NHIS clients (insured) to demand and use primary healthcare services in the study area. According to Nsiah-Boateng (2019), the NHIS has been the subject of constant research since its introduction due to its pro-poor character. Since the inception of the NHIS, it has made appreciable gains regarding the level of care and treatment (Alawode & Adewole, 2021). As a result, persons who held valid NHIS membership cards (insured) were able to access health services compared to the uninsured (Okoroh et al., 2018).

Globally, the social focus of health insurance is more on addressing the ill health of the poor with the aim of achieving universal health coverage (Gorskyi & Sirrs, 2020). In the United States, for example, most of the population has access to health care through private insurance, while the poorest 10% receive medical services through the public health system. In Denmark, Sweden and England, virtually the entire population has access to free health care through the national health insurance system (Gorskyi & Sirrs, 2020).

In developing countries (e.g. in Asia and sub-Saharan Africa), statutory health insurance systems are used by governments as a tool to finance health care in order to reduce rising health care costs due to large populations and associated disasters (Bedi et al., 2020).

In Africa, Alawode and Adewole (2021) suggest the introduction of the NHIS has made appreciable gains regarding the level of care and treatment to its populace. As a result, persons who held valid NHIS membership cards (insured) were able to access health services compared to the uninsured (Okoroh et al., 2018).

In Ghana, research shows that the quality of service provided by NHIS to customers in Ghana from 2008 to 2012 was satisfactory (Atinga, 2012), and equally the same compared to uninsured individuals using user fees in 2014 (Fenny et al., 2014). In contrast, some studies suggest that the policy is plagued with challenges including for example, a poor quality of service delivery that has little impact on the well-being of the insured (see e.g. Alatinga & Williams, 2019; Alhassan et al., 2014; Boateng & Awunyor-vitor, 2013). According to a study by Sanyare and Tuolong (2018), the above paradox is due to insufficient funding to pay providers' claims for services rendered. The above observation support World Bank's earlier claim that health insurance programs are inefficient because "low costs do nothing to deter excess demand for high-cost hospital care...as a result, the potential efficiency gains of user fees are sacrificed in the long run"(World Bank, 1992, p. 32). Hence, the question on how Ghana's health insurance policy is effective to tackle ill-health, address healthcare inequity, and to sustain its enormous benefits remains relevant. While this study acknowledges that much research has been done on NHIS regarding the provision of PHC, there is a gap in the literature that does not examine how healthcare supply affects demand for primary health services and its impact on NHIS uptake in Ghana.

Previously, studies have stated that the NHIS of Ghana provides equitable healthcare for UHC to different target groups, which influences access and use of NHIS to request PHC (see e.g. Adusei & Phillips, 2018; Kwartie et al., 2020). In a previous study, it has been found that insureds' do not renew their membership upon expiration due to poor quality of services provided by healthcare providers, lack of money, and insureds' taste in other healthcare sources, among others (Boateng & Awunyor-vitor, 2013). In addition, socio-demographic and health characteristics are factors that impact insureds use of NHIS

(Ayanore et al., 2019; Dei & Sebastian, 2018; Kwarteng et al., 2020). As a result, the researcher controlled for SEHCs (e.g. gender, age, education level, occupation, health status, etc.) and answered the specific research questions.

Achieving UHC requires the provision of supply of healthcare determinants such as available and functioning health care facilities, equipment, capable and skilled health professionals, and medications. This study argues that these supply-side determinants must be equitably distributed in order for those in need of PHC to access and use services. However, to the best of the researcher's knowledge there is currently no study which has empirically examined demand and supply-side factors of healthcare to make predictions about how these affect insureds take-up of NHIS (i.e. enrolled active and non-active card member). This study is important because proponents suggest that these kinds of predictions are necessary in health policy discourse to gauge policy efficiency (see e.g. Trottmann et al., 2012; Zweifel, 2007). In other developed countries, such as the United States (US) and the United Kingdom (UK), insights into demand and supply-side factors affecting healthcare are well known (Gorskyi & Sirrs, 2020; Tian & Pan, 2021). However, there is limited research of how efficient Ghana's NHIS is in delivering primary health care to determine the effect between demand and supply-side factors on NHIS uptake. Therefore, this study investigates the interaction between demand and supply-side factors of healthcare under the National Health Insurance (NHI) in Ghana and their implications for UHC in the Wa Municipality.

1.3 Research Questions

The main research question of the study is how does the supply of healthcare influence insured persons' access and utilisation of PHC services under the NHIS in the Wa municipality?

The specific research questions asked include:

1) What is the effect of determinants of the supply of healthcare on NHIS uptake?
2) What is the effect of access to PHC services on NHIS uptake?
3) What is the effect of PHC services utilisation on NHIS uptake?
4) What is the structural effect of socio-economic, and health characteristics, determinants of the supply of healthcare, access to and use of PHC services on NHIS uptake?

1.4 Research Objectives

The general objective of the study is to examine the effect of supply of healthcare on insured persons' access to and use of PHC services in the Wa Municipality. Specifically, the study sought to:

1. Determine the effect of determinants of the supply of healthcare on NHIS uptake.
2. Investigate the effect of access to primary health care services on NHIS uptake.
3. Examine the effect of primary health care services utilisation on NHIS uptake.
4. Establish the structural effect of socio-economic, and health characteristics of insured persons, supply of healthcare, access to and use of PHC services on NHIS uptake.

1.5 Research Hypotheses

Based on the research gap and questions, the following hypotheses were formulated and tested:

1. **H_0:** determinants of supply of healthcare do not significantly affect NHIS uptake.

   H_1: determinants of supply of healthcare significantly affect NHIS uptake.

2. **H_0:** access to primary health care services does not significantly affects NHIS uptake.

   H_2: access to primary health care services significantly affects NHIS uptake.

3. **H_0:** utilising primary health services does not significantly affect NHIS uptake.

   H_3: utilising primary health services significantly affects NHIS uptake.

4. **H_0:** determinants of supply of healthcare are not associated with demand for access and utilising primary health care services.

   H_4: determinants of supply of healthcare are associated with demand for access and utilising primary health care services.

5. **H_0:** there is no structural effect of socio-economic, and health characteristics of insured persons, supply of healthcare determinants, demand for access and utilisation of primary health care services on NHIS uptake.

   H_5: there is structural effect of socio-economic, and health characteristics of insured persons, supply of healthcare determinants, demand for access and utilisation of primary health care services on NHIS uptake.

1.6 Significance of the Study

The aim of this research was to examine the effect of supply-side factors on the uptake of national health insurance and establish their impact for UHC in the Wa Municipality of Ghana. This research posits that the principle of demand and supply of social security for public goods, in this case health care, is tied to the enrolment of the insured in the NHIS. To examine this, the study used Rawls' theory of justice in conjunction with reviews of Ruger's perspectives on health and social justice. Also, the contributions of other scholars such as the Sen's idea of justice, which is mainly used in social, public and health policy analysis in developed countries (United Kingdom [UK] and United States [US]) are incorporated in this study. The use of theories in the study informed how the NHIS achieves equitable healthcare for UHC in the Wa Municipality of Ghana. The study adds knowledge related to the achievement of the highlighted research objectives. The study therefore serves as a reference document for academics and policy makers working in the field of health policy analysis of demand-side and supply-side factors of national health insurance.

Primary health care is arguably a fundamental right that must be made available to all in all parts of the country (Gorskyi & Sirrs, 2020). According to literature, it is reasonable to assess supply of healthcare and demand for access and use of health care while controlling the SEHCs to determine policy effectiveness for UHC (Baum, 2016). To achieve UHC, it is important to maintain a balanced healthcare system to meet people's basic needs within a certain framework (Tian & Pan, 2021). Therefore, studies on how supply-side factors impact insured access, and use of PHC under the NHIS remain relevant to policy discourse, particularly in the Wa Municipality of Ghana. This is because, globally, studies have emphasised the existence of inequality and injustice in accessing and utilising health

services, particularly in social health insurance systems (Damrongplasit & Wangdi, 2017; Hadad et al., 2013). To address these, health principles have been provided to guide health decisions, to incorporate evidence of health disparities, and guidelines needed to build a global equitable and efficient health system (Ruger, 2010, 2014b, 2014a).

From the perspective stated above, the research conducted has contributed practical and theoretical knowledge to understanding the role of providers, the supply of health care and how the demand for health services, influenced by socio-economic factors, affects the utilisation of NHIS for UHC. This makes the study results useful for policy makers to understand the relationship between the supply of health services and the demand for health services in order to achieve UHC and SDG 3. The study predicted how healthcare under the NHIS could be equitable and create justice for all Ghanaians which improve the well-being of the poor in particular. Therefore, this study results are critical to health policy management; because the researcher examined the impact of providers, the supply of health care and how demand for health services is affecting NHIS uptake for UHC in the Wa municipality of Ghana.

1.7 Scope of the Study

This study was conducted in the Wa municipality of Ghana. The study area was chosen for this study because previous study in the Wa municipality uncovered some administrative inefficiencies in the delivery of NHIS services (Sanyare & Tuolong, 2018). As a result, some insured patients and healthcare providers are dissatisfied and have lost confidence in the system, and some have withdrawn from it (Tuolong, 2016).

To explore this, the study's unit of analysis included accredited healthcare providers providing healthcare services under the NHIS, informants from the local directorate of

health and the NHIS office, and insured persons requesting healthcare services at the various levels of organisation. These categories of respondents were deemed appropriate for the study as they are the primary individuals on both the supply and demand sides of healthcare providing healthcare and demand for healthcare services directly within the NHIS. As a result, they were justified in answering the study's research questions. Thus, all study participants answered both the supply and the demand side of the research questions.

In terms of content, the study answers the research questions and examines the hypotheses formulated. The essence was to examine how the Ghanaian NHIS studied within the supply-side and demand-side models improve UHC and provide social equity to those in need of primary health care. Rawls' theory of justice, Ruger's Health Capability Paradigm (HCP) and social health insurance demand and supply theory were considered relevant theories for this study as they are used in evaluating social policies, particularly healthcare systems in developed countries (US and UK). The use of theories for studies like this is relevant for improving the effectiveness of health systems by addressing the social exclusion of national policies. As a result, the use of these theories complemented each other to specifically measure the demand and supply side models of national health insurance in Ghana; implications for UHC in Wa Municipality.

In addition, a review of the literature on how the NHIS improves access and utilisation of health services also took into account the socio-economic and health characteristics of insured persons. First, the model of social determinants by Diderichsen et al. (2001) was examined to tailor the discussion of illness among the poor in need of health care, differences in access to and use of health services, and the implementation of NHIS in

Ghana. As a result, it was important to recognise how, after years of implementation, the system has improved access, use and uptake of NHIS contributed to reduced social injustice, and equitably expanded health coverage. The study applied lessons from Anderson and Newman's (1973) health care utilisation model to assess NHIS utilisation on both the supply and demand sides.

1.8 Organisation of the Study

The study was divided into six chapters. Chapter one provides the research background, highlighting the research gap that required the study. Following the problem statement, it provides empirical evidence that identifies the research niche, research questions, objectives, and hypotheses needed for the study. The chapter justifies the contributions that this research hopes to make to date in the area of health policy analysis and management, as well as the scope of the study and the organisation of the thesis.

Chapter Two reviews the literature on concepts relevant to thesis topic such as definition of terms, social health insurance, and empirical studies that identify gaps that make it relevant for the study. Thus, the literature on the thematic headings of the various research questions was reviewed: determinants of supply of healthcare, determinants of demand for health services; access and use, their implications on UHC. Considerably, the Chapter identifies the specific theory used, reviews it with illustrations, critiques it, emphasises its importance and contributions to the study. These defined the researcher's space for developing an appropriate conceptual framework that linked the research problem, research questions or objectives, and theories for effective administration of national health insurance policies.

Chapter Three deals with the research methodology. It includes discussions on the choice of study area, research philosophy, approach, design, techniques and methods. The methods include the procedure used in sampling, data collection and analysis, and the validity, reliability and ethical aspects of the data.

Chapter Four reports the research findings of the data collected on the socio-demographics, economic and health characteristics of respondents which affected insureds' use of NHIS to access PHC services. On demand for primary health services; findings are also reported on insureds' access and use of PHC, and how this affected their uptake of NHIS. Additionally, findings on the relationship between demand-side and supply-side models of health insurance, implications for UHC in the Wa Municipality were reported and hypotheses were tested.

Chapter Five discusses the research results with empirical and theoretical literature based on the research objectives to fill the research gap identified in this study. The discussions show how the results confirm or deviate from the previous literature.

Finally, Chapter Six provides a summary of the main findings of the study, conclusions, recommendations and suggests areas for future research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

First, the chapter presents conceptual definitions of terms used in this study. The chapter also examines the empirical literature on health outcomes indicators, which are critical for measuring the demand- and supply-side implications of NHIS for UHC. In addition, reviews are conducted to discuss the complexities of health equity in health policy management and theoretical perspectives. The chapter reviews literature on the Diderichsen et al. (2001) model of social determinants and Anderson's and Newman's (1973) model of health care to help examine the demand-side model of insured's access and use of health care. Moreover, the implications of healthcare provider care for effective health policy management are discussed. Based on the above, the chapter highlighted the research gap that sets the tone for empirical review of the literature on the subject areas of the specific research questions, and conceptual framework for the study.

2.2 Conceptual Definitions of Terms

2.2.1 Supply of Healthcare

To achieve UHC, it is argued that governments must ensure that healthcare is adequately available and functional for those who need it (Obrist et al., 2007). When measuring the supply side of healthcare, some of the most appropriate determinants used by researchers in health policy analysis include: available and functioning health care facilities, equipment, skilled health professionals, and drugs (see Defar et al., 2020; Drennan & Ross, 2019; Kapologwe et al., 2020; Kwateng et al., 2017; Motkuri et al., 2017; Mustafa &

Shekhar, 2021). As a result, in this study, supply of healthcare is defined to include the determinants listed above in the literature.

2.2.2 Demand for Health Care

The demand side of health care, as shown in many studies, is mainly measured in terms of access and utilisation (see e.g. Olyaeemanesh et al., 2019; Scheil-adlung et al., 2015). Agency for Healthcare Research and Quality [AHRQ] (2016:3) defines access to health care as having timely access to medical services in order to achieve the best possible health outcomes. There are four components to access, including; **Coverage**: This is the measure of healthcare services under the NHIS that insured persons could access in a geographic location over a given time period. With regards to this, NHIS makes it easier for the insureds to access the medical system. According to this study, this means that those who lack health insurance are more likely to be in poor health and less likely to receive medical care. **Health Care**: Individuals who receive suggested screening and prevention services under NHIS tend to have a regular source of care. **Timeliness**: The capacity to deliver medical care as soon as a need is recognized. **Workforce**: A team of capable, knowledgeable, and culturally sensitive healthcare professionals ready to assist patients as needed.

In other literature, some authors measure access to healthcare in terms of geographic accessibility, availability, acceptability, affordability, adequacy, and appropriateness (Baker et al., 2021; Domapielle, 2014; Obrist et al., 2007). Additionally, others modified the indicators of access to include some quality dimensions such as accommodation and safety (Scheil-Adlung et al., 2015). In this study, access is measured using the following indicators – geographical accessibility, availability, acceptability, affordability,

accommodation, and safety (Baker et al., 2021; Domapielle, 2014). According to studies, these indicators are of importance in measuring access as they ensure quality delivery of health services (Banu & Biswas, 2021; Burt, 2010; Kapologwe et al., 2020). Accessibility, appropriateness and adequacy are left out in this study because they are explained to mean availability, accommodation, and safety. For example, availability takes into account factors that go into geographic accessibility and appropriateness (Domapielle, 2014). Accommodation also ensures adequacy by explaining how the provider's facility is organised, from available physical structures, environment, labour and service delivery to avoiding restrictions (Kapologwe et al., 2020). When measuring health care quality, safety critically considers how safe both the providers and patients are free from harm, infectious waste, neglect, and injury (Alhassan et al., 2016; Alhassan & Nketiah-amponsah, 2016; Rooney & Ostenberg, 1999). Health care utilisation, involves the quantification of the number of times a patient sought for a particular treatment type and or care (AHRQ, 2016, 2020). In this study, the frequency in the use of health services or the number of times insured patient visited and sought for primary health care at the various levels of health facilities in a year period is what is termed as health care utilisation under NHIS.

2.2.3 Uptake of National Health Insurance

Ghana's NHIS is a collective risk-sharing scheme for health risks such as diseases (National Health Insurance Authority, 2012, 2018). In defining uptake of NHI, illness represents the social risk against which the insured members are insured (financial risk protection) (National Health Insurance Authority, 2018). Health insurance payments include the premiums, taxes and charges paid by policyholders and the entire population of the country (whether actual or imputed) in contribution to the NHIA (National Health Insurance

Authority, 2012). Registration with the NHIS means registration of the uninsured members with the scheme, who require annual renewal of membership to maintain entitlement to PHC services (NHIA, 2012). Thus, a person's failure to renew membership after expiry means that the person's NHIS status is an insured inactive member. Insured active members are those who extend their membership on an ongoing basis (NHIA, 2012). For purposes of this study, inclusion by NHIS means enrolled active and non-active card member who may or may not have access to NHIS services depending on membership renewal at the time of the study.

In Ghana, the purpose of the NHIS is to achieve universal healthcare by enabling active membership holders to access and utilise healthcare services such as outpatient, inpatient, maternity, oral healthcare and emergency services at accredited healthcare providers that meet all accreditation criteria. The accreditation criteria include the supply of healthcare determinants with physical infrastructure of health facility being adequate and functional, well equipped with functional equipment, staff strength and operational concerns to deliver quality services (health care delivery) (NHIA, 2012). These are likely to benefit the insured considerably to equitably demand for PHC services at their respective geographical locations. Fulfilling this duty, therefore, requires examining how complementary determinants of supply of healthcare affect insured's access and use of PHC and the general uptake of NHIS, which is the impetus for this research.

2.3 Contributions of Social Health Insurance (SHI) Schemes towards Universal Health Coverage (UHC)

Since the 1950s, when Europe began to recover from World War II in 1970, health systems have evolved to the point where they remained a shared global priority for decades

(Liaropoulos & Goranitis, 2016). Universal health coverage is a relatively new phenomenon in recent international policy agenda, particularly in terms of achieving equitable health care that is affordable for those in the informal sector (Gorskyi & Sirrs, 2020). There are three types of health insurance: private, state and social. Primarily, that of the state and social focus more on addressing the ill health of the poor and are also viewed as a government or social protection strategy aimed at achieving universal health coverage (Gorskyi & Sirrs, 2020). In the United States, for example, most of the population has access to health care through private insurance, while the poorest 10% receive medical services through the public health system. In Denmark, Sweden and England, virtually the entire population has access to free health care through the national health insurance system (Gorskyi & Sirrs, 2020).

In developing countries, statutory health insurance systems are used by governments (e.g. in Asia and sub-Saharan Africa) as a tool for financing health care in order to reduce rising health care costs caused by large populations and associated disasters (Bedi et al., 2020). Many governments in low- and middle-income countries have resorted to statutory health insurance; that is, using tax revenues and premium payments collected in a pool from its population to subsidize health care for the average poor and disadvantaged groups against diseases (Zhou et al., 2017). According to Liaropoulos and Goranitis (2016), social insurance can be traced back to two major health care systems that emerged after World War II. This occurred when countries were experiencing economic recessions: the Bismarck system (i.e. employer-employee contributions, independent of health care, as is practiced in Belgium, France and Germany), and SHI (i.e. healthcare provided within a tax funded structure, such as the national health services in the UK and some Nordic countries).

The comparison from the preceding shows that the core of social health insurance is that the distribution of health expenditure through extensive pool systems provides financial security for the disadvantaged. It also protects countries' healthcare systems from economic downturns and supports long-term viability. In summary, the benefits of social health insurance are significant. Apart from its contribution to the achievement of broad social protection policy objectives, it also paves the way for the fair delivery of quality basic social services, especially health care (Asian Development Bank, 2011).

The World Health Organisation in 2011 launched an initiative to improve access to safe and affordable healthcare in Africa. The goal was to ensure everyone has access to UHC and equitable distribution of vaccines by 2030 (United Nations [UN], 2016). Social health insurance has become established in many facets in all nations worldwide, with considerable growth being recorded every day. The overarching goals of its purpose are to provide financial risk protection, improve equitable access and utilisation of health care, especially for the most disadvantaged (Akazili et al., 2014; Domapielle, 2014; Fenny et al., 2021; Shigute et al., 2020). It is claimed that SHI programs show promise in government's attempts to establish stable means of financing their healthcare, but they are sometimes managed in a fragmented manner (Shigute et al., 2020). Operating SHI in a fragmented state is believed to create unequal access to healthcare and financial security for those covered by multiple health insurance schemes in Asia, particularly China and India (Meng et al., 2015). Research in rural Uttar Pradesh and Bihar (India) on the impact of three community-based health insurance schemes (CBHISs) on health care utilisation and expenditure found no causal effect. It concluded that CBHIS of the type studied are unlikely to have a significant impact on access and financial protection in poor countries

(Pradesh et al., 2016; Raza et al., 2016). In 2014, the majority of people in Indonesia's informal sector (60 percent) had no access to the SHI compared to the formal sector (Sparrow et al., 2016). In addition, research from Chile, China and India found that unequal access to and use of health services remained a problem in both rural and urban settings as these countries implemented SHI programs in a fragmented manner (Zhou et al., 2017). Although the international agenda to reduce health inequalities aims to improve universal health coverage, the operation of SHI systems in fragmentation further widens the gap of social inequalities. Therefore, countries are recommended to adopt comprehensive national health insurance systems to integrate the many fragmented systems in order to achieve the overall goals of the SHI systems (Ferreira, 2017).

According to the study, countries with a single national health insurance have improved protection against financial risk and access to health care, especially for the poor (Virk & Atun, 2015). In Indonesia, on average, SHI systems had a modest impact and helped close the widening coverage gap between the bottom and middle quintile groups in terms of outpatient access and household use of health services. However, the impact on financial protection was minimal to research (Sparrow et al., 2016). In Chile, it is also argued that statutory health insurance makes a significant contribution to universal health coverage, equitable health outcomes, responsiveness and financial security for all, especially the poor (Castillo-Laborde et al., 2017). In Ethiopia, opinions are that SHIs are given the motivation to drive voluntary participation in order to limit people's burden of huge medical expenses beyond what they can pay (Yilma et al., 2018). Many studies, particularly in Ghana, indicate that since implementation, the NHIS policy has helped provide financial risk

protection to disadvantaged families (Alatinga & Williams, 2019; Kipo-sunyehzi et al., 2019; Kodom et al., 2019).

These results imply that statutory health insurance tends to minimise the financial impact of disease while increasing access to health care in poor countries. In contrast, some researchers claim that while SHI medical expenses are occasionally favourable, they often do not correlate significantly with enrolment (Mebratie et al., 2015a, 2015b). They argue that while people's expectations of medical expenses can help reduce out-of-pocket (OOP) expenditures, additional medical expenses spent directly or indirectly through the use and consumption of healthcare services at authorised facilities do not eliminate completely. It suggests that people's choice of health insurance may come with the prospect of higher medical expenses (Mebratie et al., 2015b; Yilma et al., 2018). In developing countries, however, a systematic review of community-based health insurance (CBHI) indicates that out of 46 papers published on CBHI, three out of six studies acknowledged that CBHI helps the poor to gain financial protection and enable subscribers to access health care (Shigute et al., 2020). For example, in Asia and Africa, 13 out of 19 studies indicate that CBHI positively reduced OOP spending, increased cash mobilisation, and improved quality of care (Shigute et al., 2020). In contrast to SHI systems, which have a significant positive effect on resource mobilisation, a systematic review (4 of 8 studies) shows that CBHI systems have a weak positive effect on operational and perceived quality of care (Bardey et al., 2016). Indeed, studies conducted in Rwanda, Tanzania, Ghana and Kenya suggest that indicators such as drug availability, number of technical staff and time per visit, service offering, waiting time and consultation by nurses instead of Physicians, as well as the quality of care and attitudes of health workers affect the country's statutory

health insurance system (Fenny et al., 2021). According to the World Bank, SHI programs are often associated with better health outcomes when introduced early, but often deteriorate in their transition period and reduce impact due to administrative changes, political infighting and manipulations (World Bank, 2013).

In the case of Ghana, similarly conflicting conclusions on the contribution of statutory health insurance to universal health coverage have been published in the literature. According to some studies, implementation challenges affecting the NHIS include an inadequate funding gap and premium fees (Addae-Korankye, 2013), the administration's failure to pay healthcare providers on time (Sanyare & Tuolong, 2018), and other financial and operational problems (Alhassan et al., 2016). Despite this, some studies have found that the implementation of NHIS increased registration, access to healthcare and utilization (see e.g. Adei et al., 2015; Aduo-adjei & Owusu, 2015; Boateng & Awunyor-vitor, 2013; Laar, 2012; Nketiah-amponsah et al., 2019) and improved health status (see e.g. Frimpong, 2013; Kipo-sunyehzi et al., 2019). Further analysis showed that the latter was not statistically significant after adjusting for gross domestic product (GDP) per capita. In addition, a study shows that the introduction of NHIS has resulted in lower malaria treatment costs among insured patients in outpatient and inpatient care delivery, despite evidence that some insured individuals received OOP direct medical care (Dalaba et al., 2014). As a result, Christmals and Aidam (2020) discovered mixed results in a review of the empirical literature on NHIS as lessons learned. In the study by Christmals and Aidam (2020), their findings show that the NHIS has improved access to health care for the poor. However, the difference was that the coverage by the NHIS and the quality of care given were insufficient due to structural problems. While some researchers assessed the

perception of the quality of care as good (Atinga, 2012; Dalinjong & Laar, 2012; Fenny et al., 2014), others found it unsatisfactory for the insured (see e.g. Agyei et al., 2018; Alhassan et al., 2014; Boateng & Awunyor-vitor, 2013; Kodom et al., 2019; Kuunibe & Dary, 2012). Research has typically found that SES variables have an impact on policyholders' opinions of service quality and their desire to join the NHIS (see e.g. Amo et al., 2014; Asah, 2013; Boateng et al., 2017; Dixon et al., 2013; Kwarteng et al., 2020; Nsiah-Boateng et al., 2019). Therefore, based on the value of the benefits package to the insured and its responsiveness to the financial needs of healthcare providers, it is hypothesised that under the NHIS the value of the benefits package to the financial needs of healthcare providers is low (Nsiah-Boateng et al., 2016). This is a result of policyholders' dissatisfaction with the quality of care and the lack of responsiveness on the part of providers in the delivery of health services under the NHIS. Regarding equality, Nsiah-Boateng et al. (2019) found that the enrolment concentration curve is somewhat skewed towards the poor, particularly male-headed households, with at least one person reported to be enrolled in the NHIS. Regarding healthcare costs, it was found that despite 14 years of implementation of the NHIS in Ghana, healthcare costs continue to increase for a significant proportion of the insured in Ghana (Okoroh et al., 2018). However, the literature shows that Ghana has served as a model for other developing countries such as South Africa and Nigeria to learn from in terms of increasing access, awareness, understanding and perception of NHIS (Oladimeji et al., 2017).

The foregoing shows that in the 1980s, in an attempt to establish a comprehensive health care financing system to address disease and inequality, user charges were barriers to access and use of health care. Many studies have praised SHI systems, to the point of

arguing that in the current discourse on health policy management, particularly in developing countries like Africa, governments have foregone user fees in favour of introducing comprehensive SHI systems (Ridde, 2015). This has shown promise to reach UHC and Ghana is no exception. Despite the numerous awards demonstrating that SHI systems contribute significantly to the achievement of UHC, the results show that in countries where SHI systems are being introduced, strategies to increase enrolment and retention remain challenging and the poor continue to be facing social exclusion (Mebratie et al., 2015b; Shigute et al., 2020).

According to 46 research conducted in low- and middle-income countries (Guinea-Conakry, Burkina Faso and Senegal), the majority of articles (61 percent) showed a poor enrolment rate into their SHI system compared to the original enrolment rate. Furthermore, 11 out of 18 articles published between 1995 and 2012 provided evidence of social exclusion among the lowest income group who were unable to participate in CBHI programs (Mebratie et al., 2015b). According to Shigute et al. (2020), among the factors influencing the low utilisation of the SHI system in these countries are unfortunate past spending experiences, poor quality of care, unavailability of medical equipment and long waiting times for accessing health services, and treatment disparities between insured and uninsured, which interpreted to mean that preference influenced people's decision to join a health insurance scheme. In contrast to Ethiopia, where these variables are limited by a sound public health management system, the data indicate relatively high participation in its CBHI programs (Shigute et al., 2020). For example, affiliated facilities saw a 111% increase in outpatient visits, while government and accredited healthcare facilities saw a 47% increase in annual revenue mobilisation, all without sacrificing service quality as

patient satisfaction improved by 11%. In addition, there were no complaints from subscribers about visiting health professionals. These inconsistencies in results suggest that in many sub-Saharan African countries, social exclusion, low take-up rates and quality of care are blamed for the success of SHI systems over the long term, if confirmed by stakeholders, governments and institutions and lessons learned drawing from the past to successfully manage deficits (Virk & Atun, 2015), as seen in Ethiopia.

In the above narratives, it is evident that SHI systems help to improve access and utilisation of health services, with conflicting perspectives also alluding to the social exclusion and quality of care of dropouts. This suggests that governments, stakeholders and institutions need to work more collaboratively to maximise impact and close the gaps to achieve UHC by 2030.

2.4 Health Outcomes Indicators for Universal Health Coverage

It is believed that the quality of health care affects one's well-being and that making one's health a key measure of one's well-being is required to overcome other effects of socioeconomic disadvantage (Braveman & Gruskin, 2003). According to WHO (2010), health outcomes indicators are used to assess the quality of care and general well-being, but measuring them can be problematic. This is because of the complexity of these ideas, which require ongoing procedures for evaluating, diagnosing, and treating a patient, and the consequences of that therapy for the patient. Nevertheless, the WHO emphasises that quality of care is multidimensional in most definitions and postulates that treatment is of high quality if it is effective, safe, needs-based and timely. Consequently, these should have a direct impact on the overall well-being of one's health outcomes (Garcia & Gruat, 2003).

To achieve these goals, it is necessary to assess the supply and demand sides of health care and its socioeconomic determinants between more and less advantaged social groups using SES to assess how national health insurance policies contribute to UHC. According to Braveman and Gruskin (2003), these comparisons are crucial in determining whether national and international policy is moving towards or away from greater social equity in health care. According to WHO (2010), a successful health system is defined as all organisations, institutions, resources and individuals whose primary goal is to improve the health status of the population, working together for UHC without compromising the quality of care. This includes both attempts to modify health determinants and more direct actions to improve health (Solar & Irwin, 2010). This can be done if institutions respond effectively to the health needs of the population and guarantee responsiveness and equity in funding in a more equitable manner (Queensland Government, 2013).

The health impacts of Ghana's NHIS are examined in this study, as well as the impact of providers, the supply of healthcare and how demand for healthcare affects enrolment of insured based on their SES. For example, gender, age, occupation, place of residence, education or other social factors are important, because a commitment to social justice requires that we not only limit our sense of justice to the fairer care of sick people, but also demands that we counter injustice in the distribution of examining health and the underlying causes of unequal burdens of disease (Hixon et al., 2013, p. 161).

2.5 Healthcare Equality and Equity

When a system creates differences between social classes, the notion of justice comes into play. However, it is important to emphasise that although justice presupposes a reasonable degree of equality, justice does not equate to equality (Bradshaw & Bradshaw, 1995).

According to Pariera, equality refers to the equitable distribution of resources relative to individuals, while equality promotes societal fairness and just methods of distributing services to those in need (Pariera, 1989). People are not born with the same health conditions, their lifestyles differ, and their health needs change over time, according to some, making the pursuit of equality in the provision of health care inappropriate [equality should be assumed to be acceptable] (Bradshaw & Bradshaw, 1995).

Regardless, the motivation for discussing health equity is to narrow the gap between the wealthy and poor within different nations and groups as a result of the increasing growth in health care expenditure beyond governments and the power of the average citizen. To avoid this, authors argue that health authorities must make decisions that ensure equitable health status, equitable use of health services, and equal access to health care (Bradshaw & Bradshaw, 1995; Culyer & Wagstaff, 1993; Waters, 2000). However, other authors argue that equity in health care goes beyond access, use, and outcomes of a health need and is linked to socioeconomic characteristics such as occupation, income, age, race, gender, or geographic area (Dixon et al., 2007).

The heart of the question is whether equal use for equal needs by groups exists and how socioeconomic classes vary between individuals and affect decisions to choose between health care systems. It has been found that distribution based on circumstances beyond individual control is typically considered unfair, while distribution based on individual choices is not (Dixon et al., 2007: 104). This attribution of behaviour to people's choices is justified in concluding that differences in use are proxies for inequality, while attributing behaviour to circumstances beyond individual’s control is illegitimate. The concern about the argument is that most researchers writing about health systems in Ghana and around

the world focus on differences in use, access and quality of services (outcomes) and their presence in service delivery health systems as unfair, often implicitly assuming observed differences are not the result of free choice, as suggested by Dixon et al. (2007). In this study, the researcher complements this claim by arguing that inequalities based on socioeconomic variables and health conditions beyond one's control are the basis for labelling a health system unfair. The free choices people make, leading to different outcomes, are no reason to call a healthcare system unfair. The premise is that to understand justice theory in general, inputs do not necessarily equal outputs; Rather, if inputs differ between groups because of their health needs, the output may change depending on the willingness to spend additional costs. Therefore, differential treatment based on input variance and free choice of health needs is not unfair, but rather unequal. This will be an important area that this research will further explore.

Again, the principles that guide health equity in other parts of the world and in Ghana are universal access to health care, services that are free at the point of delivery; independent of one's ability to pay, a full range of basic needs services, maintaining the quality of care, improving the health status of those in need, and tight centralised control of big capital development to ensure sustainability (Bradshaw & Bradshaw, 1995; Laszlo & Krippner, 1998). To achieve these goals, however, the principles must be linked to the insurance taxonomy (Ward et al., 2009), in which health insurance plays a key role in raising funds through general taxes and premiums, both of which require strong democratic commitment from the people. Some opponents strongly believe (Oxfam International, 2011) that Ghana's equity and health insurance policies work well for the rich and poorly for the poor, and that the all-free healthcare system is desirable. In contrast, the concept of health is

complex and implies numerous just requirements (Bradshaw & Bradshaw, 1995). Equal input for equal needs, equal access for equal needs, equal use for equal needs, and equal health outcomes are examples (Morris et al., 2005). Equity is said to be divided into two types: horizontal equity and vertical equity. According to Ward et al. (2009: 3), horizontal equity is based on the principle of equal treatment of persons or groups with the same (or similar) care needs and vertical equity on the principle of treatment of different persons/groups varies depending on the level of health needs. While the latter is relatively uncontroversial, it is difficult to operationalise and monitor in a public health setting (Ward et al., 2009).

This study disagrees and is interested in both the latter and the former to determine what model of equity (horizontal or vertical) represents inequality and inequity in health care supply and demand and how it affects the number of people insured. This is the only way to determine whether inequalities due to socio-economic status heterogeneity are representative of inequality or justice. This is reasonable, and the study would predict what equity model would be acceptable for the NHIS to anticipate insured's health outcomes based on individual free choice of the plan's benefit package, using its supply and demand models.

2.5.1 Inequality and Inequity as a Dilemma in Health Policy Management

At the heart of the health care equity argument facing health policy makers is the conclusion to justify "fairness" in the distribution of health services among diverse groups with different health care needs and systems. According to Dixon et al. (2007), there is no inequity in health outcomes when people are free to make choices based on their health needs and socioeconomic groupings. The premise of the argument is, first, that choice

affects the decision to enrol in a health system, which also affects a health system's contributions and outcomes deliveries. Dixon et al. (2007) argue that inequality is problematic when the reduced outcome is the result of choices made by different individual socioeconomic groups based on their health needs. However, Dixon et al. (2007) noted that health needs vary and provide a useful guide to one's health status. In this study, it is noted that needs analysis is broad to address in this study, as a result the scope and focus of the study is on a person's changing population characteristics over a lifetime, i.e. healthy, at-risk, elderly and people at the end of life. According to Dixon et al. (2007), the health needs of these people change throughout life and are not influenced by their free choice. As a result, healthcare systems need to be carefully organised to meet people's healthcare needs as that is beyond their decision, but if they are not, that specific healthcare system can be declared unfair. This is because neediness is defined in terms of a health condition; the poorer a person's state of health, the greater their need for treatment (Dixon et al., 2007). However, in health policy, an individual's need for treatment is associated with their ability to benefit from the policy (Tabor, 2005). In this case, ability denotes one's contribution to an outcome that varies across socio-demographic or economic circumstances (Kwarteng et al., 2020; Ruger, 2006). However, a horizontal equity assessment and a similar needs assessment emphasise that inequality is not a substitute for outcome inequality when a person's needs are high and their capabilities (inputs) are small compared to a person whose inputs are large and cannot be considered unfair (Kelly et al., 2007). The focus of the above arguments on health equity suggests that both horizontal and vertical equity analyses are necessary in health policy discourse.

Therefore, the focus of this study is to derive insights into whether differential treatment for equal or different groups based on social determinants of health: socio-demographic, economic, geographic location, etc. is a matter of injustice.

2.6 Theoretical Reviews

2.6.1 Rawls Theory of Justice

Health is a basic requirement for development, hence need for equity in the provision of healthcare services in Ghana (Green, 2010). Similarly, governments bear the primary obligation for ensuring social fairness in the allocation of health care (Peltzer et al., 2014; Sambo & Kirigia, 2014). As previously stated, governments are obligated to support the idea that "each generation should have about equal resources" or "every generation should leave to the next at least as many resources as they had at the start" (Garrett, 2005). Garrett's remark implies that all generations should have the same right to resources, both future, and present, as outlined in Rawls' concept of justice – i.e. egalitarian and libertarianism in distributing justice (Lucca-Silveira, 2016; Rawls, 1999).

Regarding health, "social justice" is defined as equality in access to and utilisation of primary health care, as well as the right to health of everyone who requires care, regardless of social, cultural, political, economic, or geographical factors, among others (Hixon et al., 2013). Ruger (2010), on the other hand, emphasised that society makes decisions and performs acts that have a significant influence on the provision of healthcare. However, concerns about why and how collective decisions should be taken and policies implemented to alleviate health inequities in resource-scarce environments remain unanswered. How should societies conceptualise, measure, and assess whether health

disparities have been properly addressed? Who is to blame for various parts of this major societal issue?

The core principle of Rawls's justice as fairness is evaluating a social system without a major consideration to verify a fulfilment of which citizen's basic rights and freedoms have certain essential social societal goods and can be articulated better than utilitarianism (Rawls, 1999). However, since its inception, Rawls's theory of justice has been heavily critiqued. Hart critiqued it in a critical debate published in 1973, claiming that it fell short of '*morality*' (Tasioulas, 2012). Some of the flaws identified by Hart were fixed in a subsequent edition (Rawls, 1999). First, it was declared that "the basic rights and freedoms, and their importance" are to ensure equality for all people to social circumstances necessary for the adequate growth and use of their moral capabilities. That is the potential for a feeling of justice and a decent conception. Second, the ambiguous description of 'basic good' is defined to indicate that it rests either on natural realities of human nature or on a moral understanding of a person who represents a given ideal. Closely, the revision supported the latter, which defines primary goods as what people require in their capacity as free and equal citizens and generally fully participating members of society throughout their lives (Bankovsky, 2011). In the case of NHIS, it implements the principles of measuring justice as fairness in the distribution of primary health care to the insured by assigning rights and duties to health care providers. Addition to the foregoing, the NHIA monitors to ensure that health care providers are well-equipped in terms of healthcare supplies and ready to provide the health care services benefit package under the NHIS as expected of them in order to reduce insured-patient's ill-health that is enshrined by virtue of registration (Act 852). The explanation above supports the claim that health insurance can lead to the

promotion of just healthcare system, often known as the ‘sense of justice’ (Bankovsky, 2011). Bankovsky, supported Rawls’s theory of justice because the focus of the theory aims at supporting- "plural idea of justice grounded on the basic of recognition." Follesdal (2015), agrees that the distribution of rights, obligations, rewards, and liabilities should be spread, but believes that the values of liberty and equality are incompatible. For example, under egalitarian welfare arrangements such as in NHIS, there is the conflict between individual liberties and systems that support universal distribution. Although Rawls’s urged citizens to support universal distribution systems to achieve expected outcomes, it is unclear how the distributional effects of public goods such as health care would represent equity among different social groups whose individual health needs may differ and require economic benefits to meet their needs to improve distress than sense of fairness. The foregoing statements mean that, while citizens must support government plans for universality, they must do so in accordance with principles that preserve civil rights, including basic health care needs. Regarding the use of the Rawls’s theory of justice, a scholar has questioned its applicability in health studies, noting that the theory of justice works better from a social work standpoint than from a health care standpoint (Morris, 2002). According to Lucca-Silveira (2016), the theory of justice is more important in describing social problems than might be valid in modern health care systems. Regardless, the Rawls theory of justice is relevant in this study as it helps validate how fairness might be enabled in modern healthcare systems. However, due to criticism, this study has incorporated the Health Capacity Paradigm (HCP) theory to fill the gap highlighted in Rawls's theory of justice.

2.6.2 Health Capacity Paradigm (HCP)

Ruger (2005) makes a significant contribution to how to create a just health system that profoundly impacts the distribution of health. HPC theory provides balances in the choice/ distribution of healthcare that cater for disparities of injustice/ inequity for UHC to ensure equity in access and utilisation. By linking debates and critiques of Rawls's theory of justice, the 'health capacity paradigm,' was constructed as a basic new idea, which aims to develop a globally fair and efficient health system. Focusing on the contribution of HCP theory as a guide to this study lies the interest in what Ruger called "shared health governance." Ruger (2005) argues that individual rights and liberty are linked to responsibility and choice in the paradigm, which may be applied to both individuals (insured) and health-care organisations (NHIA, health care providers, and stakeholders who have stake in health, such as the GHS, NGOs in health, MOH, CHAG).

In addition, Rugger introduces the notions of utilitarian, libertarian, Rawlsian, and communitarians to talk about the health paradigm, building on her theory to explain how health inequities occur and may be addressed (HCP). Based on Sen's (2009) idea of justice, it was recognised that health disparities exist across social and economic categories, with low public health spending and high out-of-pocket healthcare spending creating vulnerabilities among the population (Ruger & Mitra, 2015). It was discovered that a lack of resources (equipment, experts, information, facilities, diagnostic, and treatment centres) and professional capability have substantial impact on group/individual health care quality, making it hard for everybody to get essential and appropriate care (Ruger, 2004, 2006, 2014b). The statement above reveals the consequences of supply variables impacting insured individuals' access to and use of primary health care.

Ruger (2009) presents a social justice paradigm that ensures equitable access to high quality medically required and appropriate health care to individuals and groups. The HCP framework requires health providers (agencies) to take the required measures to convert resources into appropriate health care practices that insured people may access and use. Also, Ruger's HCP theory emphasizes micro-economic analysis that focuses on identifying the association/relationship between demand and supply aspects in health care in order to increase access to and use of services. This study's argument, which argues for the creation of a balanced health care system by examining the relationship between the demand and supply-side models, intentionally supports the basis of Ruger's argument, which relies on creating a social health care system to achieve UHC. The study's goal is to employ HCP principles to better understand the supply of health care distribution, the ethics of health agency provision, and the empirical methodologies used in the provision of primary health care to meet the insured's health needs (Ruger, 2012). It's also curious to see how resource allocation based on equity criteria is focused on satisfying people's demand for primary health care access and utilisation (Carr-hill & Sheldon, 1992; Dei & Sebastian, 2018). The HCP theory is suited to analyse the demand and supply-sides models of health insurance in the Ghanaian example because of its application in assessing similar social policies like the UK health insurance program at a context specific and national scale, (see e.g., Adusei & Phillips, 2018; Alhassan et al., 2016; Ameyaw et al., 2020; Ruger, 2014b; Ruger & Mitra, 2015).

2.6.3 Academic Debates of Rawls's Theory of Justice and Ruger's Principles of HCP

According to Ruger (2012), satisfying the demands of health agencies and patients is critical to achieving equity in health capacity and social nutrition, both of which are essential for good health. According to Morris (2002), a person's capability as also proposed by Sen (2002) is determined by what they want to do and the power they have to achieve it.

Some scholars argue that Rawls's principles of fairness are appropriate to address societal issues such as equity in health care (Bankovsky, 2011; Lucca-Silveira, 2016). However, Peter (2012) feels Sen's concept of justice is more forward-thinking when it comes to discussing health-care justice. In contrast to Rawls's perception of justice as a social arrangement that shows a link between institution and distribution patterns, Peter emphasises that justice in health care is more viewed as a movement (Peter, 2012). In this way, the study sees Rawls's distribution patterns of healthcare through NHIA with healthcare providers as an egalitarian legal basis theory. As a result, the equity distribution pattern proposed by Rawls is appropriate in this study to establish the relationship between the demand-side and supply-side models of NHIS under the principle of equity (Lucca-Silveira, 2016; Pannarunothai et al., 2004; Virk & Atun, 2015). Therefore, Rawls' theory of justice is viewed as a universal theory that makes social health insurance accessible to all people (Smith, 2000). Under HCP, however, Rugger argued that not all principles of universality that apply to social policy are applicable to health policy (Ruger, 2010). Advising on a better option according to Pratt et al. (2020), governments should take a more sophisticated approach than solely distributive, which includes determining if social

structures guarantee people's health, well-being, and involvement in health policies. This is critical because, in social and health-care delivery systems, society's structures give critical information on people's health care access, behaviour, beliefs, and financial security that is needed to understand and decrease health inequalities across and within nations (Pratt et al., 2020).

According to the literature, the distinction between Rawlsian and capacity theorists is resource-oriented vs. result-oriented (Ruger, 2006), which are both important in our study. According to Ruger, the former focuses on health inputs while the latter focuses on outputs, resulting in a solid mix that explains the supply and demand dynamics under the NHIS.

In terms of justice and health, it is claimed that there exist worldwide inequities in health outcomes and access to primary health care for everyone (Ruger, 2009). Part of the disparity is due to health agencies'/providers' ability to treat and prevent disease without harming the poorest individuals who require medical attention (Ruger & Horton, 2020). As a result, tackling the problem of health justice requires equitable participation and the application of health justice principles that guide individuals and society as a whole (Ruger, 2009). According to Rugger and others, global health inequity exists because resource allocations are not made based on health research recommendations at the global, national, local, and individual levels (Ruger, 2004; Ruger & Horton, 2020).

Ruger's contribution is spectacular because a fair society is one that ensures freedoms, welfare, resources, capacities, or any mix of these (World Health Organization, 2016). Health capacities are the primary variable for analysing equity and efficiency in health policy, according to Ruger HCP (Venkatapuram, 2010). It explained the supply and demand factors as control health capabilities (CHC) – required to avoid premature

mortality and escapable morbidity – after setting health capabilities as the aim of health policy (Ruger, 2014a; Suzana et al., 2018; Tessier & Thuilliez, 2018). Evidence from previous study suggests that health and social justice are incomplete if health policy focuses just on healthcare, ignoring social domain components such as culture, education, and institutions that influence public norms (Venkatapuram, 2010). According to WHO (2016), social determinants of health play a key role in ensuring equity through addressing social justice and human rights. Health justice, according to Wiley (2014), provides an alternative to market competition and relevant rights frameworks that are consistent with health and social justice philosophy, particularly HCP.

2.6.4 Demand and Supply Theory

In this study, the demand and supply theory of social health insurance is discussed because, in theory, and reality, supply and demand principles impact vital public goods, notably health care (Trottmann et al., 2012; Zweifel, 2007). Globally, social insurance schemes, notably health insurance, exist to provide financial security to the poor, allowing countries, particularly in developing countries, to bridge the gap between health care disparity and access to basic health care. Ziebarth (2018) noted a study deficit in particular to understand how social health insurance interacts and affects human health after decades of establishing health policies in numerous nations. The application of micro demand and supply theory in health policy analysis was suggested as a means to fill this research vacuum.

Social health insurance, according to Zweifel (2007), may be defended on the basis of micro demand and supply. It holds premises on the demand side based on efficiency, equity, and public choice. In terms of efficiency, it is believed that SHI aids in income redistribution, medical treatment, and especially primary health care. A pool-sharing

method, is a shared transfer of money from the affluent to the poor via obligatory taxes, premium subsidy contributions, and exemptions to aid distribution of health-care services to a broader population. However, it is suggested that SHI causes spill-over of excess demand of health services, resulting in inefficiency in the long term (World Bank, 2014). That is, when compared between when a person is registered, the poor profit considerably in terms of access and usage of health care services in the near term (Ziebarth, 2018). However, according to Zweifel (2007), this is problematic since it is unclear how the SHI program serves the poor because targeting becomes a difficulty. As a result, the wealthy continue to have a high willingness to pay (WTP) to enrol, while the bulk of the poor are at a disadvantage. Thus, the total redistribution effect of SHI is doubtful in most developing countries, since the informal sector employs the bulk of the population. Equal access to health insurance assures equal access to health care because of equality and public choice, and empirical research suggests it is successful (Aduo-adjei & Owusu, 2015) at the margin of preserving excellent health status (Zweifel, 2007, 2022). However, although receiving a lot of attention in health policy analysis, data on the NHIS contribution to access and use of health services is still not conclusive as increasingly contradictory findings are found by scholars (Domapielle, 2021; Domapielle et al., 2020, 2021; Sanyare & Tuolong, 2018). This study argues that in order to achieve efficiency and equity, the government must commit to providing to all segments of the population. In exchange, the population would have equitable access to and use of primary health care services which jointly make-up the demand-side model for this study. From this standpoint, it is the responsibility of the government and institutions in charge of health care management (i.e., NHIA, GHS, MoH, CHAG, Service Providers, and others who are regarded as healthcare suppliers) to make

adequate provisions of care available to enable insured patients or the general public to access and use health care services under NHIS (Zweifel, 2007).

According to Zweifel, the supply of health insurance has several dimensions: the breadth and structure of benefits packages, the degree of integration of health care providers, risk selection efforts, price of coverage, and market structure of health insurance are all important factors to consider in a health policy analysis. Six factors are said to affect the size of the service package under public health insurance schemes such as NHIS: moral hazard (-), diversity of preferences (+!), diversity of risk (+!), emergency of new health risk (+!), regulation (+!), fraud and abuse (-!) (NB (+) = increase, (-) = decrease, (^) reinforcement, (!) = attenuation of relationship).

Theoretically, the extent of the quality of health services sought by the insured at the price or marginal cost of health care is known as moral hazard. It is a more important factor in public health insurance systems like NHIS because consumption of health care services usually entails little cost-sharing (premium and tax levies) for the user while usage increases proportionately. Experts argue that because low cost does little to deter excess demand, it leads to more loading on providers, which affects quality of care delivery, and the scheme ends up in deficit financing in the long run (World Bank 1992, 2019, Zweifel, 2007, 2022).

Also, because the goal of public health insurance is to offer primary healthcare to the whole population under the concept of equality of opportunity, policy implementers find it difficult to accommodate different preferences. In micro-economic theory and practice, the more preferences diverge, the more difficult it is for a national health insurance program to satisfy beneficiaries, resulting in inefficiency (Sanyare & Tuolong, 2018).

On risk diversity, since the NHIS has a universal purpose to deliver a public benefit - healthcare to everyone who needs it. In practice, risk diversity is rarely represented. For example, the government, through the NHIA, considers health care as a public good, and guarantees equitable access through a package of services with equal benefits that have been universally introduced to the program. These include the following: out-patient services, in-patient services, oral health care, eye care, maternity health care, and emergencies.

The emergence of new health hazards has a significant impact on the supply of SHI, notably in the NHIS. It is claimed that emerging health risks lead to a demand for a benefit package expansion. For example, in Ghana, cancer treatment, HB disease, and other health risks or illnesses have sparked controversy about their inclusion in the NHIS services package since public health is at danger. According to Zweifel (2007), while the government must frequently take into consideration some of these concerns under the NHIS, the result is that policy effectiveness is harmed and the government's health spending deficit grows. Because, in a normal sense, expanding the services package necessitates changes in premiums and taxes, which inhibits the poor from enrolling in the system and receiving health care. As a result, extending the services package without matching premium and/or tax adjustments defeats the long-term goal of SHI as a pro-poor program (Alatinga, 2019).

Another element that affects SHI is regulation. Because the government expects to extend the service benefit package, regulation is prone to fraud and abuse by providers and users (insured). Evidence abounds to the latest that due to fraud and abuse by providers in the delivery of services with dishonesty, as well as insured’s behaviour in seeking health care, a significant amount of money is lost in financing national health insurance schemes

(Alawode & Adewole, 2021; Sambo & Kirigia, 2014). As a result, the situation affects supplying healthcare in an equitable manner (Dagnan, 2018), that meets the desired quality of care for the insured (Ameyaw et al., 2021; Seidu et al., 2020; Tian & Pan, 2021). The comprehensiveness of the services benefit package, according to Zweifel (2007), is a primary mandate of health insurance demand and supply models.

As Ghana moved from the District Health Insurance Scheme in 2003 to national health insurance in 2005, the government generates revenue through premium contributions (either compulsory or voluntary) and other tax levies on goods and services, such as the NHIL levy (17.5 percent). It is expected that, after a decade of implementing NHIS, the provisioning of primary health care will be socially just, balancing the inefficiencies between the demand and supply factors of health care. This means that, assuming all other factors are equal and resources are competently managed, primary health care should be universally accessible to everyone who need it by 2030, with minimal discrepancies. However, this remains the gap that this study sought to investigate. Therefore, this study attempted to consolidate the results related to examining how the demand-side and supply-side models influence each other and the implementation of NHIS in Ghana.

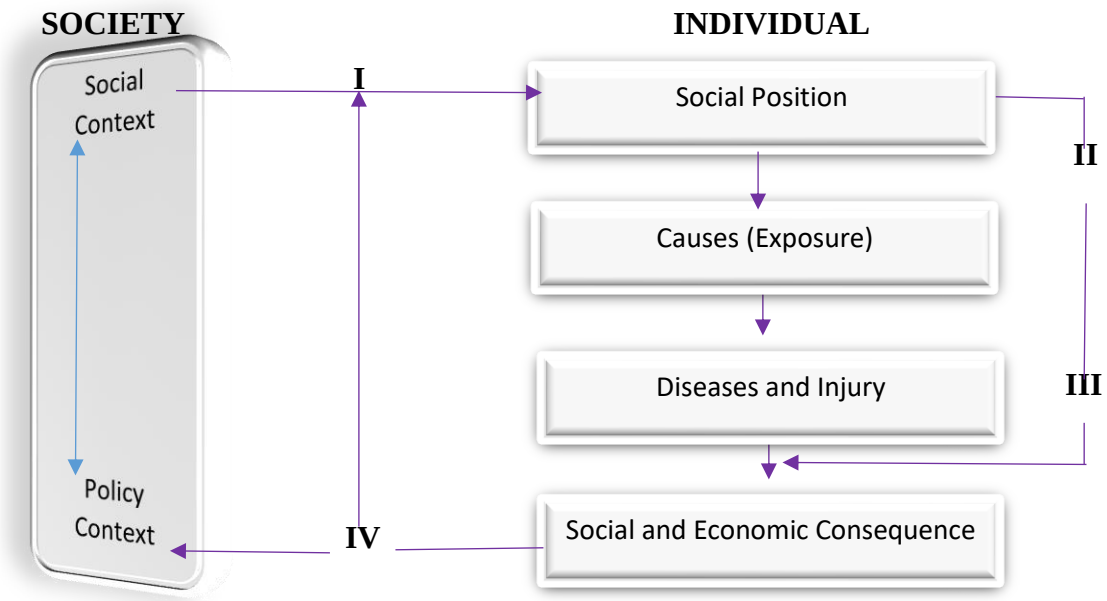
2.7 The Application of Models to Predict Health Outcomes

The use of models to predict human actions has become commonplace in modern research, and this study is no exception. The study intends to modify two models to assess hypotheses on the relevance of validating Ghana's NHIS policy. In this study, first, the method of Diderichsen et al. (2001) socio-economic determinants model is used to validate how NHIS policies are equitable in addressing ill health across different social groups without inequalities. Second, Anderson’s and Newman's (1973) health care utilisation

model as proposed by Gelberg et al. (2000) is used to examine how differences in socioeconomic status affect access, use, equity in health services and one's decision to join the NHIS. Since Gelberg et al. (2000) modified original model by Anderson and Newman (1973), these models are used in conjunction. According to Gelberg et al. (2000), several issues limit access to health care for poor groups that are not addressed in the original Anderson and Newman (1973) model but directly impact health equity and/or equity (Seidu et al., 2020). Thus, the Diderichsen et al. (2001) model of social determinants first explains how the aggregation of individual social and economic outcomes occurring in a social context influences the formulation and implementation of strategies aimed at reducing the disparities in outcomes of ill health for more and less favoured people to tackle groups. As a result, using the two models helps to reinforce the weakness of one with the strength of the other, as conceptualized and discussed in more detail in the next section.

2.7.1 The Social Determinants Model to Healthcare Equity

According to Diderichsen (2001), the processes of health inequality are centred on social status. According to WHO (2010), the processes involved in stratifying health outcomes work in four dimensions (see Figure 2.1).



Source: WHO (2010), Reproduced with permission from Diderichsen et al. (2001)

Figure 2.1: Diderichsen et al. (2001) Model of Social Determinants to Healthcare Equity/Inequity

According to Diderichsen (2001), disparities in social conditions lead to social stratification, which requires individuals to be assigned to different social positions. The socio-economic stratification exposes people to varying degrees of unhealthy living conditions and vulnerabilities in terms of health and material resource availability. In the second dimension, social stratification concerns the unequal consequences of illness for more and less advantaged groups (including economic and social consequences and differential health outcomes per se). The third component, in turn, shows how the

accumulation of individual social and economic impacts influences policy design and implementation aimed at addressing the disparities in disease outcomes for more and less advantaged groups. Consequently, the fourth dimension requires the implementation of a social protection policy (i.e. the NHIS) as a pro-poor policy aimed at addressing health problems among the poor and disadvantaged groups in the community. Given the foregoing, it is reasonable to conclude that Diderichsen et al. (2001) Social Determinants Model is best suited for use in this study as a model to validate how the NHIS is helping to address equity in health and achieve Sustainable Development Goal [SDG] three [3] (i.e. UHC) in to reach Ghana.

2.7.2 Healthcare Utilisation Model

In addition to Diderichsen's model for determining health disparities within socioeconomic groups, Anderson's and Newman's (1973) model proposes three main aspects that explain the variables under study (Andersen & Newman, 2005; Babitsch et al., 2012). These are the predisposing, enabling and caring variables that either facilitate or hinder access to and use of health services (Azfredrick, 2016) and thus influence their decision to enrol and/or renew in NHIS. The model includes demographic data, socio-structural variables as well as basic beliefs, attitudes and knowledge of health care as predisposing factors (Babitsch et al., 2012). Enabling factors include the availability and functionality of health resources for an individual or community to access and utilize health care demand (see z et al., 2015; Vargas & Muiser, 2013). While the need criteria encompass the package of benefits provided by the NHIS, this affects the enrolment of the insured (Akazili et al., 2014; Wielen et al., 2018). The model is relevant to this study as it has been used in a variety of fields including sociology, medicine, public health and psychology (Seidu et al., 2020). In the

NHIS in particular, it was used to examine barriers to access and use of health services by pregnant women in Ghana (Seidu et al., 2020). Also, Kelly et al. (2007), for example, examined the socioeconomic determinants of health: building an evidence base for policies related to health insurance. Regardless, the empirical discourse shows that the framework can be used in health policy studies, for example in the case of a health insurance system linked to the delivery of primary health services (Babitsch et al., 2012). As a result, some scholars have critiqued the model despite its widespread application across a wide range of disciplines. According to Wilson et al. (2005), the model does not take into account cultural factors and social interactions. Andersen (2008), on the other hand, claimed that needs are a social construct in and of themselves. Despite its limitations, the model is suitable and is adapted for this study as it is a multilevel theory and framework that has been used in some situations and disciplines (see Figure 2.2).

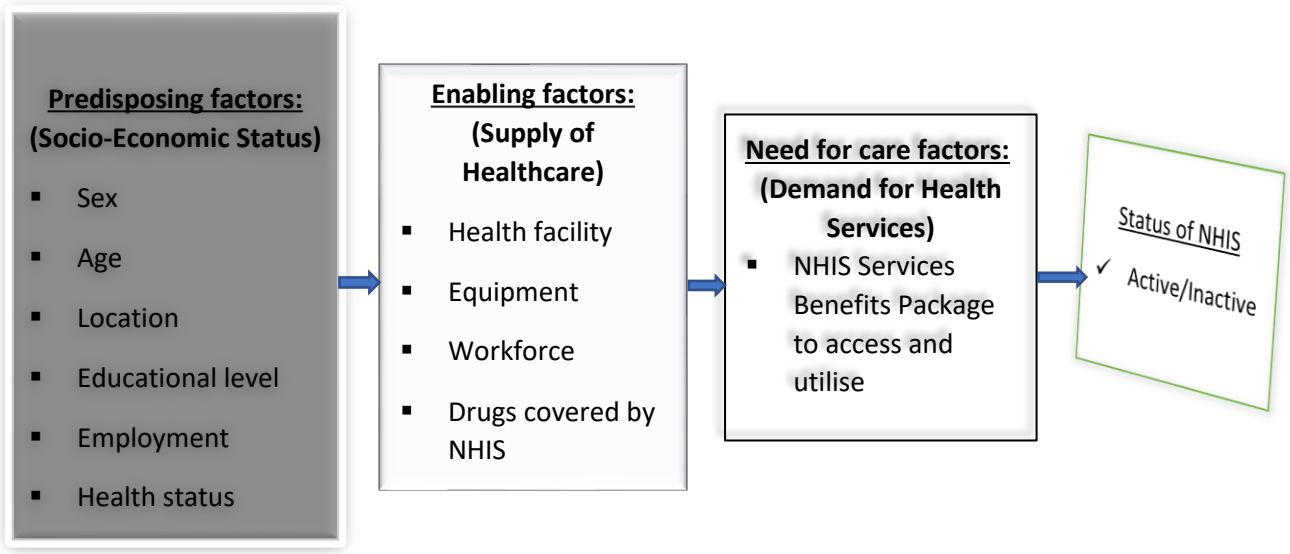


Figure 2.2: The Concept of the Supply and Demand-side Models of NHIS
Source: Adapted from Anderson and Neuman Healthcare Utilisation Theory (1973)

As shown in Figure 2.2, the NHIS ensures equity and social justice in the delivery of health care by ensuring access to and use of health care without inequalities. It indicates that people's choice to participate in the NHIS is valuable to the program's mandate and goal. In order to examine the effects of care providers, the supply of health care, and the effect of demand for health care on the number of people insured, one must first understand the variables being measured. Therefore, Figure 2.2 outlines the indicators assessing the factors influencing the decision to enrol and/or renew in the NHIS in two scenarios: first, the dependent variable (i.e. NHIS status – "active" or "inactive") and second independent variables (supply and demand side). Figure 2.2 divides the independent variables into two subcomponents: enabling factors (provision of health care) and dependency factors (demand for health care), with the mediating variable being socio-economic status. As a result, this study establishes the relationship between the supply of healthcare and the demand for healthcare when enrolling the insured always means the supply of healthcare and the demand for healthcare (access and take-up), taking into account the insured's socio-economic status is important for UHC, health equity and social justice.

The dependent variable in this study is one's own decision to join and/or renew the NHIS. The survey collected this information by asking the following question: What is your insurance status to require access and use of healthcare under the NHIS? The researcher treats their decision to enrol and/or renew with the NHIS as a binary variable and categorises the responses as insured (active) or insured (inactive). The insured (active) group includes individuals whose NHIS card was currently active and who may be requesting and receiving healthcare services under NHIS at the time of the survey. Those whose NHIS status had become inactive over time and are therefore unable to access or

use healthcare under NHIS at the time of the survey are also classified as insured (inactive). As a result, respondents' views of healthcare supply and demand variables are influenced by their enrolment status.

Previous research by Dixon et al. (2013) discovered a link between SEHC and one's decision to enrol and/or renew with NHIS for UHC. Consequently, in this study, the socio-economic status of the insured would be considered as mediating variables influencing the impact of healthcare supply and demand on insured's uptake of NHIS.

The supply of health care is independent, as is the demand for access and use of health care. On the other hand, however, the demand for access and use of health care may depend on the supply of health care. Therefore, according to this study these factors form the endogenous construct of the equation that influences the enrolment status of the insured.

2.8 The Implications of Providers' Supply of Healthcare

A country's health policy and/or health system ought to be effective in managing the complexities of health care delivery (Solar & Irwin, 2010). A successful healthcare system, by definition, includes the organisation, institution, resources, and people whose primary goal is to provide healthcare that meets public expectations. This includes both attempts to modify health determinants and more direct actions to improve health (WHO, 2009, 2013). Only possible if institutions effectively meet the primary health care needs of the population by ensuring responsiveness and equity in health care (Government of Queensland, 2013). The difficulties in health equity in this study imply that certified health providers should be effective in delivering health care in providing quality services and satisfying those insured under NHIS. Therefore, in order to define the delivery of healthcare under NHIS as successful, it is necessary to determine insured patients'

perceptions of how well-resourced accredited healthcare providers guarantee the delivery of healthcare to achieve UHC's is appropriate and equitable. Based on this evidence, research suggests that licensed healthcare professionals must operate on a continuum in healthcare delivery (Laszlo & Krippner, 1998; von Bertalanffy, 1968; Von Bertalanffy, 1972) to meet the insured patient's primary healthcare needs. This means that for the NHIS to function successfully, people providing health services must be adequately resourced and work together to achieve the common goal or purpose of the system. This is seen as the only way for the NHIS to achieve policy effectiveness, according to Solar and Irwin (2010).

2.9 Research Gap

The study went into great detail on the concepts, empirical debates and models used to examine demand- and supply-side factors of national health insurance in Ghana: implications for universal health care in the Wa municipality. The importance of identifying demand-side and supply-side factors of public health insurance for health policy management cannot be underestimated. For example, in other countries, social health insurance demand-side and supply-side factors are often used to forecast their impact on NHIS enrolment (Trottmann et al., 2012; Zweifel, 2007). However, the analytical conclusions drawn from the literature show that the evidence is sparse, particularly in the Ghanaian context including the Wa municipality. As a result, the next sections of this chapter reviews literature on the determinants of supply of healthcare, demand of access and use of health services under the NHIS, and their effect on NHIS uptake. The reviews are organised to support the research questions posed for the study.

2.10 Empirical Review on the Supply of Healthcare

Globally, the delivery of health care is challenged with limited resources, especially in developing countries. For example, health care facilities in sub-Saharan Africa are inefficient to use available resources to optimize service delivery, impacting health systems performance (Babalola & Moodley, 2020). In Zimbabwe, access to health facilities remains a serious challenge for the population in need of health care, coupled with the inadequacy of health workers and shortages of medicines (Mangundu et al., 2020). In the wake of the US-British coalition military invasion, a survey in Iraq shows that the population is disappointed in the country's healthcare system because it does not meet their basic needs. As a result, the healthcare system is characterised as inaccessible, unaffordable, poor quality, inefficient and ineffective (Jadoo et al., 2021). In Ghana, the disparity between access and use of health care between the poor and the rich is occasioned by inequity in the distribution of health facilities, equipment, health workers and drug supplies across the country. To help reduce inequalities in health care and ensure social equity in the health system, scholars advocate fair distribution of health care, as health is seen as a basic need (Gaddard & Smith, 2002; Sen 2002, 2009; Harvey, 2009). In Nigeria, a study has found that there is a linear relationship between the household implementation of care factors and the successful delivery of primary health care (Gambo et al., 2019). One study found that good supply chain and inventory management practices improve trauma care when resources are available (Boakye et al., 2021). This scenario demonstrates that appropriate supply-side determinants can positively improve the quality of healthcare, particularly in healthcare settings where available resources are scarce (Hirai et al., 2020).

Health insurance is an important factor guiding residents to access primary care services at health facilities (Zhou et al., 2021). However, in Ghana, the operation of the NHIS is characterised by unavailability of funds, forcing healthcare providers to resort to the reuse of single-use items, which discourages people from accessing PHC services in accredited healthcare facilities (Akweongo et al., 2021). This situation requires, among other things, an examination of the determinants of the supply of health services in the use of NHIS by the insureds.

2.10.1 Determinants of Supply of Healthcare

2.10.1.1 Availability of Health Care Facility

The essence of providing healthcare facilities to people is to improve access. This may include asking for mode of travel, travel time and travel distance to determine the economic costs associated with access to health care. In the district of Wuhan at the community level (a total of 830 communities), the results suggest that there is a clearly polarised differentiation in how communities access healthcare in available facilities (Ma et al., 2019). The study found that people in Wuhan District have low and high access to healthcare, with more than half of the communities having inadequate levels of access for their population size (Ma et al., 2019). Results from using a geospatial map to determine access to health facilities in forty-three (43) African countries found gaps in health facility accessibility and highlight facilities closest to areas at risk in event of outbreaks likely to witness spillover (Hulland et al., 2019).

In Tanzania, government's efforts to construct, upgrade and equip health facilities to offer safe surgery and related diagnostic services are still grappling with gaps in available health

facilities being in good statuses and functioning with capacity to offer essential and safe surgical services in order to achieve UHC (Kapologwe et al., 2020).

In Asia, particularly India, health facility index is positively associated with healthcare seeking behaviour. The results of a multilevel regression analysis showed that people from districts with 'very good' facility index were four times more likely to visit PHC compared to districts with 'very poor' facility index when background variables were controlled (Mustafa & Shekhar, 2021). In Ghana, this situation makes the concentration of health care seeking behaviour highly burdened in few facilities with limited resources (Ahinkorah et al., 2021; Ameyaw et al., 2020, 2021; Seidu et al., 2020). In a scoping review of related works, making choices of where to seek health care depends on a variety of factors between patient and provider characteristics. This may include; structural, process and outcome characteristics of providers, differing in the relative importance attached to these characteristics by patients (Victoor et al., 2012).

As a result, people working in the health service industry have seen it crucial to access quality health care from the lenses of how patients perceive healthcare from health care delivery facilities. According to a study in Nigeria, the private sector is preferred to the public one with regards to receiving healthcare and that within the public sector, the higher levels of health facilities are preferred to the primary health care centres (Abodunrin et al., 2010). In Ghana, a study has shown that there is higher level of care and attention at private healthcare facilities than the public (Kwateng et al., 2017). But as to what accounted for these differences, it is not well known and this study would be interested to explore these differences further.

2.10.1.2 Availability of Health Care Equipment

Regarding the availability of health care equipment, literature suggests lack of adequate essential equipment negatively affects access to health care service in Mzimba, Malawi (Funsani et al., 2021). In Ethiopia, provision of quality antenatal care services is challenged because of inadequate essential supplies of equipment, staff, and medicines at health facilities (Defar et al., 2020). The situation becomes more critical amidst COVID-19, where there has being structural inequity in the global supply of personal protective equipment's (PPEs) at health facilities affecting health care delivery in low-middle countries especially (Garber et al., 2020).

In Ghana, health care services are challenged because of inadequate beds and physical space, equipment, and staff strength. These challenges make the health system overburdened, with little motivation given to staff hampering quality of care (Adatara et al., 2021; Ameyaw et al., 2020; Seidu et al., 2020). In northern Ghana, a study conducted by Ameyaw et al. (2020), found that only one hospital had complete equipment for emergency obstetric and new-born care, while four others had adequate emergency obstetric care equipment. As a result, the number of maternity and delivery beds per 10,000 population was low, ranging from 0.40 to 2.13 compared to the standard of 80-85%, leading to more referral's cases of emergency obstetric care and maternity care (Ameyaw et al., 2020). For these reasons, access to sustained medical devices at all levels of health care facilities is necessary to achieving UHC in Ghana and, is possible through a comprehensive approach to acquiring adequate medical equipment, and showing technical leadership of its management by facility managers (Williams et al., 2020). Yet, to what

extent this is in place is another interesting variable this study measured under the supply-side model in the Wa municipality.

2.10.1.3 Availability of Health Care Professional

Good workforce forecasting is vital to lessen health disparities and improve health systems (Drennan & Ross, 2019). Globally there is a shortage of health care professionals at various levels of health facilities in providing varied services (see e.g., Adatara et al., 2020, 2021; Ameyaw et al., 2020; Defar et al., 2020; Drennan & Ross, 2019; Li et al., 2017; Williams et al., 2020). It is argued that there is a high demand for nurses in all countries (Drennan & Ross, 2019). In Ethiopia, nearly half (45%) of the total annual cost is incurred on health personnel budget (Feyisa et al., 2021). The deficiency in health professionals makes comprehensive oral health care inaccessible (Burtner & Dicks, 1994). In India, the overall low numbers of qualified health workers; compared to a large presence of unqualified health workers, particularly in rural areas; and large urban–rural differences in the distribution of qualified health workers had consequence on service delivery (Motkuri et al., 2017; Nedungadi et al., 2018; Rao et al., 2016). For example, a study has found that lack of easy access to health practitioners and medical centres in rural India makes common ailments that are easy to manage with medicines, being either self-treated or managed by an unqualified practitioner. The situation leads to medical escalations and even fatalities due to lack of awareness and delayed diagnosis (Nedungadi et al., 2018). However, to wipe-out unqualified practitioners in the health care service provision, the introduction of licensing system has proven significant to curb this menace in many countries, and Ghana is no exception (Sonoda et al., 2017). Job satisfaction and lack of motivation for health workers also are barriers affecting the supply of adequate health professionals at facilities

(Labiner et al., 2010; Mutale et al., 2013, 2016). Though there is dissimilarity in factors influencing job satisfaction between rural and urban healthcare workers, there is the need for human resource policy to be responsive to the diverse needs of health workers particularly at the primary level (Labiner et al., 2010). The reason is because there is an established evidence of variation in motivation score by sex, type of health worker, training and time in post (Mutale et al., 2013).

In Ghana, earlier projections in 2020 show that based on the population (size and demographics), the burden of disease, the package of health services and the professional standards for the delivery of these services, approximately 221,593 health workers in eleven categories in primary health care were needed (Asamani et al., 2021: 1). The health workforce is expected to cover 67% of demand, but with huge supply imbalances. Specifically, the supply of six (6) out of eleven (11) health workers at about 54.5% cannot even cover 50% of the healthcare needs by 2035. But midwives could potentially be overproduced by 32% by 2030. As a result, Asamani et al. (2021: 1) recommends that the future human resources strategy in health care should strive to increase the number of pharmacy technicians by more than sevenfold; medical doctors by 110%; registered general nurses by 55% while midwives were cut by 15%. To achieve these targets approximately $480.39 million is needed in health professional training to correct the mismatch between demand and supply (Asamani et al., 2021: 1).

In northern Ghana in particular, the supply of health care professionals at health facilities are inadequate as various staff strength fall far below the WHO recommended staff benchmark of 1:1,320 (Ameyaw et al., 2020). For example, all the facilities had less than one general medical doctor per 10,000 population (range 0.02–0.30). The number of

midwives per 10,000 population ranged from 0.00 to 1.87, and few of the health facilities had a university-trained nurse designated for maternity care.

Against the above backdrop, there is the need for interventions to reduce supply barriers to ensure adequate health care professionals and improve the delivery of services (Obrist et al., 2007). To this end, policy makers may have to integrate more comprehensive staff motivation interventions into quality improvement strategies especially in government-owned health care facilities where working conditions are perceived to be the worst (Alhassan et al., 2013). However, a good working condition of health care workers is likely to bring on board task-sharing of health services among health professional for improved service deliveries (Mendenhall et al., 2014). In India, evidence showed that healthcare providers considered efficient teamwork as an opportunity for enhancing provider skills and knowledge, job satisfaction, delivering effective health care administration, and establishing good community relationship (Sathyananda et al., 2021).

2.10.1.4 Availability of Drugs

Ensuring that there is available supply of essential drug at all levels of health facilities is crucial in quality of care and well-being. In Ethiopia, second to personnel that accounted for nearly half (45%) of total annual cost the country's budget, is cost incurred on drugs supply, while other consumables accounted for about one third (29%) of the total annual cost (Feyisa et al., 2021). In Afghanistan, between 2010 -2016, the supply of drugs available at health facilities declined significantly, thus far affected quality health care delivery (Ansari et al., 2020). In Kenya, due to the frequent shortage of supplying essential drugs in treating patients with mental health diagnosis, the service was challenged. This situation together with only two psychiatric nurses attending to a population of

approximately 1.2 million people made treatment of Schizophrenia a health care challenge in Kifii (Bitta et al., 2017). In Eastern Uganda, the majority of diabetic patients (94.3%) cannot afford prescribed medicines when not covered by health insurance (Obakiro et al., 2021). As a result, access to essential drugs is a challenge in public health facilities. In Bangladesh, lack of logistics including drugs supply among others were factors identified as barriers facilitating the increase of non-communicable diseases (Rawal et al., 2021). In Ghana, there are various chances to enhance general stock management procedures, notably the use of medications in hospitals with limited financial resources. However, because of inadequate supply chain management, inadequate drugs supply continues to be a concern (Boakye et al., 2021).

2.11 Demand for Accessing and Utilising Primary Health Care Services

Spontaneous illnesses are increasing the demand for health care around the world. When comparing high-income countries (England, Netherlands and Spain) with lower-middle-income countries (Malaysia, North Macedonia, Romania and Turkey) in terms of quality and cost of primary health care and strengths of service delivery, the reports are varied (Lim et al., 2021). The result showed that high-income countries with strong primary care performed better on completeness, continuity, and coordination, but underperformed on accessibility to services compared to lower-middle-income countries. However, none of the countries studied showed consistent performance on all indicators, in either the best or worst dimensions of primary care delivery (Lim et al., 2021). In Ethiopia, there is a gap of about 33% in percent of the resources needed by 2030 to meet the basic health needs of the population (Hailua et al., 2021). The situation makes availability and willingness to access tuberculosis diagnostic services a barrier (Asemahagn et al., 2020). Therefore, achieving

universal coverage is challenged due to the affordability of populations unable to access their health needs (Hailua et al., 2021).

In Nigeria, a study conducted by Abimbola et al. (2015) shows that healthcare costs incurred prior to the related transaction between patient and provider (i.e., transaction costs of accessing healthcare) are potential barriers to accessing healthcare in low- and middle-income countries. Of approximately 452 patients, 84% initially consulted an informal or inappropriate provider before later turning to qualified providers. Some of the informal providers, who were first contacted before qualified professionals were available, included non-accredited pharmacists and traditional healers. As a result, the cumulative total transaction costs of accessing healthcare increased proportionately from US$14.40 to US$30.20 (Abimbola et al., 2015). In health policy analysis, determinants of access to and use of health care are central to how people seek health care. The focus of this section is therefore to assess the demand-side model of national health insurance in Ghana.

2.11.1 Determinants of Access and Use of Primary Health Services

Access and use are two variables of the demand-side model of health care management. Although these two indicators are often linked in the literature, their measurable scales are different. For this reason, they are treated separately in this study.

NHIS enrolment figures in Ghana continue to increase overtime between 2005 to 2014 (Ankra et al. 2018). For example, evidence from December 2014 showed that around 1.43 million people, representing 5.3% of the population, were active registered members of the NHIS who had access to health services (Ankra et al. 2018). Within 2015, those with active NHIS membership had at least made 3 outpatient visits per beneficiary (Ankra et al. 2018). Available evidence suggests that the introduction of the NHIS has led to a decline in

healthcare expenditure (i.e. out-of pocket payment) by the citizenry (Adua et al., 2017; Akazili et al., 2014; Akazili, Mcintyre, et al., 2017). This development has subsequently led to improvements in health outcomes – the reduced infant and maternal mortality from 50% to 25%, and increased in life expectancy rate from 60.7 to 64.8 years between 2005 - 2014 (see e.g., Adua et al., 2017; Akazili et al., 2014; Akazili, Ataguba, et al., 2017; Akazili, Mcintyre, et al., 2017; Dalinjong et al., 2017). Enrolment into the NHIS is shown to decrease the citizenry unmet medical needs by 15 percentage points, decrease catastrophic OOP by 7 percentage points and improve financial risk protection (Navarrete et al., 2019). These reductions are particularly more significant for people living closer to health facilities than among the geographically remote vulnerable groups (Navarrete et al., 2019). Yet, inequity in access to and use of health service has been observed to hinder enrollment into the NHIS largely due to variation in socio-economic factors often leading to a decline in enrolment (Amu et al., 2018; Dake, 2018; Seddoh & Sataru, 2018; Wielen et al., 2018).

In Ghana, Dei's and Sebastian (2018) study established that both horizontal and vertical inequities exist as barriers affecting insured patients use of outpatient services, though inpatient healthcare utilisation was both horizontally and vertically equitable. Also, women were found to be more likely to use outpatient services than men but had reduced odds of using inpatient services. Again, possessing a health insurance was also significantly associated with the use of both inpatient and outpatient services (Dei & Sebastian, 2018). For these reasons, the NHIS has the impetus to achieve UHC because being insured is associated with increased utilisation of outpatient, inpatient, and maternity care health services (see e.g., Agbanyo & Peprah, 2021; Dalinjong et al., 2017; Kwarteng et al., 2020;

Wielen et al., 2018). Further findings report that persons with history of recent illness or injury and poor or very poor self-reported health status, those on chronic medication also had increased odds of utilising both outpatient and inpatient health services respectively (Dalinjong et al., 2017). Considerably, among the insured, again the poorest use the Community-based Health Planning and Services (CHPS) compounds, while the least poor use private clinics and public hospitals for outpatient health services as compared to the uninsured who predominately use pharmacies or licensed chemical shops (LCSs). Specifically, for inpatient health services, it is reported that the insured largely use public hospitals, with the uninsured using private clinics or public health centres (Dalinjong et al., 2017). On maternity care, convenience, availability and affordability of maternal health services, as well as sociocultural factors were major influences on women's uptake of national health insurance and use of services (Agbanyo & Peprah, 2021; Izugbara & Wekesah, 2018).

Similarly, age, gender and educational level are reportedly significant predictors of enrolment into the NHIS in Ghana. For example, respondents between the ages 41–60 years were twice more likely to be enrolled onto a district Scheme compared with respondents between the ages 21–40 years. Also, females were thrice more likely to enrol compared with males (Seddoh & Sataru, 2018). Again, respondents educated to the tertiary and post-graduate levels, were five times and four times more likely to enrol compared with non-educated respondents (Seddoh & Sataru, 2018). Interestingly, no significant association was observed between occupation and enrolment (Seddoh & Sataru, 2018). Despite continuous education and publicity by scheme managers, evidence suggests that people are not registered on the scheme because of poor knowledge (Abiola et al., 2019). Yet, of those

registered, it was also established that there was a statistically significant association between age and utilisation, marital status and utilisation of NHIS, employment status and utilisation of NHIS (Abiola et al., 2019). The results suggest that sociodemographic factors were significantly associated with insured's use of health services. Yet again, comparing subscriber's thought about quality of care, evidence showed there is a significant difference in NHIS clients' perception of quality of care by occupation, region, length of NHIS membership, age and facility type (see e.g. Alatinga & Williams, 2014; Haw, 2018; Nsiah-Boateng et al., 2018). In a study by Nsiah-Boateng et al. (2018), the multivariate logistic regression analysis proved that different factors, other than region of residence, were significantly associated with perceived good quality of care. Also, analysis of health care providers' responses showed significant differences in their perception of quality of care by region. For example, it was found that health care providers in the Volta region were significantly less likely to perceive quality of care as good compared to those in the Ashanti region (Nsiah-Boateng et al., 2018). Using Ghana Demographic and Health Survey (2014) dataset, NHIS utilisation was negatively associated with overall perception, and the difference across utilisation categories was higher among private facility users than public facility users (Dalinjong et al., 2017; Haw, 2018). The above results seem to indicate that there are inequalities in access to quality healthcare in Ghana's healthcare systems (Hongoro et al., 2018). As already emphasised, poor households do not have access to health services due to the uneven geographic distribution of primary health care facilities and resources because the use of PHC services involves high transaction costs (see e.g., Anselmi et al., 2015; Alhassan et al., 2016; Ben et al., 2017; Riman & Akpan, 2012; Stilwell, 2017; Uwala, 2018, Dagogo et al 2020). To improve the quality of care, it is

argued that health care system has to encompass the total range of comprehensive health interventions, inclusive of considering SEHCs, regards the supply and demand-side determinants of health care access and utilisation at least centered on preventive, diagnosis, curative, and rehabilitative care (see e.g., Kuupiel et al., 2017; Plianbangchang, 2018; Tang et al., 2017). According to Kuupiel et al. (2017) improving the accessibility and efficiency of point-of-care diagnostics services, particularly in resource-limited settings, may be a promising route to improving healthcare outcomes, particularly primary health care.

The introduction of interventions such as Free Maternal Health (FMH) into NHIS policy has both improved NHIS enrolment and has so far proven to be a reliable factor in encouraging the use of facility-based delivery services in Ghana (Agbanyo & Peprah, 2021). The literature suggests that individuals who have not had access to health care, largely it was because they cannot pay the enrollment fee (Iwuoha et al., 2021; Tang et al., 2021, Khakh et al., 2019). As a result, previous studies have demonstrated that SES are significant factors affecting inclusion in the NHIS, leading to self-medication and catastrophic deaths (Iwuoha et al., 2021; Tang et al., 2021). For example, in Kenya, transport cost, unemployment of the household head, presence of an elderly person, a person with a chronic ailment, large household size, lower household social-economic status, and geographical residence of the citizenry were significant factors associated with increased catastrophic expenditures which affected access and utilisation of primary health care (Barasa et al., 2017; Pratt et al., 2020). In China a study also found that the accessibility of top-tier hospitals is affected by residence catchment area which is unequally distributed in space (Pan et al., 2018; Tian & Pan, 2021; Wang et al., 2021).

Considering analysis of health systems in developing countries, it is argued that policy implementation barriers affect the poor and vulnerable groups from benefiting from public spending on public health policies and programs (Rouzbehani & Araghi, 2020). For instance, there is a significant relationship between access to health facilities leading to increased health service utilisation and better health outcomes (Bohra, 2017). However, the prevailing inequality in access dimensions; availability, affordability, accommodation, acceptability and safety to healthcare services and use between the rich and poor, urban and rural, and other SEHC are what hinders progress of health systems, particularly national health insurance in developing countries (Banu & Biswas, 2021).

2.12 Structural Effect of SEHC, Supply and Demand-side Factors on NHIS Uptake

To achieve UHC, access and use of health services are paramount. In order to achieve SDG three (3) and make healthcare equitable to all who need it, the Government of Ghana introduced the comprehensive NHIS services in 2005 to cover primary healthcare (NHIA, 2012). The implementation of NHIS since 2005 to date means that the supply of healthcare resources to meet demand for healthcare needs for population's access and use as a transition to UHC should be equitably distributed. The review of previous studies as demonstrated earlier suggests that there are gaps in the supply and demand-side determinants, ranging from an uneven allocation of resources in terms of healthcare facilities, equipment, healthcare professionals and medicines. The consequence of the above affects the insured's access to health care and the use of primary services due to differences in SEHCs and perceptions of the quality of service delivery (Jehu-appiah et al., 2011; Kayiba et al., 2021; Kusi et al., 2014; S. Morris et al., 2005). However, to the best of the researcher's knowledge there is no study that has determined how both determinants

of supply and demand-side factors of healthcare, together with SEHC, affect insured persons' NHIS uptake. It is against this that the research sought to determine the relationship between the demand and supply-sides models of the national health insurance on NHIS uptake and implications for UHC in Ghana using structural equation model as shown in Figure 2.3.

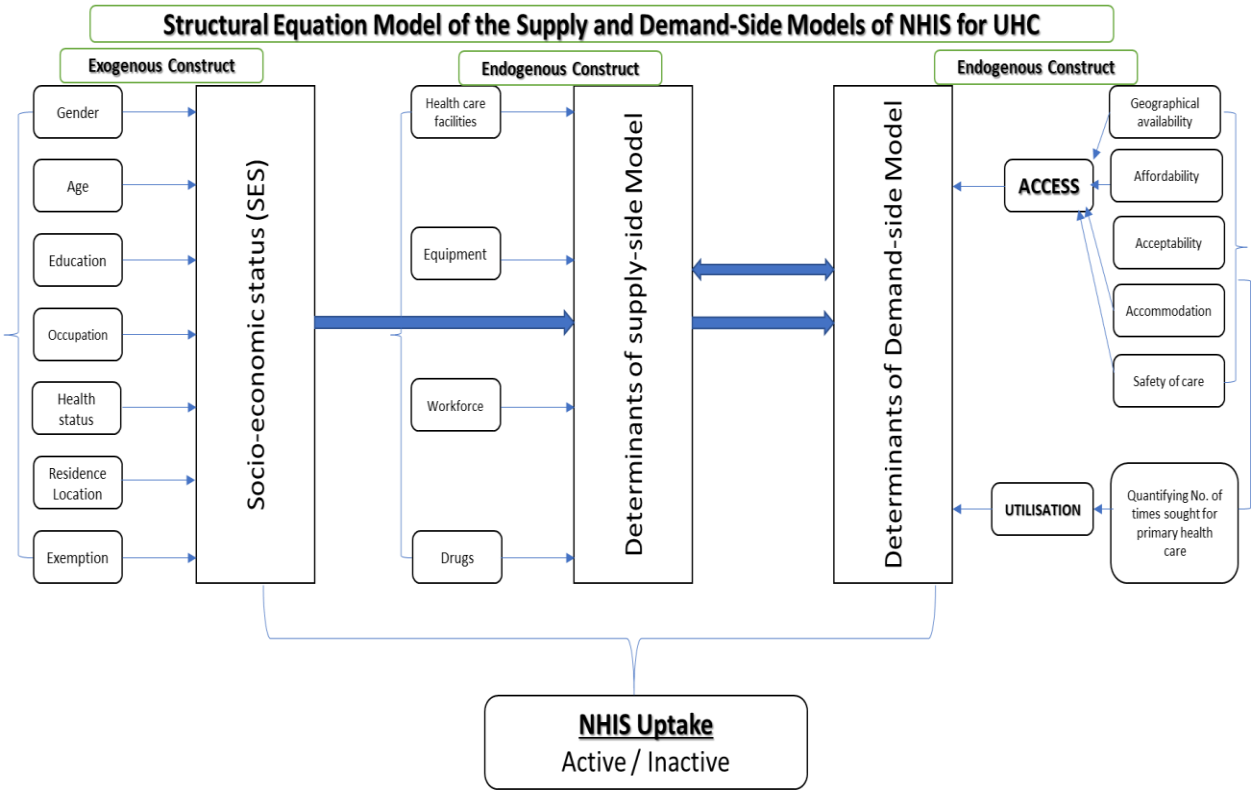


Figure 2.3: The Research Model
Source: Author's Construct (2023)

Based on the empirical reviews, the study hypothesis posits that both exogenous and endogenous elements of the variable construct affect the demand and supply side of NHIS policy, and overall affect NHIS uptake. Hence, it is crucial to predict the research model using structural equation modelling (SEM) to answer the theoretical and conceptual viewpoints driving the investigation. SEM is a well-known predictive analysis used to

transform broad observable variables into unobservable latent constructs in order to establish relationships that exist between them (Schuberth et al., 2022). In health surveys, as may be the case here, SEM has been accepted by scientists as a standard model to create and predict models for making critical policy decisions (Abbas et al., 2021; Al-Dmour et al., 2020; Hou et al., 2020). Therefore, SEM is suitable for use in this study to determine the structural effect of SEHC, supply-side and demand-side factors on NHIS uptake.

2.13 Conceptual Framework

The figure below shows a graphical presentation of the research topic and gap that triggered the investigation. It also shows how the inventiveness of the NHIS, a social protection program for impoverished and vulnerable populations, fits under the umbrella of social justice and social security principles and influences the policy effectiveness of the NHIS.

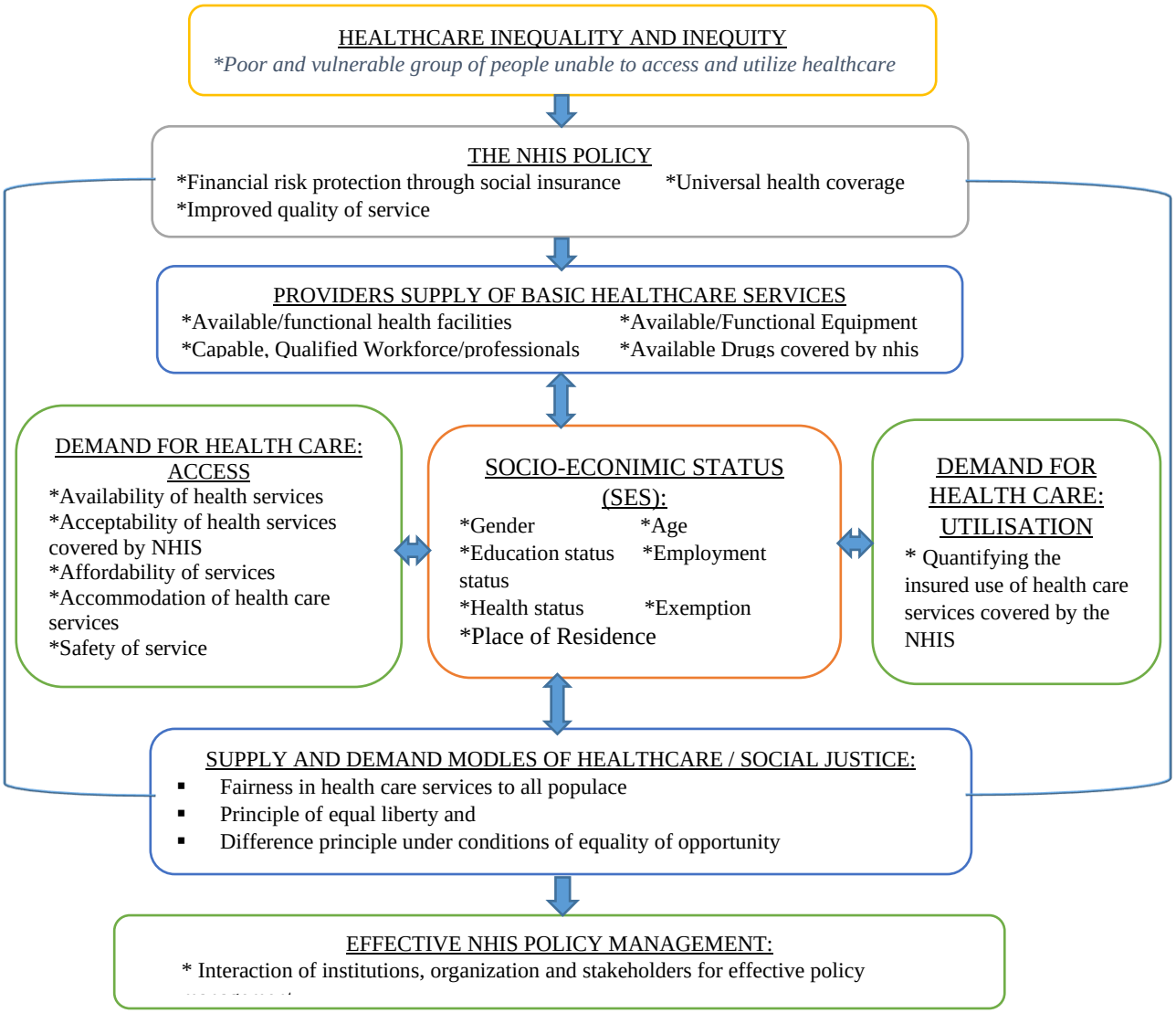


Figure 2.4: A Conceptual Framework for Effective NHIS Policy Management

Source: Author's Construct (2023)

The NHIS is a social protection policy that employs the social insurance mechanism to enable the poor and disadvantaged groups of people to access and use healthcare for a variety of reasons (Alatinga & Williams, 2015, 2016; Boateng & Awunyor-vitor, 2013). According to the research, one well-known, though not quite obvious, cause for many groups of people being unable to access and use healthcare was an unequal provision of health to the population of socio-economic status (Dixon et al., 2013). This difference in

policy execution is frequently characterised as inequitable, unjust to the poor, and as a result, deepens the poverty gap of ill-health between the affluent and poor (Alatinga, 2014). In the arguments, it is proposed that to define a poverty-related policy as an inequitable and unjust method, the idea of social justice must be shown, and the supply and demand sides models must be evaluated (see e.g., Alatinga, 2014; Nkansah-Amankra et al., 2013; Trottmann et al., 2012; Wiley, 2014). In this context, the NHIS is predicated on social justice concepts, such as the principle of equal liberty and the principle of difference under circumstances of equality of opportunity (Garrett, 2005). Furthermore, the NHIS is social insurance that is constrained by the demand and supply laws of public goods - healthcare (Wiley, 2014; Zweifel, 2007). As a result, this study used the theory of justice, and HCP to examine the demand and supply-side models under NHIS in Ghana, Wa municipality. The reason why this study is important is because in affluent nations such as the United States, the United Kingdom, and Europe, such validations are undertaken to contrast pro-poor programmes, resulting in informed information and improved policy management.

2.14 Chapter Summary

The chapter goes into great detail to review literature on concepts, foundational models, empirical reviews, theoretical debates and conceptual framework that influenced the creativity of the study. The review pointed out the research gap which necessitated the nature of the research questions and objectives, as well as hypotheses explored. The study makes a significant contribution to Rawls's theory of justice, Ruger's HCP theory and social health insurance demand and supply theory in the context of the Ghana NHIS. It also contributes to the dissemination of information about healthcare, its determinants and their impact on healthcare demand. These factors help consolidate the gains made by social

health insurance schemes such as the NHIS and explain how Ghana is making progress towards the United Nations (UN) Sustainable Development Goal (SDG) – three (3): full health coverage for all by 2030. As a result, the next chapter provides the methodology to be used in conducting the research to study the demand-side and supply-side models of National Health Insurance in Ghana: Implications for Universal Health Care in Wa Municipality.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter provides a profile of the study area, the research methodology on philosophical assumptions, the research approach and the design choice suitable for this study. Also, the chapter is devoted to explaining the study's target population, sample size and techniques used, data collection methods, issues of validity and reliability, data analysis, management and processes, and ethical considerations, as illustrated in the figure below:

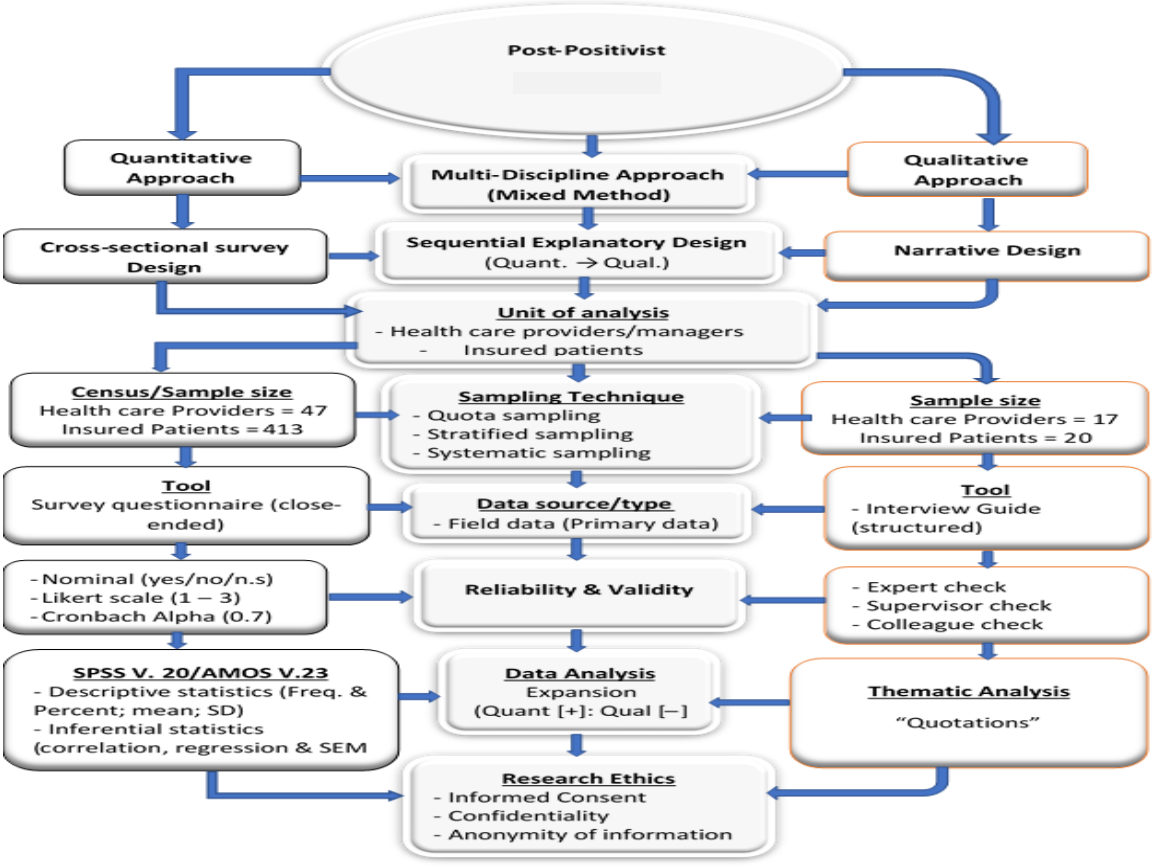


Figure 3.1: Research Methodological Framework

Source: Author's Construct (2023)

3.2 Study Area

The Wa Municipality serves as the regional capital of the Upper West Region of the Republic of Ghana, with Wa functioning as the regional capital. It is located at latitude 10.04N and longitude 02.30W and has an average altitude/elevation of 326 meters (Geographical database GeoNames, revised 2022-01-18). In 2010, the Municipality had a total population of around 107,214 people, of whom 52,996 are males and 54,218 are females according to the 2010 census (Ghana Statistical Service [GSS], 2012). Then the community growth rate ranges from 2.7 percent in rural areas to 4 percent in urban areas (Wa Municipal Assembly, 2012; GSS, 2012). Currently, according to the 2021 Population and Housing Census, the municipality has a population of 200,672 (female 102,744 and male 97,928) and is growing at 6.0 percent annually (GSS, 2021). In comparison, the study area experienced a double growth rate of population between 2010 and 2021, which is considered appropriate for this study. It is bordered by Nadowli District to the north, Wa East District to the east and south, and the Assembly of Wa West District to the west and south. The municipality is made up of people from many religious backgrounds, with Muslims, Christians and traditionalists predominating (GSS, 2021).

The people in the municipality are made up of indigenous people who own the land and speak Waala as a language, as well as foreigners who live there for government duties, commercial activities and education. As a result, the municipality has a diverse demographic mix of individuals from many tribes and occupations (GSS, 2021). Apart from the residents of the municipality and those who have relocated to carry out their official duties and obligations as well as business operations, there are other students who have travelled from other parts of Ghana and across the borders to pursue secondary and

higher education. The municipality has four (4) tertiary colleges including Simon Diedong Dombo University of Business and Integrated Development Studies (SDD-UBIDS), the Dr. Hilla Liman Technical University, Jahan Training College and Wa Nursing Training College and other secondary, technical, vocational and commercial schools, all of whose students have access to and use of community health care. As a result, people in the study region are literate and can read, write and understand basic English. This influenced the nature of the methodological tools used in the research. Due to the municipality's thriving investment prospects, the informal sector, largely covered by small business owners, includes agriculture, commerce, tailoring, hairdressing, furniture making, shoe-making, weaving and so on.

The poverty index in the Upper West region ranges from a low of about 36 percent in Wa Municipal to about 84 percent in Wa East and over 90 percent in Wa West (Ghana Statistical Service, 2015). In terms of providing PHC under the NHIS, Wa Municipality has 47 NHIS-accredited healthcare facilities that provide PHC services under the NHIS. The healthcare facilities were divided into two categories: secondary level facilities (the regional hospital) and primary level facilities (the municipal hospital, clinics, health centres and CHPS, private medical diagnostic centres and pharmacies). The health facility locations fall into the urban, sub-urban, and rural categories. Health centres and CHPS offering PHC services were found in rural, sub-urban, and urban areas referred as locality health facility, while hospitals, clinics, private medical diagnostic centres, and pharmacy shops, sometimes acting as referral facilities, were located in urban and sub-urban areas. Available data from the Wa Municipal Health Insurance Authority (2022) showed that NHIS take-up recorded 11,814 enrolments and 80,289 renewal memberships in 2019

compared to 2020 when new enrolments and membership renewals fell to 7,741 and 79,370 respectively. In 2021, new enrolments increased to 9,783, with membership renewals increasing proportionately to 86,022. As of March 2022, records showed that 4,897 were newly registered with NHIS and 44,014 renewed their membership.

As a result, Wa Municipality has recently been recognised as one of the fastest growing regions in the region, attracting investors from Ghana and beyond. This has resulted in a significant increase in the healthcare coverage rate, drawing NHIA's attention to the importance of NHIS working efficiently to deliver healthcare to meet policyholder's demand.

3.3 Research Philosophy

As a body of knowledge, research has a variety of philosophical assumptions that characterise a social phenomenon. Positivism, social constructivism, interpretivism, post-positivism and/or pragmatism are examples (see e.g. Bryman, 2012; Creswell, 2014; Saunders et al., 2012). However, it is argued that the application of philosophy in research depends on the nature of the research topic, the study audience, and the researcher's understanding of the social phenomenon being studied (Creswell, 2009). These make research philosophy important for its proper application in measuring the epistemology (research process) of the study of social reality, either from the ontology of objectivity or subjectivity and/or mixed (Creswell, 2014; Saunders et al., 2012).

The philosophical assumption underpinning the study was that NHIS is a health financing intervention that provides financial risk protection to improve access and utilisation of health care for those who need it, for UHC (Domapielle, 2014; Kotoh et al., 2018). This requires an equitable provision of health care that creates an equitable access and use of primary health services by the insured (see Chemouni, 2018; Fenny et al., 2014; Liu, 2016; Parmar et al., 2013). The researcher views the study as an investigation that requires a holistic examination of the NHIS (Palinkas et al., 2013). So instead of taking a stance to discover outcomes that are of absolute objectivity as posited by positivism and/or absolute reality as posited by social constructivism and interpretivism the study took the stance of post-positivism revolving around pragmatism to argue that there is no such thing as absolute objectivity and absolute reality in determining truth in social science research (see Creswell, 2009; Liu, 2016). But a mix of paradigms hold strength to fully discover reality (see Creswell, 2014; Saunders et al., 2012), particularly in intervention studies (see

Palinkas et al., 2013). The foregoing arguments mean, both post-positivism and pragmatism are appropriate research philosophies for this investigation. However, the researcher chooses post-positivism as an appropriate research philosophy because the study used a predictive approach, analysing the determinants of supply healthcare and demand-side models to predict their implications on insureds' uptake of NHIS for UHC (Trottmann et al., 2012; Zweifel, 2007, 2022). For example, since the goal of NHIS is to provide financial risk protection, insured's demand for access and use of healthcare requires, as noted above, that health care is fairly distributed, particularly when considering people socio-demographic characteristics. Based on this premise, the researcher views the subject under study as predictive and exploratory investigation (see Creswell, 2014). Therefore, using a sequential research procedure, which is based on the use of external tools and objective reporting of results, the researcher generalised the findings to the insured population of Wa Municipality. In addition, the study used subjective selection criteria that delved further into details of the quantitative outcome and discovered informed knowledge from insured participants and key informants as in the case of healthcare providers (Saunders et al., 2009, 2012). As a result, the research process in this study followed a continuum rather than a dichotomy of opposing investigations (see Newman & Benz, 1998). Through this means, the study established the association between supply-side and demand-side variables and how insured persons utilise NHIS for healthcare delivery (Kwarteng et al., 2020; Vyas & Kumaranayake, 2006). Therefore, this study attempted to challenge ideas, theories and models to determine how people's socio-demographic characteristics affect the determinants of supply of healthcare and insured persons' demand for health services under NHIS in the Wa municipality of Ghana.

3.4 Research Approach

In the social sciences, the choice of research technique is determined by the phenomena being studied. According to Creswell (2014), research methodology encompasses all phases of an investigation, from thorough conventions to comprehensive data collection, analysis, and interpretation methods. There are three types of research approaches in research: qualitative, quantitative and mixed-methods (Babbie, 2010). One scholar argues that these approaches are not viewed as exact, independent species, opposites, or contrasts, but that they are distinct endpoints on a continuum that help researchers discover the truth on the subject (Newman & Benz, 1998). Therefore, the study relied on the research goal of choosing on the continuum between explanatory, exploratory, or descriptive to select the appropriate research techniques (see Bryman, 2012; Creswell, 2014).

Following the research philosophy, the study used a mixed methods research strategy, particularly expansion (Creswell, 2009). The intent of using a mixed method expansion strategy was to test the research hypotheses while seeking how individual attributes explain the social phenomenon (Harwell, 2008; Neuman, 2014; Saunders et al., 2009; Alatinga & Williams, 2019). First, the quantitative research technique was used to select respondents, objectively – insured patients and accredited healthcare institutions, as units of analysis. The purpose was to determine the implications of providers, the supply of health services and how insureds' demand for access to and use of health services affects their use of NHIS. Second, the qualitative research technique was used to complement that of the quantitative technique and to subjectively select health care providers and informants of insured patients for follow-up interviews. The advantage of this mixed-method approach in health policy analysis is that it provides a clearer and complete understanding of the problem of

the study, rather than either quantitative and qualitative approach alone (see e.g. Alatinga & Williams, 2019; Burt, 2010; Creswell, 2014; Neumann, 2014).

3.5 Study Design

The purpose of the study design was to assist the researcher in deciding the precise nature of the methods and processes to be used in the study of the subject under study (Harwell, 2008). Creswell (2009) sees research design as a confluence of philosophy, investigative techniques, and specific methods that put the approach into practice. Again, there are different types of designs in social research. For example, in quantitative health policy studies such as NHIS, common study designs include surveys, cross-sections, time series, and longitudinal (Atinga, 2012; Dixon et al., 2007; Dixon et al., 2013; Fenny et al., 2014). As in the case of this study, survey designs help researchers gather first-hand information from the field to measure variables capturing a large population within specific geographic areas, sections, or units over time (Neuman, 2007, Bryman, 2012). On the other hand, it is acknowledged that qualitative research designs such as case studies, ethnography, phenomenological and narrative designs can be used for exploratory purpose in a mixed-method study (Creswell, 2009; Bryman, 2012). This study therefore considered and used cross-sectional survey for the quantitative aspect to detect differences between the units of analysis (De Vaus, 2002) and narrative design for the qualitative results to explain the research ideas (Lee, 2014). Therefore, explanatory sequential mixed design (see Creswell, 2009) was appropriate for the research. Explanatory sequential mixed design helped in identifying the demand and supply side models of NHIS use and examining how ideas interact and differ from respondents (Creswell, 2014). The use of explanatory sequential mixed design was useful because it aided test hypotheses, predicted relationships, and

explored ideas that explain them (Walt et al., 2008). That is, it helped gather the facts and beliefs of accredited healthcare providers and insured patients under the NHIS in relation to the provision of healthcare and how this affects the demand for accessing and utilising health services, and the implications for achieving UHC in Ghana. Therefore, in this study, quantitative and qualitative data were successively sought, with the former being given more weight than the latter (Creswell, 2009).

3.6 Target Population and Sampling Frame

The study targeted insured people and accredited healthcare providers. The insured included both people who are actively and inactively registered under the NHIS at the time of the survey. The study examined the supply and demand side models considering the people's socio-demographic characteristics and its association with their uptake of NHIS for UHC in the Wa municipality. This is important as previous community studies on the NHIS concluded that the programme is currently ineffective due to various administrative issues (Sanyare & Tuolong, 2018). For example, late payment of funds to healthcare providers, resulting in loss of trust and lack of trustworthiness between healthcare providers and system managers have previously been reported (Tuolong, 2016). As a result, people who were active card holders were dissatisfied with the quality of care provided and some have decided to exit the scheme (Alhassan et al., 2014; Sanyare & Tuolong, 2018; Tuolong, 2016). From the Office of the Wa Municipal National Health Insurance Scheme (WMNHIS), the target population of total insured membership of the NHIS (active and inactive) who have joined the scheme is one hundred and twenty-six thousand seven hundred and eleven (126, 711), with the number of healthcare providers as of August 31, 2021 as forty-seven (47) (WMNHIS, 2022). The target population provided by the

WMNHIS formed the basis for the calculation of the sample size of insured persons for the survey studies (see e.g., Bryman, 2012). Defining the target population and sampling frame is significant in this study because in mixed methods research, the target population serves as the framework from which the study sample for the survey is drawn (see e.g., Saunders et al., 2012).

3.7 Sample Size for Survey

The Yamane (1967) formula was used to calculate the sample size for insured persons covering the census areas of accredited health care providers under the NHIS. The formula was suitable for determining representative samples in quantitative survey research because it supports the central limit theorem of specifying a normal distribution curve for large surveys (Islam, 2018). The formula is mathematically expressed as follows:

$$n = \frac{N}{1+N\,(e)^2} \qquad (1)$$

$$n = \frac{126{,}711}{1+126{,}711\,(0.05)^2} \cong 399$$

Where: n = required sample size; N = the target population size (126,711); 1 = constant; e = error margin (0.05).

When substituting the values into the formula, the calculation yielded a sample size of approximately 399, but was increased by 3.39 percent to 413 for the quantitative survey of insured respondents to offer a higher statistical power of predictions (Myers et al., 2010). In addition, a census of all 47 accredited health facilities was conducted to determine the geographic distribution of health facilities providing primary health care (PHC) services under the NHIS in the municipality.

3.8 Sample Size for Qualitative Interviews

From the 413 samples of the survey study, 20 insured respondents and 17 healthcare providers were contacted for the qualitative interviews. Health care providers included health service administrators or directors, facility managers, and systems managers. The informants were specifically selected on the basis of their specific position/role as facilities' manager and their rich experience and knowledge of the study phenomenon. According to Neuman (2007), a sample size of up to five (5) percent of the target population was sufficient and exhaustive to reach the saturation point in a qualitative follow-up study.

3.9 Quantitative Sampling Technique

Probability sampling techniques, specifically cluster, stratified, and systematic sampling approaches, were used to select respondents for the study. The essence was to satisfy the probability sampling assumptions which include giving all respondents in the target population a fair chance to participate; and ensuring precision so that the result represents the true value of all target individuals. The quantitative sampling techniques mentioned earlier were done taking into account the variability of the target population of similarity and difference so that the sample drawn is not ambiguous/inconclusive to generalise the results (see Saunders et al., 2012). As a consequence of the above, the main sampling concerns were addressed in the investigation as they reflected the generality of the investigation results once completed.

3.9.1 Application of Cluster Sampling Technique

To cover the entire study area, Wa Municipality was divided into five zones (North Zone, East Zone, West Zone, South Zone and Central Zone) using a cluster sampling approach. From these, six (6) communities/suburbs from each zone were selected, based on the criteria that they have a healthcare facility (3) and or not having a healthcare facility (3) built in the community. Subsequently, in each selected community, the insured individuals using the NHIS to seek healthcare treatment were targeted. The choice of using cluster sampling, according to authors, is workable for a survey of this type because, the survey covers a large geographic area (see e.g., Bryman, 2012, Saunders et al., 2012, Neuman, 2014). As a result of this method, respondents were selected from all sections, parts and locations to participate in the study, allowing for balanced representation (see Saunders et al., 2012).

3.9.2 Stratified Sampling Technique

After using cluster sampling, the study area was further divided into three categories: rural, suburban, and urban. A comparison was also made by assessing the demand and supply characteristics between local and referring healthcare facilities to determine if there were any changes in the treatment of NHIS insured persons. As a result, data was collected, analysed and the results presented using a mixed methods research model that compared outcomes among insured persons, healthcare providers and key informants' claims from the directorate and the NHIS office in relation to the demand and supply side issues of the primary health care services in the municipality. The study chose a stratified sampling as it provided more precision throughout the investigation process (see Saunders et al., 2012).

3.9.3 Systematic Sampling Technique

A systematic sampling approach was employed to select the respondents, which was deemed appropriate for this study. This is because it made it easier for the researcher to select respondents at regular intervals based on the predicted sample proportion (3.08). The sample proportion was calculated by dividing the target population (126,711) by the sample size (413). The frequency of selecting respondents was chosen as a consequence of the predicted sample proportion results (see. e.g., Sarantakos, 2013). The procedure of using systematic sampling was done at the healthcare facility level, and also at the communities to select the insured people. At the healthcare facility level, the researcher used the registration list of insured patient attendance records as the sampling frame and selected respondents. The house number sequence, as used by the Ghana Statistical Service for the housing and population census, was also used as a sampling frame at the community level. In each community, a respondent representing the household was selected from the entry point, with the third (3rd) sample marked as an interval point for selection, and then followed up to the required sample size, which was allocated to each selected community (see e.g. Saunders et al., 2009). According to the authors, when the geographic region to be covered by the research is large, systematic sampling is preferable to random sampling (Saunders et al., 2009; Sarantakos, 2013). This is because the use of systematic sampling allowed for replication, making the process more convenient for the researcher to select respondents without bias (see e.g., Sarantakos, 2013).

3.10 Qualitative Sampling Technique

The quota purposive sampling technique was used to select informants from the different categories of healthcare providers and insured persons as defined by the NHIS category. A

quota purposive sample was chosen for this study to allow for a targeted selection of informants representing the different categories of respondents in the sampling units by categorisation by system managers (see e.g. Berg, 2001; Bhattacherjee, 2012; Sarantakos, 2013). Regarding the selection of healthcare providers who provide healthcare under the NHIS, the quota purposive sampling method allowed collecting information that spread across the different types of healthcare facilities. That is, key informants included staff from the local NHIS office (1), municipal health directorate (1), regional hospital (1), district/municipal hospital (1), clinics (3), health centres (3) and community health planning services [CHPS] (3), laboratory/diagnostic centres (2) and pharmacies (2). Additional probes were also sought from the insured people to information resulting from the survey results, among groups who have ever accessed PHC services through NHIS and used them to inquire about their experiences. This included gathering health-related information from the different groups of clients categorised by the system manager (NHIA). That is, the quotas were distributed among the clients: SSNIT (3), informal sector (3), indigenous people (2), under 18 years (3), 70 years and older (3), pregnant women (3), and LEAP beneficiaries (3) of one are each a resident of rural, suburban, and urban areas. The selection criteria consisted throughout of alternating between the gender (male and female) of the insured active and non-active participants.

3.11 Data and Sources

The study drew on primary data collected on-site at the healthcare facility and community levels from insured individuals and authorised healthcare providers registered with the NHIS. Collecting primary data in survey studies is costly and time-consuming, and requires the researcher's diligence throughout the process (see e.g., Neuman, 2007; Creswell, 2009;

Bryman, 2012; Saunders et al., 2012). The study considered the primary data source to be suitable, since the existing data sets such as GLSS and GDHS were missing important study variables on supply and demand-side issues. Therefore, to collect field data on the determinants of health care supply and its impact on the demand for access to and use of PHC services, primary data was feasible (Saunders et al., 2012). The process allowed the researcher to collect first-hand data from participants who provided timely accurate information on the topic (Creswell, 2014).

3.12 Data Collection Method

Data for this study were collected using a structured questionnaire and a semi-structured interview guide.

3.12.1 Survey Questionnaire and Procedure of Data Collection

A survey questionnaire was developed and used to collect primary data from NHIS beneficiaries who had enrolled in the program since 2005 to respond to the research questions that guided the study. According to some scholars, a questionnaire is used when a planned set of questions is asked, particularly in descriptive and explanatory studies (De Vaus, 2002; Gil & Johnson, 2002). While questionnaires are commonly used in survey research, their design is not as simple as one might think (Bell, 2005; Bell & Waters, 2018). In this study, the questions for categorical data were strictly closed, while the questions for continuous data were open-ended (Saunders et al., 2012). Saunders et al. (2012: 420) state that the choice of questionnaire in survey studies is influenced by some variables related to the study questions and/or objectives. For example, the characteristics of the respondents from whom the information was collected; the importance of reaching a particular respondent; and the intent of ensuring that respondents' answers were not contaminated or

manipulated were taken into account in this study. Also, the sample size needed in each healthcare facility and/or community was selected based on the proportionate sample distribution. Again, the kind of questions asked to gather information; and the number of questions that had to be asked to obtain consistent and accurate information were followed.

The questionnaire was divided into sections and parts. Section A: contains the socio-demographic information of the respondents. In the supply-side model, Section B: includes questions related to the provision of healthcare for the delivery of PHC under the NHIS in parts of (I = healthcare facility, II = equipment, III = labour force, and IV = drug supply issues). On the demand side, Section C includes: issues related to access to PHC services under the NHIS in parts of (I = availability, II = acceptance, III = affordability, IV = accommodation and V = safety of care) and finally Section D; asking questions about the frequency of use of PHC services within the NHIS over a 12 month/1 year period, using 2021 as a reference point. When conducting interviews among respondents, the survey time varied between 30 and 45 minutes.

The foregoing qualities were equally applied to questionnaire selection, research questions or objectives, and choice of data collection method based on the type of respondents addressed (Saunders et al., 2012). The nature of the questionnaire design and the method of data collection as used in this study explains the researcher's confidence that the respondent is the right person to answer the questions appropriately, and thus the reliability of the answers (see e.g., Saunders et al., 2009).

In the collection of data, the researcher hired ten (10) research assistants to assist in data collection at the different levels of healthcare and communities, using the investigator-respondent interview method (see e.g., Neuman, 2007). The data collection period was

between March 28, 2022 and April 30, 2022. The Open Data Kit (ODK), specifically Kobo Tool Kit, was used to deploy the questionnaire, which enabled timely data collection. The Kobo Tool Kit has advanced features which controls respondent's bias. In today's age of development research, Kobo Tool Kit, an online tool, is recognised and used by researchers around the world to ensure data quality (see e.g. Creswell, 2014). Therefore, the process of data collection using the researcher-interviewee method was applied equally to those who can read and understand and also to those who may not be able to read and understand the questionnaire adequately. The purpose of including the data collection procedure for researcher interviews in this study was to improve response rates while minimising bias or contamination of the information given (Saunders et al., 2012).

3.12.2 Interview Guide

A semi-structured interview guide was used to collect the qualitative information from informants. The questions were structured into thematic areas as structured in the survey questionnaire of the research questions and asked in an open form. Some of the questions were asked by the researcher taking clues from previous studies, others arose from the quantitative finding. Some of the questions explored included; what influenced your decision to renew and not renew your NHIS status; what accounted for your good and/or bad experience of using NHIS to access PHC services since you signed up for the system and, among other things, probes were sought to gain in-depth knowledge of the informant's claim. The time period for each interview session ranged from 50 minutes to 1 hour 45 minutes, depending on the type of participant and/or informant. Interviews were conducted between May 1, 2022 and June 3, 2022 based on participant availability and timing. While the interviews of the insured participants were conducted via telephone calls, the interviews

with the health practitioners' key informants were conducted in one-on-one face-to-face sessions. The choice between telephone calls and face-to-face interviews was made based on convenience (see Creswell, 2009; Bryman, 2012; Neuman, 2012).

In terms of order, the questions were asked according to the pattern structured in the guide and expanded to include specific themes that emerged from the interviews (Bell, 2005). The process of information gathering took the form of the interviewer-interviewee format, in which the researcher became the interviewer and the informant became the interviewee (see Berg, 2001; Bloomberg & Volpe, 2019). Data were recorded in designated fields in the schedule guide and/or a notebook and later transcribed into a codebook (Saldaa, 2016). The semi-structured interview guide and its processes were considered appropriate for this study due to its flexibility (see e.g., Bell, 2005; Bell & Waters, 2018; Berg, 2001; Bloomberg & Volpe, 2019). On site and via phone calls, the guide enabled the questioner to track thoughts, solicit responses, and explore reasons and moods that define the boundaries of questions. As a result, the semi-structured interview guide was useful for this study.

3.12.3 Key Informants Interview (KII)

As part of the qualitative data collection process, key informants from the demand and supply sides of Ghana's national health insurance system were interviewed. Participants included authorised healthcare providers (facility officers, directors or managers) as well as the NHIS system manager. These individuals were selected because they are responsible for the day-to-day operations of managing healthcare and ensuring that all people, including insured, visiting healthcare facilities receive the attention they need. In the interviews, they were asked about their in-depth knowledge and experience of the system

in the delivery of primary health services to better understand how demand and supply side issues have impacted service delivery in the community. In particular, healthcare provider informants provided a detailed description and explanation of healthcare (e.g., how healthcare facilities treat NHIS patients when they visit them, availability of necessary equipment, manpower, and supply of medicines covered by the scheme impacts the primary health care service delivery). They also answered questions about how insured persons are using their NHIS cards to access primary healthcare and how service delivery is changing. On the other hand, the informant to the municipal NHIS office provided year by year data on the enrolment of members in the scheme (new and renewed) for the different categories. She also participated in responding to questions and/or concerns raised by healthcare providers and insured individuals. The use of key informant interviews was beneficial as they allowed the researcher to delve deeper into the intricacies of quantitative survey data obtained from experienced practitioners (Bloomberg & Volpe, 2019; Neuman, 2014). As a result, the information gathered was rich and its substance provided a clearer explanation of Ghana's national health insurance demand and supply-side models and their impact on UHC in Wa Municipality.

3.13 Data Validity and Reliability

In social science research, confirming the validity of the tools used is just as important as checking their reliability, credibility, or trustworthiness (Saunders et al., 2012). The study created a healthcare supply and demand questionnaire and interview guide based on variables suggested in the literature. The scope of the health supply and demand assessment tools was broad enough to include standard indicators for both insured and accredited health care providers. In addition, the questions in the questionnaire and interview guide

were simple and specific enough to allow respondents and informants to answer correctly and consistently. To ensure validity, three scientists with publications on health policy analysis reviewed the research protocol and tools and provided feedback, which fed into the final questionnaire. The review of the protocol and tools were done to ensure that the questionnaire and key interview questions provided a sound forecast and were consistent with the themes represented in the literature (see e.g., Bell & Waters, 2018; Bloomberg & Volpe, 2019). In addition, the research protocol underwent a thorough academic and ethical review by the Navrongo Health Research Centre Institutional Review Board (NHRCIRB). With integrated feedback from the NHRCIRB, the study received ethical approval to begin fieldwork.

On reliability of the survey instrument, quantitative questions for insured people were pre-tested among 30 respondents. A Cronbach's alpha of 0.713 was obtained from the collected pre-tested responses, after correlating them with each other and calculating them to ensure that the questions integrated into the scale measure were the same (see e.g., Saunders et al., 2012). As shown in **Appendix VII**, a Cronbach's alpha of 0.823 was obtained from the main data set used for this study analysis. The result shows that the effect between individual measure and average measure of the consistency definition of the variance between measures was significant ($F_{(412)} = 5.658$, p-value < 0.001).

The foregoing processes meant that both internal and external consistency techniques were employed to assess the research protocol and the reliability, credibility, and trustworthiness of the instruments (see e.g., Saunders et al., 2012; Saunders & Rojon, 2014). Therefore, having strictly followed the outlined processes above, it means that the research protocol,

methods and instruments were valid and reliable to obtain credible data for the researcher's analysis.

3.14 Data Processing, Management, and Analysis

The research followed a mixed-method strategy of data analysis, mixing quantitative data with qualitative information, following the study philosophy, approach and design. First, quantitative data was processed, reported, analysed, and interpreted before being interspersed with qualitative information, the latter explaining the former (Alatinga & Williams, 2019; Caracelli & Greene, 1993). In mixed-method designs, the analysis dimensions may be grouped to include: triangulation, complementarity, development, initiation, and expansion (see e.g. Alatinga & Williams, 2019; Caracelli & Greene, 1993; Morgan, 1998). For the purpose of this study, the reason for choosing the expansion method was that the researcher tried to transform the results of quantitative statistics with explanations from the qualitative thematic analysis in such a way that the analysis and interpretation phases show a complete integration (Caracelli & Greene, 1993). In doing so, quantitative results were merged with qualitative quotes in order to understand the phenomenon. This supports the scholars' view that in mixed-methods studies, the rationale for data analysis and interpretation must be integrated into a continuum rather than separate facets (Caracelli & Greene, 1993; Newman & Benz, 1998).

3.14.1 Quantitative Data Processing and Management

The Statistical Package for Social Science (SPSS) version 20 with extension package SPSS AMOS (version 23) was used to import and analyse quantitative data, with the results initially presented either in tables or figures. Second, descriptive statistical analyses such as frequency, percentage, mean, and standard deviation values were reported to explain

respondents' socio-demographic, economic, and health characteristics (SEHCs) (independent variables), determinants of supply of health care [SoHDs] (independent variables), demand of insured persons after access to and utilisation of [DAU] primary health care [PHC] services (independent variables) and their effect on NHIS uptake (dependent variable). Third, inferential statistics at a 95 percent confidence level using Pearson's correlation for continuous data and Spearman's correlation for ordered data helped establish the relationship between the independent variables and the dependent variable. In addition, categorically measured variables such as gender, educational level, etc. were analysed to determine their association differences at equal variance between the insured-active, and non-active groups as independent using an independent t-test analysis. In addition, binary logistic regression using both continuous and categorical data was performed and analysed to explain the probabilities of influencing factors of the models that were statistically significant at the third level from the variables that were statistically significant in the independent t-test results were. To assess the suitability of the model in the third stages, the following tests were performed: the omnibus test of the model coefficient, the -2 log likelihood, the Cox & Snell R-square, the Nagelkerke R-square, and the Hosmer & Lemeshow test. The results of the third phase showed that the results had been adjusted to draw conclusions based on the results of the study. The model was adapted to the structural equation model (fourth stage). These helped establish the link between NHIS supply and demand models with SEHCs and their impact on NHIS uptake for UHC in the municipality. As the research postulates, SEHC differentiation within a population is crucial to measure the long-term effect of variables rather than the short-term (Vyas & Kumaranayake, 2006). The SEHCs variables included were those that show a close

correlation to predicting one's own health status, such as gender, age, income/occupation, geographic location, educational attainment, and health status.

With regards to the management of the quantitative data, the dependent variable (i.e. NHIS uptake) was coded as 0 and 1 as a binary variable in insured (active) and insured (inactive), respectively. Independent SEHC variables were coded as categorical variables for their respective items, starting with code label = 1.

On the determinants of supply of healthcare (i.e., available healthcare facilities, equipment, capable/skilled professionals, and medications); the insured persons' perceptions on different dimensions or indicators were integrated into overall and subscales calculating for their respective weighted averages (see e.g. Vyas & Kumaranayake, 2006). The subscales and overall total supply of health care is divided into two levels; adequate and insufficient; coded 0 and 1, respectively. Subsequently, this was compared to facility data of determinants of supply of healthcare collected from accredited healthcare providers in quantity and/or ratio (quantity per number of clients served) using standard World Health Organisation practice. Following these, qualitative probing responses explaining the providers' thoughts and feelings were corroborated into themes of their claims and interpreted by the researcher (Harwell, 2008; Jacob, 1987; Miles et al., 2014).

Regarding the demand for access and utilisation of primary health services by the insured, similar coding methods were used to manage the data first as separate sub-independent variables and later combined under one broad overall independent variable to appropriately address the research goals. The process helped assess insured persons' perspectives on their demand for healthcare and its influence on uptake of NHIS. The indicators measuring access to health services in the NHIS included the most commonly used dimensions:

availability, acceptability, affordability, accommodation and safety (see e.g., Domapielle, 2014; Gulliford et al., 2002; Levesque et al., 2013). On the other hand, the demand for use of primary health services was measured by quantifying the use of the various health services covered by the NHIS over a one-year period (2021 as the reference year) by insured people (Agency for Healthcare Research and Quality [AHRQ], 2020; Morris et al., 2005; Ward et al., 2009). Again, following these qualitative probing responses explaining the insured informant's thoughts and feelings regarding access and use of health services, the themes of their claims were corroborated and interpreted by the researcher (Harwell, 2008; Jacob, 1987; Miles et al., 2014).

Summarising all quantitative variables in one equation, SPSS AMOS (version 23) software was used to run the SEM model with a 95 percent confidence level to accept or fail to reject the hypotheses. The hypotheses established the relationships between the insured's SEHCs, which is the moderating variable adjusted in its separate individual characteristics, impacts the supply-side and demand-side models and overall uptake of NHIS, particularly in Wa Municipality. This implies that the data are first analysed independently for each research question, using descriptive statistics and inferential statistics whenever possible. The quantitative data describe and explain relationships before they are brought together to identify the demand and supply side models, and explaining the concept of interactions in healthcare (Walt et al., 2008).

3.14.2 Qualitative Data Processing and Management

In addition, qualitative information was prepared using thematic analyses. The informants' information were transcribed and imported into Qualitative Data Miner (QDA) software (version 5.0.35). It was further encoded into a code-book by the researcher, recorded and

categorised into thematic blocks, cited and interpreted by the researcher (Miles et al., 2014). To integrate the quantitative and qualitative information with each other, an expansion analysis strategy was followed, with the latter explaining the former (Alatinga et al., 2020; Caracelli & Greene, 1993).

3.14.3 Mixed Methods Data Analysis

Descriptive, statistical models and narratives have been used to describe, test, or predict the outcome of investigation and to explain ideas (Walt et al., 2008). The quantitative analysis described and predicted how the availability and functionality of supply of healthcare under NHIS affects the demand for healthcare services by the target population and uptake of the NHIS. Also, qualitative analysis provided an expansion explaining the interaction of ideas between informants to support the quantitative results (Alatinga et al., 2020; Caracelli & Greene, 1993; Morgan, 1998). That is, both quantitative data and qualitative information had the relevant knowledge (truth, facts and beliefs) when analysed and interpreted, which better explains the phenomenon of study as posited by post-positivist and/or pragmatist philosophy (Alatinga & Williams, 2019; Creswell, 2014; Saunders et al., 2012).

Therefore, the essence of the study was to sequentially explain the impact of healthcare on NHIS uptake (e.g., Berthlemy & Thuilliez, 2014; Minh et al., 2014; Tian & Pan, 2021); the demand for access to primary health services influences NHIS uptake (e.g. Fenny et al., 2014; Levesque et al., 2013); demand for use of primary health services influences NHIS uptake (e.g. Boateng et al., 2017; Fenny et al., 2016); the relationship between healthcare provider supply and insured's demand for healthcare (e.g., Barr, 2010; Bonfrer, 2015; Richardson, 2001; Trottmann et al., 2012) from quantitative objective world views to

qualitative narrative judgments. This was achieved by transforming the statistical data analysis models and expanding them into a thematic analysis (see e.g. Caracelli & Greene, 1993; Driscoll et al., 2007) to successively measure, code and analyse the research data as how shown in Table 3.1.

Table 3.1: Data Analyses Models

Research Variables	Measurement	Statistical Analysis	Qualitative Analysis
1: Dependent variable: • NHIS uptake **Moderating Variable:** • Socio-demographics Status (SEHC) **Independent Variable:** • Supply of health care	▪ Binary (1=active, 0=inactive) ▪ Categorical (coded) ▪ Scale (weighted mean)	▪ Frequencies & percentages ▪ Spearman R ▪ Independent t-test ▪ Binary Logistic Regression	▪ Thematic analysis (information sorted, chronicled, blocked in themes, put in quotations, and interpreted)
2: Dependent variable: • NHIS uptake **Moderating Variable:** • Socio-demographics Status (SEHC) **Independent Variable:** • Demand for health care access	▪ Binary (1=active, 0=inactive) ▪ Categorical (coded) ▪ Scale (weighted mean)	▪ Frequencies & percentages ▪ Spearman R ▪ Independent t-test ▪ Binary Logistic Regression	▪ Thematic analysis (information sorted, chronicled, blocked in themes, put in quotations, and interpreted)
3: Dependent variable: • NHIS uptake **Moderating Variable:** • Socio-demographics Status (SEHC) **Independent Variable:** • Demand for health care utilisation	▪ Binary (1=active, 0=inactive) ▪ Categorical (coded) ▪ Scale (weighted mean)	▪ Frequencies & percentages ▪ Pearson R ▪ Independent t-test ▪ Binary Logistic Regression	▪ Thematic analysis (information sorted, chronicled, blocked in themes, put in quotations, and interpreted)
4: Dependent variable: • Demand for health care (access & use) **Moderating Variable:** • Socio-demographics Status (SEHC) **Independent Variable:** • Providers Supply of health care	▪ Scale (weighted mean) ▪ Categorical (coded) ▪ Scale (weighted mean)	▪ Pearson R, and or ▪ Spearman R (Partial)	▪ No qualitative integration
5: Dependent variable: • NHIS uptake **Moderating Variable:** • Socio-demographics Status (SEHC) **Independent Variables:** • Supply of health care • Demand for health care (access & use)	▪ Binary (1=active, 0=inactive) ▪ Categorical (coded) ▪ Scale (weighted mean)	▪ Structural Equation Model (regression weight, covariance, correlation, & variance estimates)	▪ No qualitative integration

Source: Adapted and Modified from Bagson et al. (2019)

3.14.4 Analytical Techniques

$$ {}^{n}_{t}Y = \alpha + \beta_x + \beta S_H + e_i \qquad (2) $$

where ${}^{n}_{t}Y$ = number of subscribers (^{n}) to NHIS (Y) at the time ($_{t}$) of study; α = constant ; β_x = socio-economic status (moderating variables $_{x}$); β = slope/coefficient; S_H = determinants of supply of healthcare and e_i = error term.

$$ {}^{n}_{t}Y = \alpha + \beta_x + \beta D_{HC} + e_i \qquad (3) $$

where ${}^{n}_{t}Y$ = number of subscribers (^{n}) to NHIS (Y) at the time ($_{t}$) of study; α = constant ; β_x = socio-economic status (moderating variables $_{x}$); β = slope/coefficient; D_{HC} = demand for healthcare access and e_i = error term.

$$ {}^{n}_{t}Y = \alpha + \beta_x + \beta D_{HU} + e_i \qquad (4) $$

where ${}^{n}_{t}Y$ = number of subscribers (^{n}) to NHIS (Y) at the time ($_{t}$) of study; α = constant; β_x = socio-economic status (moderating variables $_{x}$); β = slope/coefficient; D_{HU} = demand for healthcare utilization and e_i = error term.

$$ TD_{HCU} \leq R \geq TS_H \qquad (5) $$

where R = correlation coefficient; TD_{HCU} = total demand for healthcare access and utilization; TS_H = total supply of healthcare.

$$ {}^{n}_{t}Y = \alpha + \beta_x + \beta TS_H + \beta TD_{HCU} + e_i \qquad (6) $$

where ${}^{n}_{t}Y$ = number of subscribers (^{n}) to NHIS (Y) at the time ($_{t}$) of study; α = constant ; β_x = socio-economic status (moderating variables $_{x}$); β = slope/coefficient; TS_H = total supply of healthcare; and TD_{HCU} = total demand for healthcare access and utilisation.

3.15 Ethical Considerations

Ethical approval was obtained from the Navrongo Health Research Centre Institutional Review Board (NHRCIRB) to conduct this study; Ethics Approval ID: NHRCIRB455. Permissions were also obtained from institutional agencies at the Wa Municipal Health Insurance Authority (Wa MHIA) and the Ghana Health Service Directorates before the field data collection began. Appendix I contain details of other relevant document relating to the ethical clearance.

3.16 Study Limitation

In a quantitative sense, this study may have limitations such as selection bias, as study respondents included those who had access to primary health care services in the past years between 2005 and 2021 under NHIS. In a qualitative sense, participants' responses may also exhibit a social desirability bias.

3.17 Chapter Summary

The chapter emphasised the choice of study area, Wa Municipality, due to its cosmopolitan character with the largest population in the heart of the region where health care is highly concentrated. In addition, the post-positivist philosophy, was chosen because the study of national health insurance is an interventional study. The mixed-method research approach, in particular the explanatory sequential design, was deemed appropriate to answer the research questions. Consequently, both quantitative and qualitative research techniques and methods were used to collect and analyse the data, with an emphasis on quality measures and ethical considerations. Therefore, the next chapter contains the research results and practical insights.

CHAPTER FOUR

RESULTS

4.1 Introduction

In this chapter, results on socio-demographic, economic and health-related behavioural characteristics (SEHCs) of insured persons (respondents) are presented. The chapter also presents results on the effect of SEHCs on the uptake of NHIS as basic factors that need to be controlled in the structural equation model. The findings are necessary for this research because in literature it is said SEHCs have significant influence on supply and demand for access and utilisation of health care thus far, set the pace for answering the research questions in this study. They include; the effect of the supply of healthcare determinants on NHIS uptake; the effect of access to and use of, primary health care services on NHIS uptake; and the structural effect of socio-economic, and health characteristics of insured persons, determinants of supply of healthcare, demand for access and use of, primary health care services on NHIS uptake The results were analysed using descriptive statistics such as frequencies, percent, minimum, maximum, mean, and standard deviations to make meaning of the research field data. Subsequently, inferential statistics (independent -t-test, binary logistic regression and SEM), were used to establish the relationship between SEHCs, SoHDs, DAU on insured persons' NHIS uptake tested at 95 percent confidence interval (2-tailed). The results are presented in Tables, and Figures.

4.2 Socio-demographic Characteristics of Insured Persons'

Gender, age, marital status, level of education, and location of residence are among the socio/demographic variables of insured people collected in the survey. The findings are shown in Table 4.1.

Table 4.1: Socio-demographic Characteristics of Insured Persons'

Socio/demographic characteristics	Categories	Freq. (N = 413)	Percent (%)
Gender	Male	121	29.3
	Female	292	70.7
Age[1]	12 – 17 years old	24	5.8
	18 – 41 years old	280	67.8
	42 – 65 years old	87	21.1
	66 years and above old	22	5.3
Marital status	Single	96	23.2
	Cohabitating	10	2.4
	Married	292	70.7
	Divorced/separated	2	0.5
	Widowed	13	3.1
Level of education	No formal education	147	35.6
	Primary education	62	15.0
	JHS/MSL	81	19.6
	SHS/O'Level	82	19.9
	Tertiary	41	9.9
Place of residence	Rural	76	18.4
	sub-urban	253	61.3
	Urban	84	20.3

Source: Field Survey (2022)

Table 4.1 reveals that females made up the majority (70.7%) of insured persons, while males (29.3%) made up more than a quarter of the sample respondents. The average age was 34.46 years old, with the lowest age (12 years old) and highest age (89 years old). The age categories of people who were insured was between the ages of 18 and 41 years old (67.8 percent). Adolescents aged 12 to 17 years old (5.8%) and the elderly aged 66 and more (5.3%) were less than adults aged 42 to 65 years old, who were less than a quarter (21.1%).

The majority of insured persons (70.7%) were married, while fewer than a quarter were single, according to the findings (23.2%). Only a small percentage were widowed (3.1%), cohabitating (2.4%), and divorced or separated (0.5%).

[1] **Age:** Mean (Std. Deviation) = 34.46 (15.73) yrs. Old; Min. (Max.) = 12 (89) yrs. Old.

In terms of education, individuals with no formal education were found to be greater (35.6%) than those with SHS/O'Level education (19.9%), JHS/MSL education (19.6%), primary education (15.0%), and tertiary education (9.9%).

In terms of place of residence, the survey discovered that the majority of the insured persons (61.3%) live in sub-urban regions, with only a few living in urban (20.3%) or rural areas (18.4%).

4.2.1 Socio-economic Characteristics of Respondents'

Table 4.2 shows the findings of a survey of insured person's economic characteristics, including job status and average monthly income.

Table 4.2: Socio-economic Characteristics of Respondents'

Socio-economic status	Categories	Freq. (N = 413)	Percent (%)
Employment status	Salary earner (public & private) sector	39	9.5
	Farmer	99	24.0
	Engaged in profit venture	97	23.5
	Dependent	154	37.2
	Other, specify	24	5.8
Average monthly income (Gh¢)[2]	<Gh¢364.00 or less per month[3]	364	88.1
	Gh¢365 - 823.8 per month	30	7.3
	Gh¢823.9 - 1,282.5 per month	8	1.9
	Gh¢ 1,282.6 /+ per month	11	2.7

Source: Field Survey (2022)

Table 4.2 shows that the majority of insured persons' (47.5%) worked in the informal sector, such as farming (24%) and profit ventures (23.5%), compared to only a few (9.5%) who worked in the formal sector, such as earning a salary in the public sector (3.9%) or in the private sector (5.6%). Dependents (22.5%), such as students (14.5%), pensioners (0.2

[2] **Income:** Mean (Std. Deviation) = Gh¢ 178.73 (321.70)**:** Min. (Max.) = Gh¢ 0.00 (2,200.00)
[3] **Minimum income wage** = Gh¢ 365 (as at 31/01/2022).

percent), and others (5.8%) who were apprentices studying a hand-craft or trade, were among the remainder.

The insured person's mean monthly income was (Gh¢178.73) (Standard deviation = Gh¢321.70), which was significantly wide apart between the lowest (Gh¢50) and highest (Gh¢2,200.00) monthly income earners. The results demonstrate that the great majority of insured persons (88.1%) earn (Gh¢364.00 or less) per month less than the minimum wage, while just a small percentage earn (Gh¢365.00 or more) per month (11.9%).

4.2.2 NHIS Uptake by Insured Persons'

This section contains the results of respondents' use of the National Health Insurance Scheme (NHIS) for primary health care (PHC) services at authorised health facilities. According to the inclusion criteria of insured 'active' and 'inactive' members under NHIS, the response rate of 265 (64%) and 148 (36%), respectively was reached as an eligibility criterion for participation in this study. It signifies that all survey participants have been registered for the NHIS from its inception in 2005. As a result, information on their enrolment type/category and current NHIS status ('active' or 'not active') as of the data collection date was gathered. The results and analysis are shown in Figures 4.1 and 4.2.

Those enrolled as under 18 years old, expectant mothers, and LEAP beneficiaries were among the insured person's NHIS enrolment types by categories. Others include indigene/vulnerable group, over 70-year-old elderly, informal premium charge holder, and SSNIT contributor The result is shown in Figure 4.1.

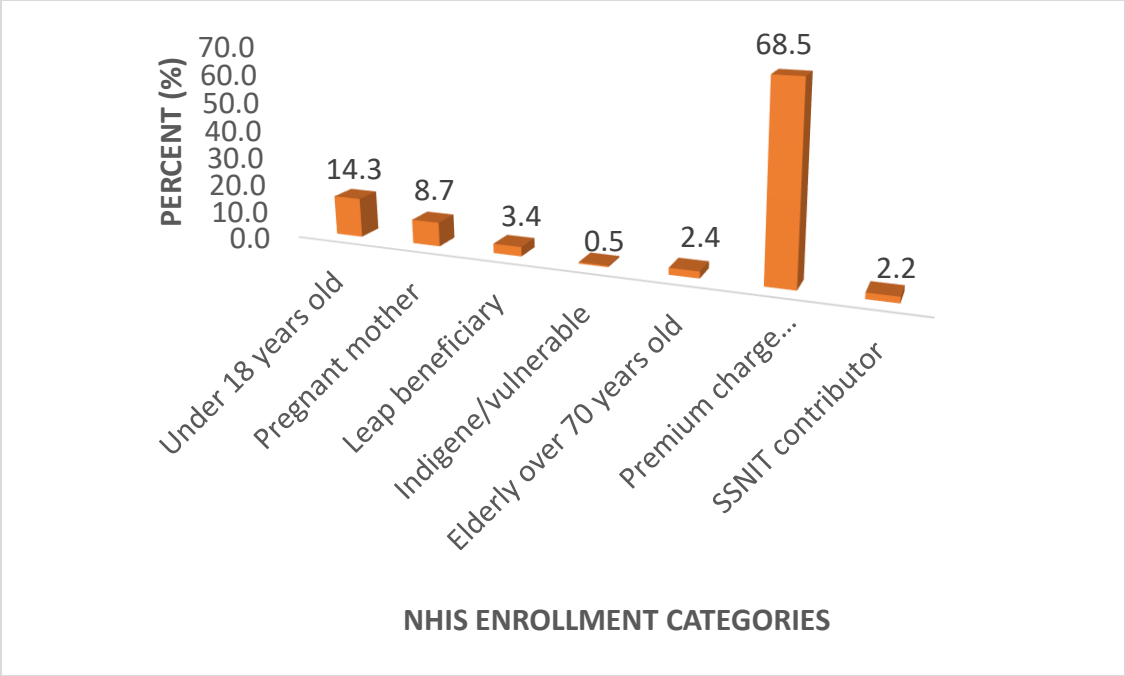


Figure 4.1: NHIS Enrolment Type by Categories
Source: Field Survey (2022)

Figure 4.1 shows that those registered in the informal sector, also known as premium charge holders (68.5%), outnumbered those registered with exceptions such as those under 18 years old (14.3%), pregnant women (8.7%), leap beneficiaries (3.4%), elderly over 70 years (2.4%), SSNIT contributors (2.2%), and indigene or vulnerable groups (0.5%).

The results reveal that many of the insured individuals who had enrolled for NHIS were still 'active' members (64%) at the time of data collection, which meant they could access and use PHC services at recognised health care facilities.

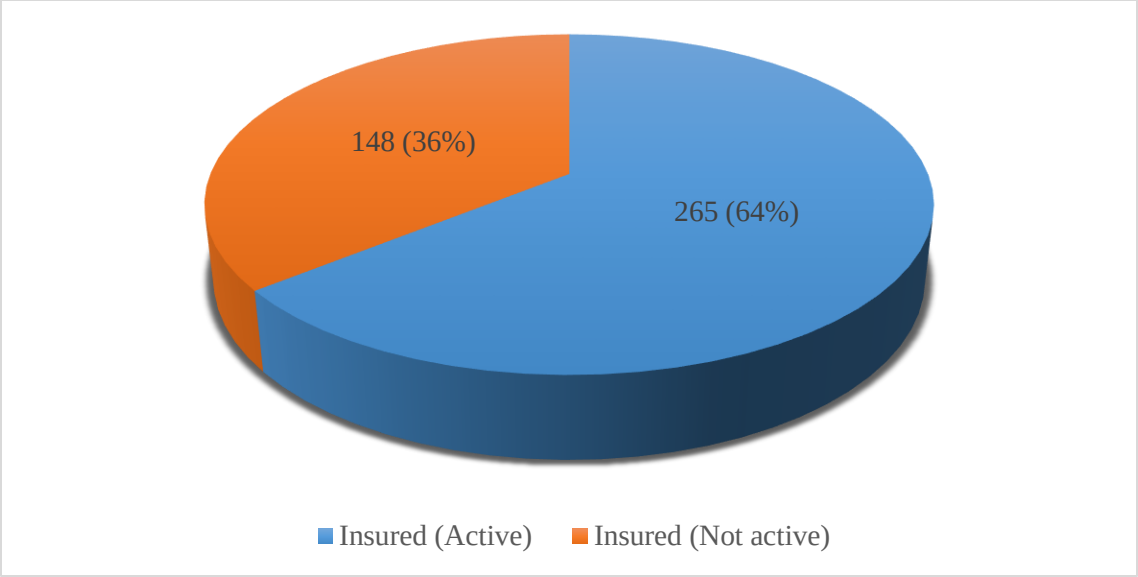


Figure 4.2: NHIS Status
Source: Field Survey (2022)

According to Figure 4.2, more than a quarter (36%) of the remaining insured persons' NHIS status was 'not active' at the time of data collection, which meant they could not access or use PHC services at the time and had to rely on out-of-pocket payments until their status was activated by renewing their subscription.

4.2.3 Health Care Behaviour of Insured Persons using NHIS to Access PHC

Following up from the previous section, this section includes findings on insured person's access to and utilisation of PHC services at authorised health care institutions. First, records of how often respondents used NHIS to access PHC services, and the number of times they visited accredited health care facilities to access PHC as of the data collection period (March 28 – April 30, 2022) were reported. In addition, records of respondents' mode of transportation to the health care facility, ownership type of health care facility used, approximate cost incurred (to and from) health care facility, and the most likely health care facilities they patronise to access PHC services were also reported.

The results of the health care behaviour of insured individuals accessing PHC services through NHIS at recognised health care institutions are shown in Figure 4.3.

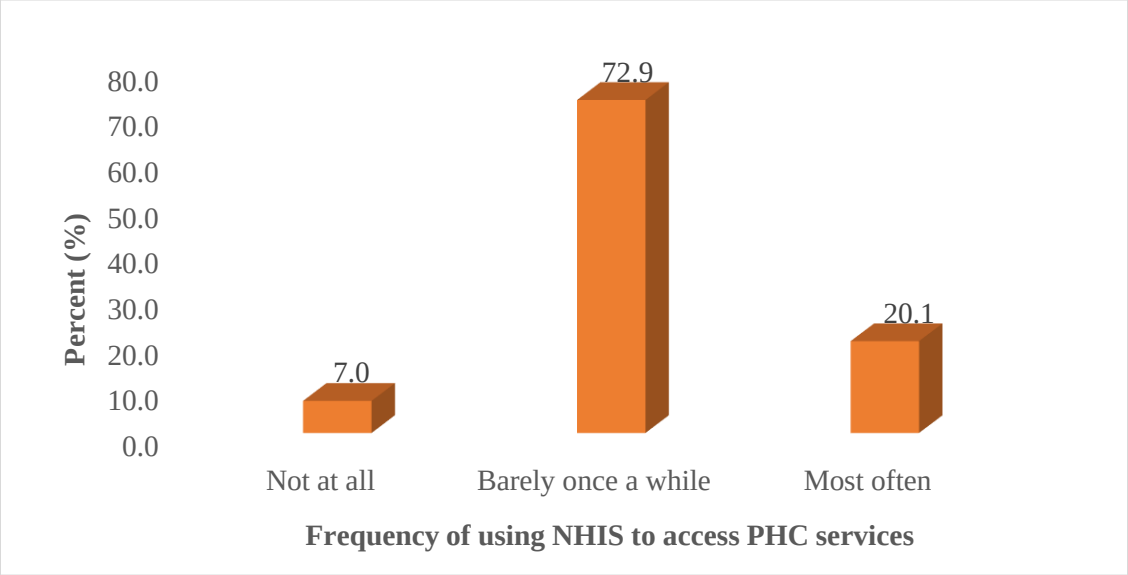


Figure 4.3: Health Care Behaviour of Insured Persons' using NHIS to Access PHC
Source: Field Survey (2022)

Figure 4.3 also revealed that many insured people only use the NHIS 'once in a while' to receive PHC services for treatment at a certified health institution. Although some people use the card 'most often' (20.1%) to access PHC services at authorised health facilities, others don't use it at all (7.0%) *'because I [insured informant] don't feel ill/sick,*' which necessitates them to seek treatment at health facilities.'

The mean[45] number of times insured people visited recognised health facilities to obtain and use PHC services between January 1, 2022 and the date of data collection was 0.93

[4] **Mean (Std. Deviation)** of insured persons PHC utilisation **= 0.93 (1.40)** number of times

[5] **Minimum (Maximum)** values of insured persons PHC utilisation **= 0 (10)** number of times

(1.40), with a range of zero (no visit) to ten (10) visits in the first quarter (January – April, 2022).

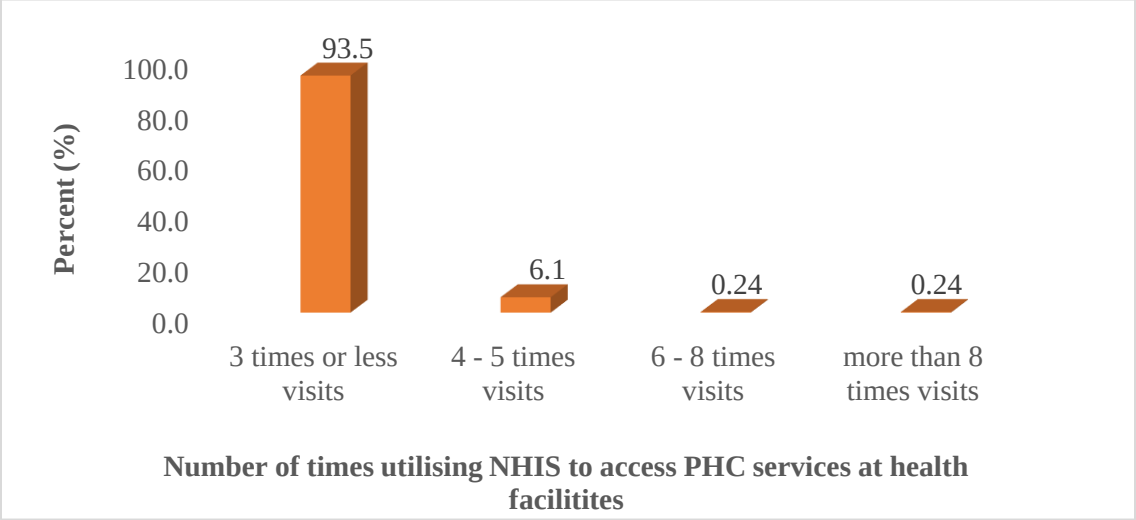


Figure 4.4: Number of Times Insured Persons Visited Health Care Facility to Access PHC as at 31st April, 2022
Source: Field Survey (2022)

Figure 4.4 shows that the great majority of insured people (93.5%) visited recognised health facilities at least three times or less to obtain and use PHC services, while just a handful went four to five times (6.1%), six to eight times (0.2%), or more than eight (8) times (0.24%).

The results and analysis of the mode of transportation used by insured individuals to access and use PHC services at recognised health care facilities are presented in Figure 4.5.

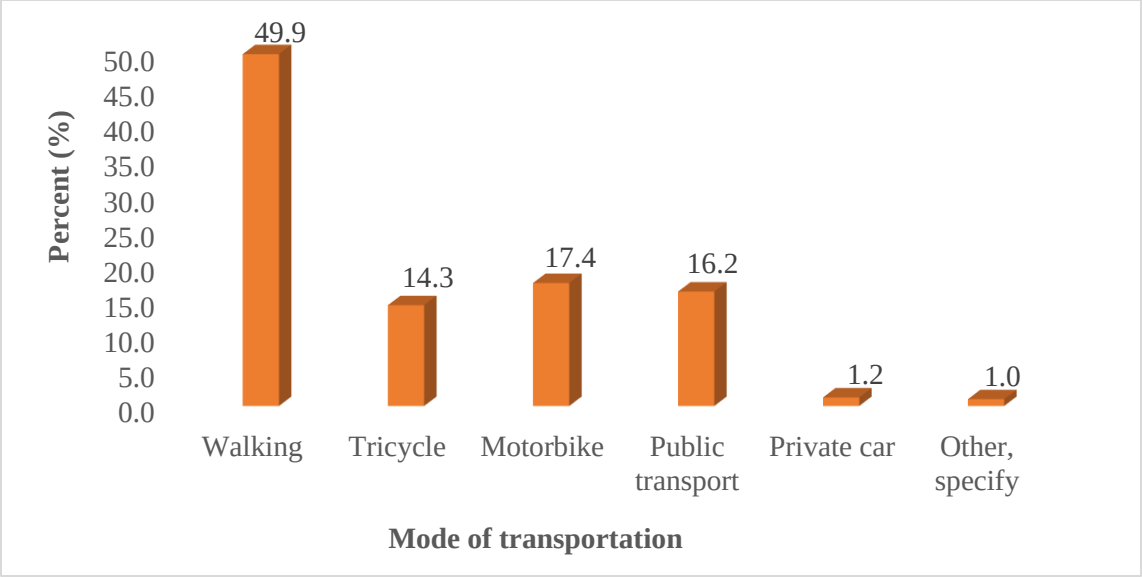


Figure 4.5: Insured Persons' Mode of Transportation to Access PHC Services at Health Care Facilities

Source: Field Survey (2022)

According to Figure 4.5, the most common mode of transportation used by insured persons to access PHC services at health facilities was walking (49.9%), followed by riding a motorcycle (17.4%), taking public transportation (16.2%), taken on a ride by tricycle (14.3%), and a few who used their own car (1.2%) or other means (getting a lift) (1.0%).

The findings of the ownership type of health care facilities utilised to receive PHC services are shown in Figure 4.6.

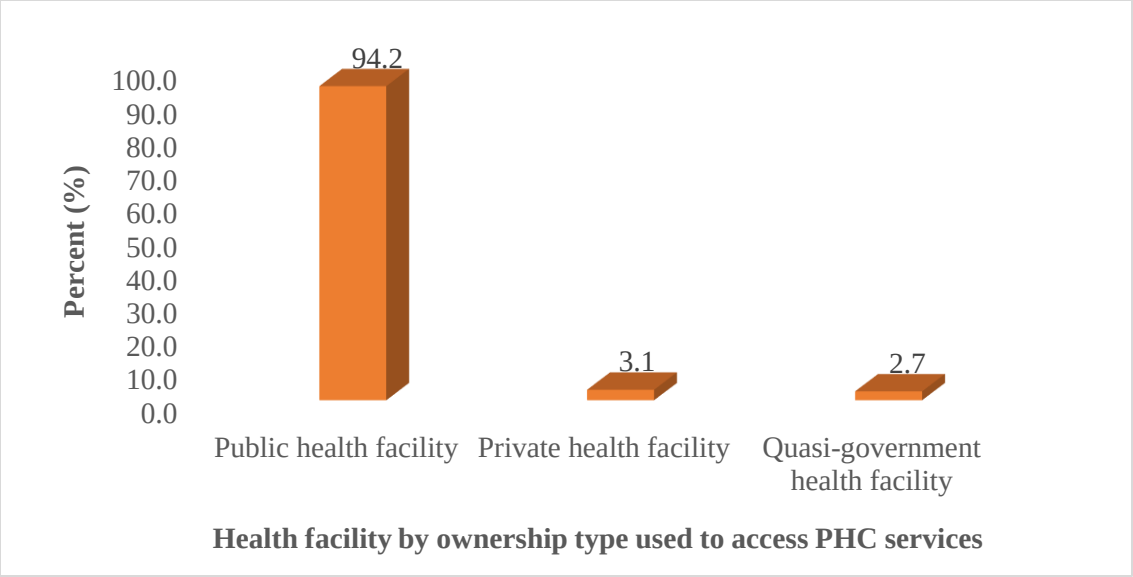


Figure 4.6: Health Facility by Ownership Type used to Access PHC Services
Source: Field Survey (2022)

As indicated in Figure 4.6, public and/or government health facilities were the most common types of health care institutions where insured people sought PHC services (94.2%). According to informants (both insured people and health care providers), they visit or use private health facilities (3.1%) and quasi-government health facilities (2.7%) less because according to the informants' report:

> "*It is generally perceived that in public health facilities, they accept NHIS and even if the service is not covered, their cost on services charge is less."* (25-year-old Female insured participant, 15/05/2022).

> *"It is also felt that health care experts at government health care facilities can be trusted to give excellent services at an inexpensive price or cost as compared to private and quasi-government health care facilities,"* (30-year-old Male health practitioner, 12/05/2022).

As on the most recent visit by insured people, Figure 4.7 shows the estimated cost (to and from) health care facility to access PHC.

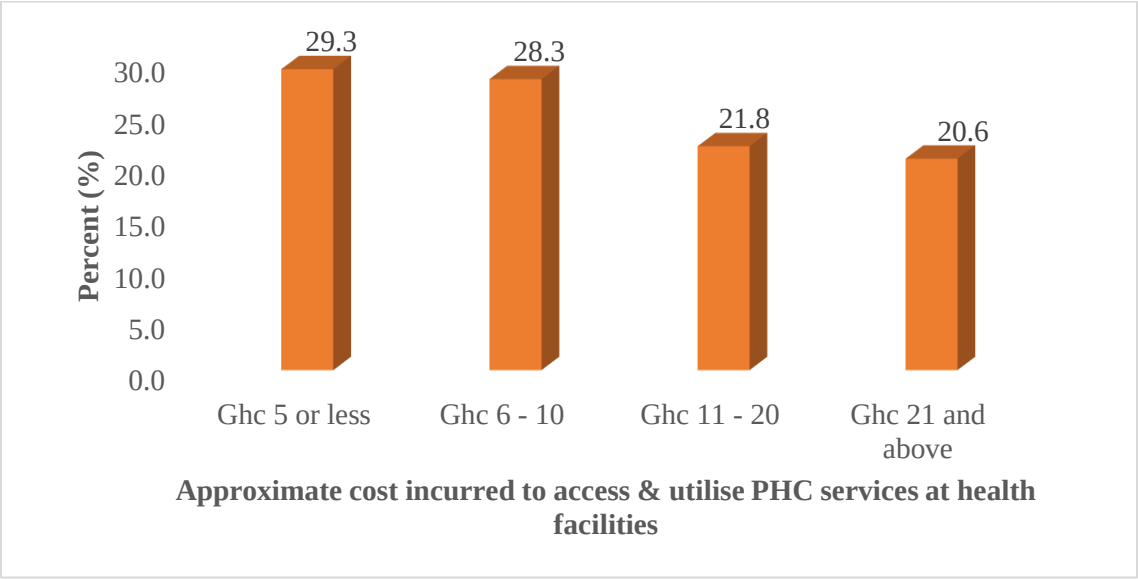


Figure 4.7: Approximate Cost incurred by Insured Persons' to Access and Utilise PHC Services at Health Facility (Gh¢)

Source: Field Survey (2022)

According to the result, the approximate cost (Gh¢)[67] incurred by insured persons to access and utilise PHC services per their visit to accredited health care facility was **Gh¢15.65 (Std. deviation = 17.65) [US$1.00 = Gh¢10.79 as at February 18 2023].** While others incurred no cost, the maximum was Ghc189.00, according to the results. In Figure 4.7, although the majority of insured people paid less than Gh¢5 (29.3%), a significant proportion spent Gh¢6.00 to Gh¢10.00 (28.3%) and Gh¢21.00 and more (20.6%) to access and use PHC services at authorised health facilities.

[6] **Mean (Std. Deviation)** on cost incurred to seek for PHC at health facility **= Ghc15.65 (17.65)**

[7] **Min. (Max.)** cost incurred to seek for PHC at health facility **= Ghc2.00 (189)**

Below in Figure 4.8 shows the results of the various health care institutions by types/levels where insured individuals sought PHC services.

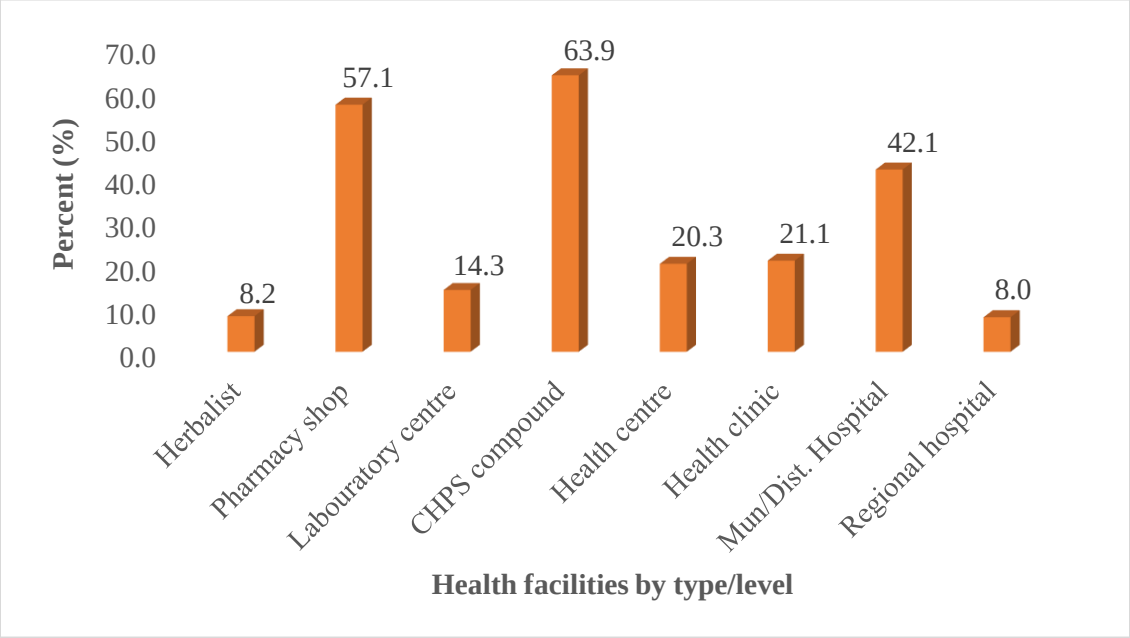


Figure 4.8: Health Facilities by Types/Levels where Insured Persons sought for PHC Services

Source: This study field survey (2022)

As indicated in Figure 4.8, CHPS compound (63.9%) was the most common health facility where insured people used NHIS to seek PHC services. This was followed by pharmacy stores (57.1%), which they utilised out-of-pocket payment (OOP) to acquire medications, and municipal hospital (42.1%), which they use NHIS for PHC services. Only a handful (8.0%) sought PHC services at the regional hospital, which is a referral/secondary level facility, according to the findings. It was also discovered that a small percentage of insured people (8.2%) use the services of traditional herbalists, despite the fact that they are unprofessionally trained and not licensed to treat diseases under the NHIS. Despite this, a

sizable number of insured people, according to reports, seek PHC services in nearby health clinics (21.1%), health centres (20.3%), and laboratory diagnostic centres (14.3%).

4.3 Effect of SEHC's on NHIS Uptake

The independent t-test analysis was used to establish the statistical difference of associations of SEHCs between insured 'active' and 'not active' members (dependent variable). This was done to identify the associations and effect of insured persons' SEHCs (independent variables) on their NHIS uptake. Following that, binary logistic regression was used to measure and forecast the likelihood of influence on insured persons' NHIS status (i.e., 'active' and 'not active') based on those factors that were statistically significant in the first place. The statistical significance in independent t-test and binary logistic regression tests was at the 95 percent confidence range. The statistical findings of the independent t-test analysis were believed to be of 'identical variance.' The model was also fitted [Omnibus test of model coefficients = 84.81 (0.000); -2Log likelihood = 454.126; Cox & Snell R Square = 0.186; Nagelkerke R Square = 0.186; Hosmer and Lemeshow test = 3.475 (0.901)] using the binary logistic regression.

Table 4.3: Effect of SEHCs on NHIS Uptake

Socio/demographic Economic & health Status	**Independent T-Test between 'active' and 'not active' membership**			**Factors influencing active membership: Logistic regression**		
	95% Confidence Interval of the Difference		t (p-value)	95% Confidence Interval for Odd Ratio (O.R.)		O.R (p-value)
	Lower	Upper		Lower	Upper	
Gender (Female) [reference = male]	**0.010**	**0.193**	**2.181 (0.030)**	0.384	1.114	0.654 (0.118)
Age	-5.258	1.083	-1.294 (0.196)	-	-	-
Marital status	-0.217	0.168	-0.253 (0.800)	-	-	-
Level of education [reference = non-formal]	**0.144**	**0.703**	**2.976 (0.003)**	-	-	-
Current place of residence [reference = rural]	**0.085**	**0.333**	**3.312 (0.001)**	-	-	-
Employment status	-0.219	0.544	0.837 (0.403)	-	-	-
Average monthly income	**9.768**	**138.910**	**2.263 (0.024)**	0.999	1.001	1.000 (0.395)
NHIS enrolment type by category	-0.298	0.505	.507 (0.613)	-	-	-
How often do you seek for PHC [reference = not at all]	**0.104**	**0.304**	**4.006 (0.000)**	-	-	-
Number of visits to health facility for PHC (2022)	**0.499**	**1.044**	**5.559 (0.000)**	**1.252**	**2.096**	**1.620 (0.000)**
Mode of transportation to health facility [ref = walking]	**0.354**	**0.849**	**4.778 (0.000)**	-	-	-
Ownership type of health facility	-0.004	0.142	1.859 (0.064)	-	-	-
Approximate cost to health facility (GH¢)	**2.198**	**9.239**	**3.193 (0.002)**	**1.001**	**1.037**	**1.019 (0.034)**
Herbalist	-0.054	0.058	0.069 (0.945)	-	-	-
Pharmacy shop	-0.136	0.064	-0.710 (0.478)	-	-	-
Laboratory centre	**0.005**	**0.146**	**2.101 (0.036)**	0.397	1.901	0.869 (0.724)
CHPS compound	**-0.237**	**-0.045**	**-2.884 (0.004)**	0.648	1.986	1.134 (0.660)
Health centre	-0.006	0.156	1.813 (0.071)	-	-	-
Health clinic	-0.102	0.063	-0.458 (0.647)	-	-	-
Mun/Dist. Hospital	**0.052**	**0.250**	**3.008 (0.003)**	0.615	1.754	1.039 (0.887)
Regional hospital	-0.036	0.074	0.690 (0.491)	-	-	-
Constant	-	-	-	-	-	**1.610 (0.716)**
Omnibus test of model coefficients					**84.81 (0.000)**	
-2Log likelihood					**454.126**	
Cox & Snell R Square					**0.186**	
Nagelkerke R Square					**0.186**	
Hosmer and Lemeshow test					**3.475 (0.901)**	

Source: Field Survey (2022). NB: t-test results are based on equal variances assumed.

Statistically, Table 4.3 shows that there is difference in NHIS uptake in terms of gender (t = 2.181; p-value = 0.030), level of education (t = 2.976, p-value = 0.003), current place of residence (t = 3.312; p-value = 0.001), average monthly income (t = 2.263; p-value = 0.024), how often they sought for PHC services (t = 4.006, p-value = 0.000), number of times they visit health facilities, mode of transportation used to health facility (t = 4.778, p-value = 0.000), approximately cost to and from health facility (t = 3.193, p-value = 0.002), access to PHC Services at laboratory centre (t = 2.101, p-value = 0.036), CHPS compound (t = -2.884, p-value = 0.004) and municipal hospital (t = 3.008, p-value = 0.003).

To explain the factors influencing NHIS uptake, the binary logistic regression results suggest that the number of times an insured person visits a health facility to seek PHC treatment had a higher likelihood chance of predicting their NHIS status (OR = 1.620, p-value = 0.000; C.I at 95 percent = 1.252–2.096). Also, the estimated cost (to and from) of visiting a health facility to receive and use PHC services had a higher chance of altering an insured person's NHIS status (OR = 1.019, p-value = 0.034, C.I at 95 percent = 1.001 – 1.037).

4.4 Supply-side Factors Influencing National Health Insurance Uptake

The section presents results that answer the first research question on the effect of the supply-side factors of primary health care delivery on NHIS uptake. Regarding the determinants of supply of healthcare delivery, analysis included availability of accredited healthcare facilities, availability of healthcare equipment to provide PHC services in accredited healthcare facilities, availability of healthcare professionals, attitudes and behaviours towards the provision of PHC services, and availability of medicines dispensed to insured patients. These thematic areas are presented and analysed in the following sub-sections.

4.4.1 Availability of Accredited Health Care Facilities in the Wa Municipality

Table 4.4 shows the findings of the availability of accredited health care facilities in delivering PHC services in the municipality.

Table 4.4: Availability of Accredited Health Care Facilities in the Wa Municipality

Accredited health facilities by level	Number	Location
Regional hospital	1	Urban
Municipal/district hospital	1	Urban
Health clinics	5	Urban
Health centres	10	Urban (3), Sub-urban (3), & Rural (4)
CHPS compound	24	Urban (6), Sub-urban (4), & Rural (14)
Laboratory Diagnostic centres	3	Urban, & Sub-urban,
Pharmacy shops	3	Urban
Total	**47**	

Source: Wa Municipal Health Insurance Authority (Wa MHIA), Accredited Health Care Facilities (2021).

Table 4.4 shows that, as of (31/09/2021), forty-seven (47) health facilities were accredited and delivering PHC services to insured individuals, according to the WMHIA (2021). The institutions are divided into two categories: secondary level facilities (regional hospitals)

and primary level facilities (municipal hospitals and clinics), with the remainder acting as clinics, health centres, CHPS, Diagnostic centres, and pharmacy stores. The health facility's sites fall into three categories: urban, peri-urban, and rural. Health centres and CHPS compounds were found offering PHC services in rural, sub-urban, and urban areas, whereas hospitals, clinics, diagnostic centres, and pharmacy shops, which sometimes act as referral facilities, were situated in urban and peri-urban regions.

However, the study discovered that all facilities offering medical diagnosis services had their accreditations revoked by NHIS at the time of data collection, and that they were no longer accepting NHIS at the time of treatment. The reason for withdrawing their accreditations was "*based on administrative grounds*" as remarked by an informant below:

> "*the management issue that led to operators' withdrawal of medical diagnostic services was explained on the basis of conflicts of interest. It was found that an official working in a similar position as a medical diagnostic officer in a public hospital/entity or directorate and also running a similar business in the private sector violated the practice*" *Therefore, in order for private medical diagnostic services to regain their accreditation, they were asked to resign from their position in public office or their position as a director in the private medical diagnostic company. Although, according to the informant he did, it took forever to get the NHIA to restore the facilities' accreditation* (45-year-old Male Medical Diagnostic Informant, 12/04/2022).

4.4.2 Geographical Distribution of Accredited Health Care Facilities Locations and their Distance away from Insured Person's Residence

The focus of this section is to generate a geographical distribution of accredited health care facilities that provide PHC services to gauge their distance from insured people's homes. The map below shows the locations of all accredited health care institutions that provide PHC services under NHIS. The distance to the insured person's home has been calculated using Euclidean Distance Analysis (EDA) based on survey GPS coordinates plots and travel time obtained on the field. The findings are shown in the figure below.

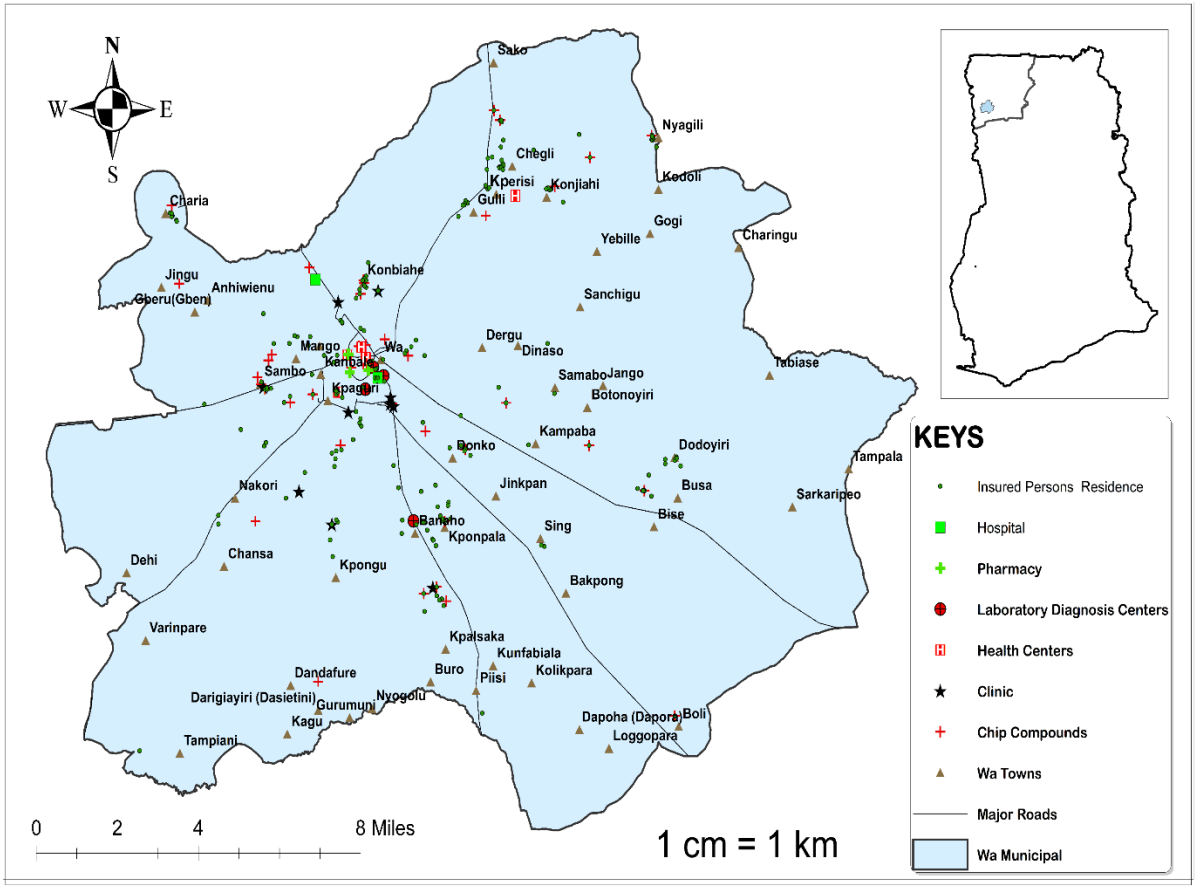


Figure 4.9: Geographical Distribution of Accredited Health Care Facilities Locations and their Distance away from Insured Person's Residence

Source: Field Survey (2023)

Figure 4.9 shows that healthcare facilities are fairly evenly distributed geographically close to home, particularly on CHPS connections which they could access and use with NHIS on PHC service.

4.4.4 Distance and Cost (to & from) Analysis of Accredited Health Care Facilities away from Insured Person's Residence

Table 4.5 shows the distance and expense incurred (to and from) various health facilities using descriptive and Euclidean distance analysis.

Table 4.5: Distance and Cost (to & from) Analysis of Accredited Health Facilities away from Insured Person's Residence

Distance[8] and cost (to & from) health facilities away from residence (N = 413)	**Range**	**Min.**	**Max.**	**Mean**	**Std. Dev.**	**Variance**	**Euclidean Distance**
Place of residence (rural, peri-urban & urban)	-	-	-	-	-	-	**0.00**
Distance to regional hospital (in minutes using motorbike, tricycle/car)	345	5	350	45.43	34.96	1222.20	**1105.58**
Cost to and from regional hospital (Gh¢)	90	0	90	13.29	7.45	55.55	
Distance to mun./dist. hospital (in minutes using motorbike, tricycle/car)	245	5	250	34.59	28.65	820.55	**846.70**
Cost to and from mun./dist. hospital (Gh¢)	68	0	68	10.21	6.34	40.24	
Distance to health clinic (in minutes using motorbike, tricycle/car)	250	0	250	28.59	25.96	674.10	**732.46**
Cost to and from health clinic (Gh¢)	60	0	60	8.38	6.22	38.69	
Distance to health centre (in minutes using motorbike, tricycle/car)	250	0	250	28.69	27.57	760.29	**758.70**
Cost to and from health centre (Gh¢)	70	0	70	8.43	6.85	46.90	
Distance to CHPS compound (in minutes using motorbike, tricycle/car)	80	0	80	11.20	10.28	105.66	**279.88**
Cost to and from CHPS compound (Gh¢)	45	0	45	2.56	4.09	16.75	
Distance to laboratory centre (in minutes using motorbike, tricycle/car)	249	1	250	31.71	26.95	726.03	**815.29**
Cost to and from laboratory centre (Gh¢)	80	0	80	9.42	6.67	44.53	
Distance to pharmacy shop (in minutes using motorbike, tricycle/car)	180	0	180	20.41	20.56	422.73	**561.20**
Cost to and from pharmacy shop (Gh¢)	35	0	35	5.28	5.12	26.25	

Source: Field Survey (2022); Mun. = municipal, Dist. = district; Euclidean Distance – in meters

[8] WHO recommended distance to health facility away from residency is = 5km – 30km (i.e. ≤15minutes) travel time.

The results in Table 4.5 shows that the distance to regional hospital was quite distant in terms of journey time in minutes (mean = 45.43, standard deviation = 34.96) and varied correspondingly (variance = 1222.200) away from insured individuals' dwelling (Euclidian distance = 1105.58). As a result, they had to pay a hefty travel fee of Gh¢13.29[9] (Std. Deviation 7.45) for each journey to the health centre to obtain and use PHC services.

When comparing the distance between health facilities and insured persons' homes, the average distance to the municipal hospital was (mean = 34.59; standard deviation = 28.65) minutes, and the distance varied (variance = 820.55) among insured people. This was correspondingly (258.88 percent) also a long distance (Euclidian distance = 846.70) from the insured person's home to the regional hospital. As a result, the average cost spent (to and from) the municipal hospital by insured individuals per trip to access and use PHC services at the facility was Gh¢10.20 (Std. Deviation = 6.34).

In minutes, the distance to the health clinic (mean = 28.59; standard deviation = 25.96, variation = 674.10), health centres (mean = 28.69, standard deviation = 27.27, variance 760.29), and CHPS complex (mean = 11.20, standard deviation = 10.28, variance = 105.66) were all deemed to be quite near to the insured person's home. These were correspondingly (114.24 percent, 88 percent, and 566.81 percent) far detached from the city hospital in terms of journey time in minutes (Euclidian distance = 732.46, 758.70, and 279.88) respectively. The cost incurred (to and from) the health facilities was roughly low (Gh¢) (mean = 8.38, standard deviation = 6.22, variation = 3 8.69) to health clinics, health centres

[9] **US$ equivalent: US$1.00 = Gh¢10.79 as at February 18 2023**

(mean = 8.43, standard deviation= 6.85, variance = 46.90) and lowest (mean = 2.56, standard deviation = 4.09, variance = 16.75) to CHPS compound.

However, the distance to medical diagnostic laboratories (mean = 31.71, standard deviation = 26.95, variance = 726.03) and pharmacy shops (mean = 20.41, standard deviation = 20.56, variance = 422.73) to get prescribed medications outside of health institutions was found to be far off from insured people' homes. The proportion difference was around eight (8) times and five (5) times. That is about (Euclidian distance = 815.29, and 561.20) respectively from the insured's home. As a result, the cost of accessing and using laboratory services (mean = 9.42, standard deviation = 6.67, variance = 44.53) and drugs at pharmacy shops (mean = 5.28, standard deviation = 5.12, variance = 26.25) outside health facilities was on average high (mean = 9.42, standard deviation = 6.67, variance = 44.53) and modest (mean = 5.28, standard deviation = 5.12, variance = 26.25) respectively.

4.4.5 Health Facilities by Levels that accept NHIS in treating PHC; their Closeness to Residence, and how often it is used to Access PHC Services

Table 4.6 shows the findings of the accessible health facilities by level of acceptance of NHIS in treating PHC, as well as their proximity to insured individuals' homes and how frequently they are utilised to receive PHC services.

Table 4.6: Health Facilities by Levels that accept NHIS in treating PHC; their Closeness to Residence, and how often it is used to Access PHC Services

Health facilities by levels where insured persons accesses PHC		Accepts NHIS in treating PHC (N = 413)			Closeness to residence (N = 413)					Often used to access PHC services (N = 413)					
		No	Not sure	Yes	Very far	Far	Somewhat	Close	Very close	Not at all	Not often /barely	Once a while on referral	Once a while as first point of access	Most often on referral	Most often as first point of access
Regional hospital	Freq.	7	78	328	268	103	19	19	4	203	58	95	14	8	35
	(%)	1.7	18.9	79.4	64.9	24.9	4.6	4.6	1.0	49.2	14.0	23.0	3.4	1.9	8.5
Mun/Dist. Hospital	Freq.	3	42	368	106	211	31	62	3	78	56	126	67	43	43
	(%)	0.7	10.2	89.1	25.7	51.1	7.5	15.0	0.7	18.9	13.6	30.5	16.2	10.4	10.4
Health clinic	Freq.	1	45	367	47	138	119	81	28	154	52	47	91	11	58
	(%)	0.2	10.9	88.9	11.4	33.4	28.8	19.6	6.8	37.3	12.6	11.4	22.0	2.7	14.0
Health centre	Freq.	1	47	365	42	141	118	81	31	170	65	46	69	12	51
	(%)	0.2	11.4	88.4	10.2	34.1	28.6	19.6	7.5	41.2	15.7	11.1	16.7	2.9	12.3
CHPS compound	Freq.	0	23	390	10	18	51	110	224	86	20	5	112	95	95
	(%)	0.0	5.6	94.4	2.4	4.4	12.3	26.6	54.2	20.8	4.8	1.2	27.1	23.0	23.0
Laboratory centre	Freq.	112	269	32	100	164	69	65	15	87	29	203	19	51	24
	(%)	27.1	65.1	7.7	24.2	39.7	16.7	15.7	3.6	21.1	7.0	49.2	4.6	12.3	5.8
Pharmacy shop	Freq.	350	53	10	71	84	60	122	76	57	33	61	95	105	62
	(%)	84.7	12.8	2.4	17.2	20.3	14.5	29.5	18.4	13.8	8.0	14.8	23.0	25.4	15.0
Herbalist	Freq.	395	18	0	130	76	52	113	42	186	99	12	25	5	86
	(%)	95.6	4.4	0.0	31.5	18.4	12.6	27.4	10.2	45.0	24.0	2.9	6.1	1.2	20.8
Rho Statistics		**0.087 (0.079)**			**0.260 (0.000)**					**0.212 (0.000)**					

Source: Field Survey (2022); NOTE: Correlation coefficient (p-value); Significant Level = 0.05.

According to the results in Table 4.6, majority of insured people confirmed that, with the exception of laboratory centres (No = 27.1%), where they were unsure (65.1%) whether they still accept NHIS to conduct medical diagnosis, pharmacy shops (84.7%) and herbalists (95.6%) do not accept NHIS in the treatment of PHC services, despite seeking health care at these facilities. However, they stated that they were able to receive PHC services using NHIS at regional hospitals (79.4%), municipal hospitals (89.1%), health clinics (88.9%), health centres (88.4%), and CHPS compounds (94.4%). Despite this, there was no statistically significant link between available health facilities and their acceptance of NHIS in PHC treatment (Rho = 0.087, p-value = 0.079).

In terms of the proximity of health services to insured person's homes, many of the insured thought that the regional hospital was very distant (64.9%) compared to few (24.9) who said the regional hospital was far away from their home. Whereas health clinics and health facilities were rated as somewhat (28.6%), far (33.4%), and less very distant (11.4%), CHPS compound was also rated as somewhat (28.6%), far (33.4%), and averagely very close (54.2%) to their residence. As a consequence, the study found a statistically less positively significant (rho = 0.026; p-value = 0.000) association between the proximity of authorised health facilities and the residency of insured people.

In terms of how frequently they use health facilities to get PHC services, the result shows that close to average of respondents do "not at all" (49.2%) use regional hospitals. However, because it is classified as a secondary level health facility, only a few 'once in a while on referral' (23.0%) used it because *'charges there [regional hospital] are too expensive though they accept NHIS' in treatment of PHC services*,' (28-year-old Female insured informant, 06/05/2022).

In terms of the municipal hospital, the findings show that while insured people use it "once in a while on referral" (30.5%), they also used it "once in a while as first point of access" (16.2%), "most often as first point of access" (10.4%), and sometimes "not at all" (18.9 percent) or "not often / barely" (13.6%). The presence of accredited health facilities was less positively significantly associated (rho = 0.212, p-value= 0.000) with how often insured individuals used the health facilities to get PHC services, according to the statistical findings.

In terms of health care clinics, the study discovered that many insured people used them "not at all" (37.3%), "barely" (12.6%), and "once in a while on referral" (11.4%) to access PHC services, as opposed to using them "once in a while as first point of access" (22.0%) and "most often as first point of access" (14.0%). As a consequence, there were no significant differences in how they used health facilities, CHPS compounds, laboratory centres, pharmacy stores, and herbalists to receive PHC services.

As shown in Figure 4.10 below, the majority of insured individuals (89%) chose to use public/government health facilities over quasi-government (3%) and private health facilities among the available health facilities (10%).

Despite this, also in Figure 4.11 below, the findings suggest that the great majority (91%) of insured people felt their perceptions of availability, distance, and cost to authorised health facilities have the least (4%) impact on their NHIS uptake shifting to 'not active.' Although a few (5%) indicated it affected their NHIS uptake to some extent, they also admitted that "*most commonly, lack of money and or financial restriction is the main reason for me not renewing my NHIS membership*" (35-year-old Male insured informant, 07/05/2022).

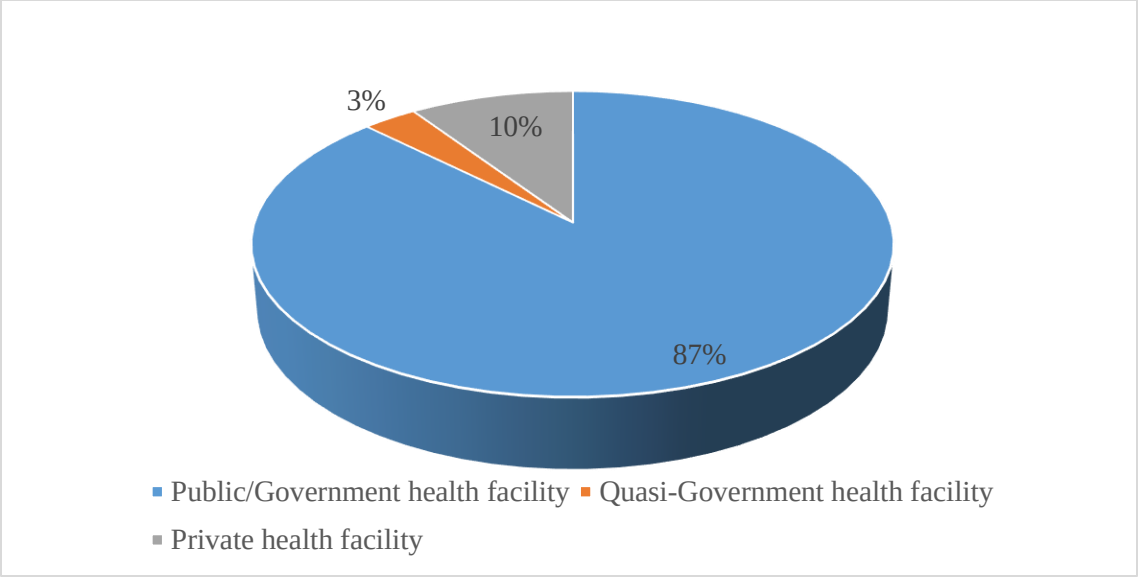


Figure 4.10: Health Facility by Type mostly Preferred by Insured Persons to Access PHC Services

Source: Field Survey (2022): N = 413

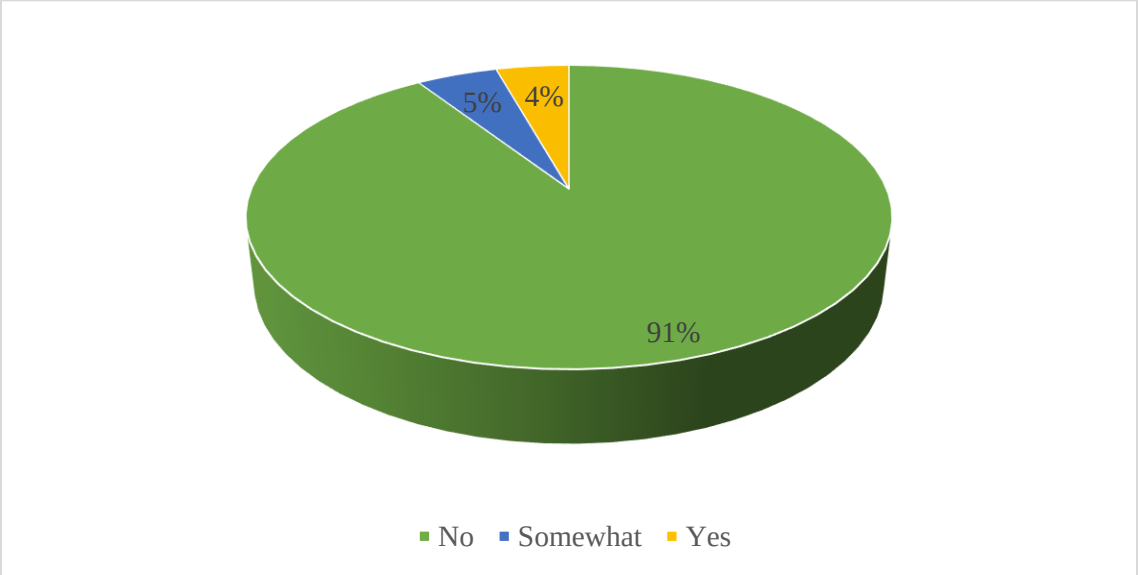


Figure 4.11: Influence of Health Facilities Availability, Distance and Cost (to and from) of accessing PHC at Locality and or Referral Facilities affect change of one NHIS Status

Source: Field Survey (2022): N = 413

4.4.6 Availability of Healthcare Equipment at Health Facilities to provide PHC Services

This section reports on findings of the required health equipment that is functional for delivering PHC services and is aesthetically attractive to deliver services, as well as insured individuals' perceptions on the availability of health care equipment at health facilities to provide PHC services.

When asked about the needed health equipment for delivering PHC services, health care professionals gave information to that effect, which is displayed in the table below.

Table 4.7: Providers' Perspective on Availability and Functionality of Healthcare Equipment at Health Care Facilities in provision of PHC Services

Availability and functionality of healthcare equipment	**Status**	**Freq. (N = 17)**	**Percent (%)**
Availability of healthcare equipment	Not available	4	23.5
	Available	13	76.5
Functionality of healthcare equipment	Not functioning	5	29.4
	Functional	12	70.6

Source: Field Interviews (2022)

Regarding the availability and functionality of various medical devices for use in providing PHC services at various levels of healthcare facilities, the results in Table 4.7 according to the interview with healthcare providers revealed that the majority (76.5%) of the informants agreed that medical equipment were easily accessible for use in treating PHC services. Many (70.6%) of them acknowledged to the fact that the accessible medical equipment was usable at the time of data collection. For instance, a practitioner stated that about the operation and availability of medical equipment as remarked below:

"...some of the healthcare equipment are [un]available. The lack of availability and performance of the majority of the aforementioned equipment makes treating patients at the hospital difficult. As a result, some patients receive referrals to other health facilities. Therefore, when the available equipment is operating as predicted, therapy is successful. For instance, this thermometer gun's malfunction is caused by a bad battery, which results in an erroneous temperature measurement right now." (29-year-old Female informant: a healthcare practitioner, 17/05/2022).

In Table 4.8, the findings show insured individuals' perceptions of the medical technology available and utilized in providing PHC services at neighbourhood and referral facilities in addition to healthcare providers' claims.

Table 4.8: Insured Persons' Perception on Availability and Functionality of Health Care Equipment at Health Facilities for providing PHC Services

Availability of Health care Equipment at Locality & Referral Facilities (N = 413)	**Response scale**	**Locality facility**		**Referral facility**		**Rho-statistics**
		Freq.	(%)	Freq.	(%)	
At health facilities, health care providers have `the requisite health equipment that are functional for providing PHC.	Disagree	21	5.1	9	2.2	**0.468 (0.000)**
	Somewhat	126	30.5	73	17.7	
	Agree	266	64.4	331	80.1	
At health facilities, health care providers have visually appealing equipment/tool to deliver services	Disagree	14	3.4	3	0.7	**0.490 (0.000)**
	Somewhat	132	32.0	78	18.9	
	Agree	267	64.6	332	80.4	
The condition and status of health care equipment/tools at locality health facility ever influence my NHIS status changed to 'not active'	Disagree	243	58.8	279	67.6	**0.587 (0.000)**
	Somewhat	72	17.4	53	12.8	
	Agree	98	23.7	81	19.6	

Source: Field Survey (2022); Correlation coefficient (p-value); Significance Level = 0.05

The findings in Table 4.8 show that many insured people agreed that health care personnel in community health facilities (64%) and recommended health facilities (80.1%) had the necessary health equipment for providing PHC services. As a result, statistically, the study discovered a moderate significant positive (rho = 0.468, p-value = 0.000) correlation between neighbourhood health facilities and referral health facilities, indicating that health

care equipment at both ends was aesthetically appealing for PHC treatment. As a result, they deny that the condition and status of health care equipment, tools, and apparatus at locality and referral health facilities ever had an impact on their NHIS status being altered to 'not active.' The finding was statistically significant and moderately linked (rho = 0.587, p-value = 0.000).

4.4.7 Availability of Health Professionals, their Attitude and Behaviour at Locality and Referral Health Facilities

Table 4.9 shows the findings of the availability of health professionals, their attitude, and behaviour at community and referral health facilities when delivering PHC services.

Table 4.9: Availability of Health Professionals, their Attitude and Behaviour at Locality and Referral Health Facilities

Statement	Scale	Locality health facility		Referral health facility		Rho-statistics
		(N = 413).	(%)	(N = 413).	(%)	
Health officers are adequately available to provide primary health care	Disagree	33	8.0	2	0.5	**0.284 (0.000)**
	Somewhat	82	19.9	51	12.3	
	Agree	298	72.2	360	87.2	
Health officers are all time available at duty post to provide primary health care	Disagree	25	6.1	2	0.5	**0.301 (0.000)**
	Somewhat	106	25.7	56	13.6	
	Agree	282	68.3	355	86.0	
Health officers report to duty post timely to provide primary health care	Disagree	28	6.8	3	0.7	**0.354 (0.000)**
	Somewhat	122	29.5	75	18.2	
	Agree	263	63.7	335	81.1	
Health officers attend to patients' health needs with prompt attention	Disagree	16	3.9	6	1.5	**0.479 (0.000)**
	Somewhat	115	27.8	91	22.0	
	Agree	282	68.3	316	76.5	
Health officers attend to patients' health needs with caring heart/empathy	Disagree	21	5.1	8	1.9	**0.545 (0.000)**
	Somewhat	125	30.3	113	27.4	
	Agree	267	64.6	292	70.7	
Health officers provide services right the first time and keep error free records	Disagree	13	3.1	4	1.0	**0.683 (0.000)**
	Somewhat	190	46.0	155	37.5	
	Agree	210	50.8	254	61.5	
Health officers consistently are courteous to insured patients when providing services	Disagree	21	5.1	10	2.4	**0.622 (0.000)**
	Somewhat	139	33.7	126	30.5	
	Agree	253	61.3	277	67.1	
Health officers make patients feel safe in their service delivery	Disagree	12	2.9	6	1.5	**0.592 (0.000)**
	Somewhat	138	33.4	109	26.4	
	Agree	263	63.7	298	72.2	
Health officers provide services within promised time	Disagree	20	4.8	8	1.9	**0.631 (0.000)**
	Somewhat	153	37.0	129	31.2	
	Agree	240	58.1	276	66.8	
Availability, attitude and behaviour of health officers in health facilities influence the change in NHIS status	Disagree	272	65.9	288	69.7	**0.665 (0.000)**
	Somewhat	64	15.5	47	11.4	
	Agree	77	18.6	78	18.9	

Source: Field Survey (2022); Correlation coefficient (p-value); Significance Level = 0.05

In terms of the availability of health care professionals at health facilities, the results in Table 4.9 show that majority of insured persons agreed that health officers were 'at all times at duty post' (68.3% & 86%) to provide PHC services. Similarly, majority of insured persons agreed that health officers 'reports to duty post timely' (63.7% & 81.1%) to provide PHC services at both locality health facilities (72.2%) and referral health facilities (87.2%). In terms of their 'adequacy' (rho = 0.284, p-value = 0.000), 'all time at duty post' (rho = 0.301, p-value = 0.000), and 'timely reports to duty post' (rho = 0.354, p-value) to provide PHC services to patients, these were significant factors showing a less positive association between health care professionals' availability in locality health facilities compared to referral health facilities.

The results indicated no significant differences in treatment intervention disparity between local and referral health facilities when it came to health care professionals' attitudes toward insured persons' when providing PHC services. For example, the majority of insured persons agreed that health officers at locality health facilities and referral facilities attended to patients' health needs promptly (68.3% & 76.5%, respectively), with a caring heart or empathy (64.4% & 70.7%), and provided services correctly the first time by keeping error-free records (50.8% & 61.5%). Again, the study discovered that there is a statistically significant relationship between health care professionals' attitudes as observed at community health facilities and referral health facilities being modestly positively significantly associated with prompt attention (rho = 0.479; p-value = 0.000). It was strongly significantly associated with having a caring heart or empathy (rho = 0.545, p-value = 0.000) and keeping error-free records when attending to NHIS patients' health

needs (rho = 0.683, p-value = 0.000). However, some exceptions were reported by insured participant in an interview who said:

> "*The unprofessional behaviour of some health officials, which has occasionally led to confrontations between insured patients and health officials on duty. I confronted a nurse for standing and watching my wife die in childbirth*" (32-year-old Male insured participant, 08/05/2022).

In terms of health officers' behaviour, the study's findings revealed no significant behavioural differences between officers giving PHC services at community health centres and officers delivering PHC services at referral health centres. At both neighbourhood health facilities and referral health facilities, insured persons consistently accepted that health officers were always pleasant to them (61.3% & 67.1%), ensured their safety (63.7% & 72.1%), and delivered services within quantifiable promised time. As a consequence, the study discovered that there was a statistically significant link between health officers at local and referral health facilities on supply of PHC services within quantifiable promised time (rho = 0.631, p-value = 0.000). As a result, the insured respondents strongly disagreed (65.9% & 69.7%, respectively) with the claim or statement that "availability, attitude, and behaviour of health officers at health facilities ever affected their NHIS status changed to "not active" (rho = 0.665, p-value = 0.000).

4.4.8 Availability of Drugs at Accredited Health Facilities, and Mode of Dispensing

Table 4.10 shows the findings of the availability of medications at authorised health institutions and their form of distribution.

Table 4.10: Availability of Drugs at Accredited Health Facilities, and Mode of Dispensing

Drugs supply	**Mode of Drugs dispensing**	**Locality facility**		**Referral facility**		**Pharmacy shop**	
		N = 413	(%)	N = 413	(%)	N = 413	(%)
Drugs covered by NHIS prescribed at health facilities are dispensed using…	Out of pocket payment (OOP)	29	7.0	22	5.3	388	93.9
	NHIS	223	54.0	205	49.6	10	2.4
	Combination of NHIS & OOP	161	39.0	186	45.0	15	3.6
Rho-statistics	**Coefficient (p-value)**	**1**		**0.646 (0.000)**		**0.144 (0.003)** **0.199 (0.000)**	

Source: Field Survey (2022); Significance Level = 0.05

According to Table 4.10, the majority of insured people believe that drugs covered by the NHIS are prescribed and distributed at health care institutions utilising the NHIS at both local health facilities (54%) and referral health facilities (49.6%). However, they frequently acquire prescribed medications that are not available at health care facilities through OOPs (93.9%) at accredited pharmacy shops outside, as opposed to a handful who use NHIS to get their prescribed medications at qualified pharmacy shops outside.

Nonetheless, in neighbourhood and referral health facilities, a significant number (39 percent and 45 percent, respectively) admitted to using a mixed portfolio to get prescription pharmaceuticals at recognised health facilities. That is, they used NHIS to get some of the accessible prescriptions, then OOPs to get others prescribed for them to buy at a drugstore outside the health institution. According to informants: "*buying drugs using OOPs frequently occurs due to the unavailability of such medications at the time the insured patient was receiving PHC services at health facilities,*" (Informants: insured individuals

& health care professionals, 06/05/2022). The findings demonstrate a very significant positive (rho = 0.646, p-value = 0.000) relationship between the style of drug dispensing at locality and referral health institutions. However, there was a statistically significant positive relationship between how pharmaceuticals were distributed at locale and pharmacy stores (rho = 0.144, p-value = 0.003) and between referral facilities and pharmacy shops (rho = 0.199, p-value = 0.000).

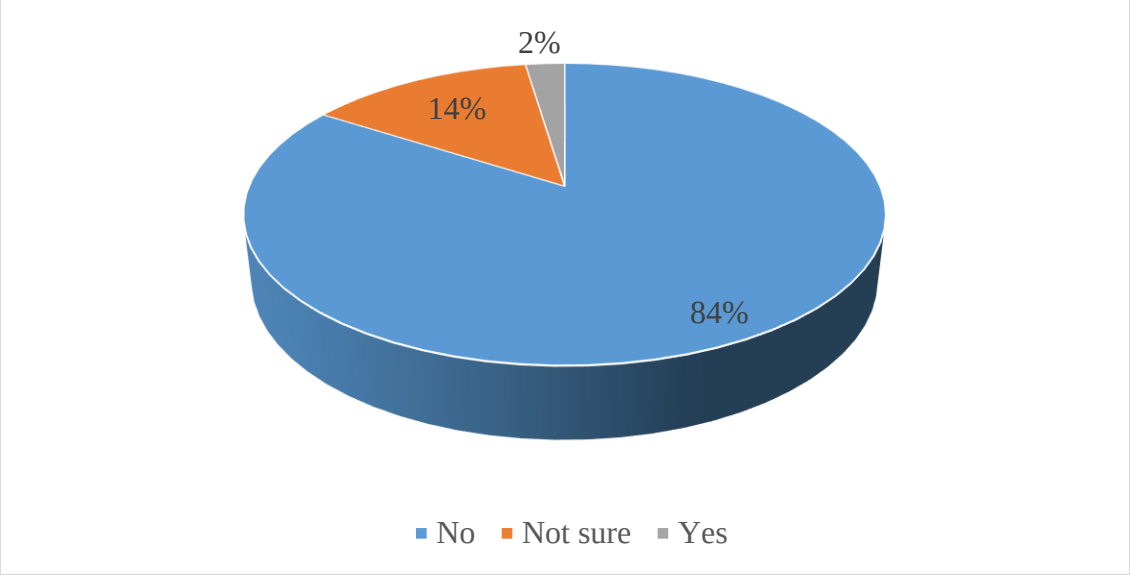


Figure 4.12: Knowledge of whether Drugs accessed through 'Out-of-Pocket Payment' or 'Combination of NHIS and OOP' at Health Facility is Covered by NHIS
Source: Field Survey (2022)

However, the majority of insured persons (84%) had no idea whether drugs obtained through OOPs or a mix of NHIS and OOPs at health facilities were covered by NHIS or not, according to Figure 4.12 above.

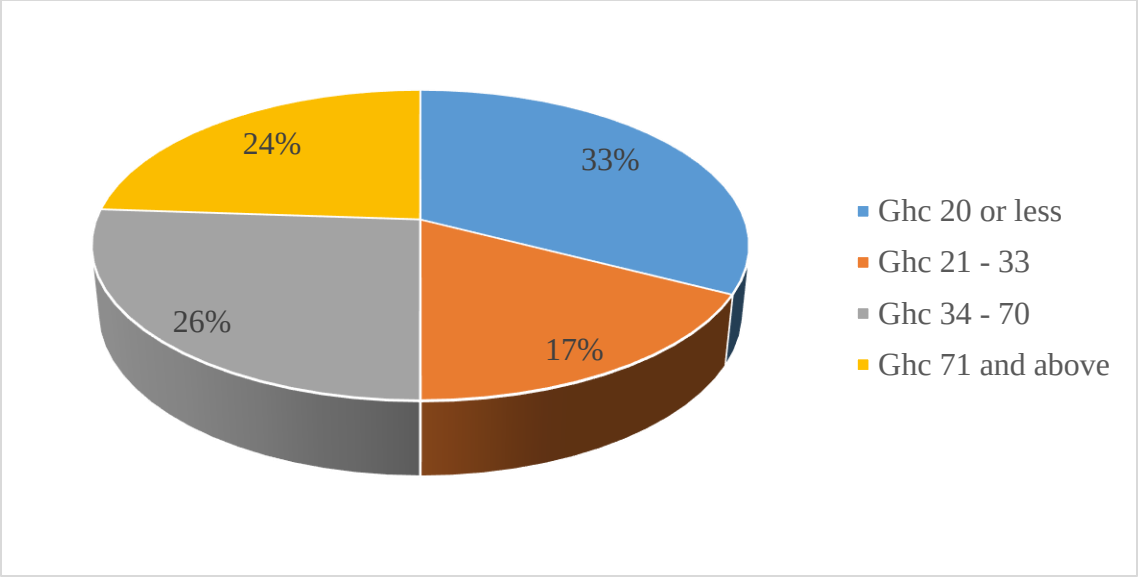


Figure 4.13: Cost of Drugs Bought (Gh¢)
Source: Field Survey (2022)

As a result, findings from Figure 4.13 above show that the average cost of medications purchased using OOPs for insured individuals was Gh¢83.61 (Std. Deviation = 123.03) **[US$1.00 = Gh¢10.79 as at 18/02/2023]**. According to the results, the majority of insured persons who purchased drugs using OOPs or a combination of NHIS and OOPs spent Gh¢20.00 or less (33 percent), Gh¢21.00 – 33.00 (17 percent), and Gh¢34.00 – 70.00 and above (24%). In an interview, one participant said:

> "*It is worrying and sometimes we (insured patients) feel there is no value for money given, bearing in mind how much is charged as premium (*Gh¢ *22.00) and the levy [NHIL = 2.5 percent] on general products and services,". We are entitled to improved services, especially in the areas of medications and laboratory tests"* (30-year-old Male insured participant, 10/05/ 2022).

Despite this, in Figure 4.14 majority of insured persons' (85.5%) still felt that the way medications are prescribed and delivered in health facilities has less of an impact on them changing their NHIS status to 'not active.'

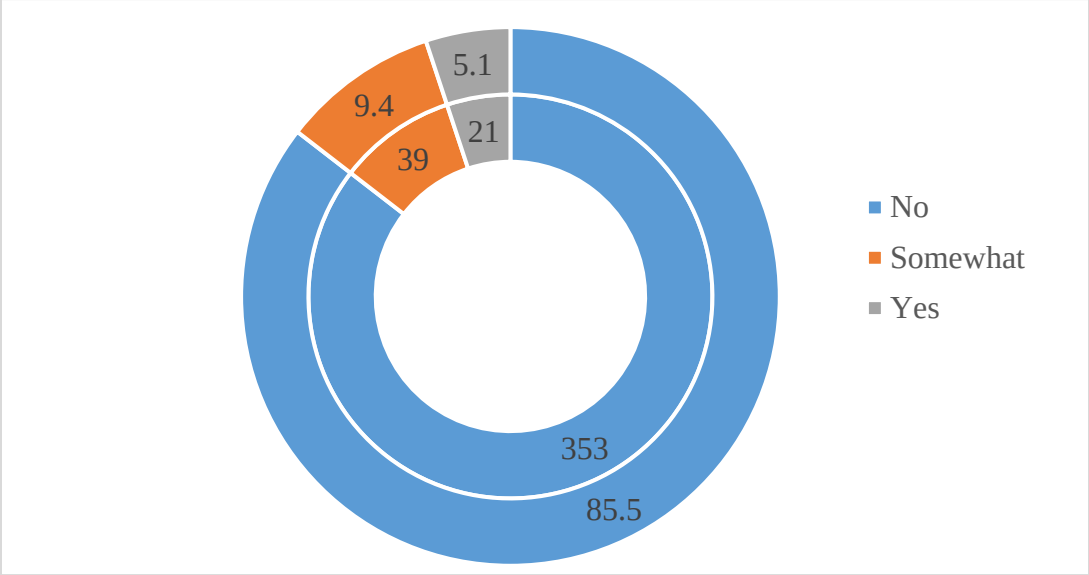


Figure 4.14: Mode of Drug's Prescriptions as Dispensed at Health Facilities ever cause a Change in NHIS Status
Source: Field Survey (2022)

4.4.9 Effect of Supply-side Determinants of PHC Services on NHIS Uptake

The statistical significance in both independent t-test and binary logistic regression tests were at the 95 percent confidence interval. The statistical findings of the independent t-test analysis were almost 'identical' based on the Levane's test conducted. The model was also fitted [Omnibus test of model coefficients = 18.82 (0.016); -2Log likelihood = 520.113; Cox & Snell R Square = 0.045; Nagelkerke R Square = 0.061; Hosmer and Lemeshow test = 10.806 (0.213)] using the binary logistic regression.

Table 4.11 shows that there was no statistical difference in the effect of available health care facilities that insured persons mostly used to access PHC services (t = 1.000, p-value

> 0.05), facility acceptance of NHIS to treat PHC services (t = 1.245, p-value > 0.05), average distance covered to a healthcare facility (t = -1.867, p-value > 0.05), cost (to & from) health facility (t = 0.115, p-value > 0.05), and how often those health facilities they used affect their NHIS uptake. However, the binary logistics regression results suggest that the average distance travelled by insured persons as travel times (in minutes) to access and use PHC services at health facilities had less of an impact on insured persons' NHIS uptake (status) change (OR = 0.979, p-value = 0.008, C.I at 95 percent = 0.964 – 0.994).

The independent t-test for equality of mean assumed between insured 'active' and 'not active' members (dependent variables) found that availability of healthcare equipment as a supply-side determinant (independent variable) had a statistical difference in reducing insured persons' NHIS uptake (status) (t = -2.501, p-value= 0.013) to change to 'not active'. The probable chance of the effect was less statistically significant (OR = 0.850, p-value = 0.046, C.I at 95 percent = 0.724 – 0.997) as a consequence of the binary logistic regression.

However, on other determinants of healthcare supply, findings show no statistically significant variation among variables such as in health professionals availability, attitude and behaviour, or drug supply affecting insured people' NHIS uptake (status) to change (p-value > 0.05).

Table 4.11: Effect of Determinants of Health Care Supply on NHIS Uptake

Supply-side determinants	Independent t-test for Equality of Means between 'active' and 'not active' members				Factors influencing NHIS uptake: Logistic regression			
	95% Confidence Interval of the Difference		t	p-value	95% Confidence Interval for Odd Ratio (O.R.)		O.R.	p-value
	Lower	Upper			Lower	Upper		
Available of health care facilities most likely used by insured persons	-0.11965	0.36769	1.000	0.318	0.917	1.310	1.096	0.315
Available health care facilities accept NHIS to treat PHC services	-0.09928	0.44196	1.245	0.214	0.928	1.301	1.099	0.275
Average distance to health care facilities away from residence to seek PHC	-7.32958	0.18820	-1.867	0.063	**0.964**	**0.994**	**0.979**	**0.008**
Average cost (to and from) incurred to access PHC services at health care facilities from residency	-0.76892	0.86425	0.115	0.909	0.994	1.164	1.076	0.071
How often health facilities are used to access PHC services	-1.01102	1.60679	0.447	0.655	0.966	1.031	0.998	0.886
Available health care equipment at facilities	**-0.75706**	**-0.09067**	**-2.501**	**0.013**	**0.724**	**0.997**	**0.850**	**0.046**
Workforce (professionals) availability, attitude, & behaviour at health care facilities	-2.53729	0.05356	-1.884	0.060	0.942	1.020	0.980	0.327
Drugs availability for dispensing at health care facilities	-0.15680	0.33385	0.709	0.479	0.894	1.272	1.066	0.474
Constant	-	-	-	-	-	-	**3.418**	**0.478**
Omnibus test of model coefficients						**18.82 (0.016)**		
-2 Log likelihood						**520.113**		
Cox & Snell R Square						**0.045**		
Nagelkerke R Square						**0.061**		
Hosmer and Lemeshow test						**10.806 (0.213)**		

Source: This study field survey (2022). NOTE: t-test results are based on equal variances assumed.

4.5 Demand-side Factors Influencing National Health Insurance Uptake

The section answers the second and third research questions on the effect of insured persons' access and use of PHC services on their NHIS uptake. On PHC access, insured individuals were first questioned about the different PHC services provided under the NHIS that they have ever used, and then about their impression of those services based on the access dimensions; availability, acceptability, affordability, accommodation and safety. On utilisation, the insured members were asked to report (quantify) how many times they used each type of PHC service in the year 2021.

4.5.1 Access to Primary Health Care Services at Health Facilities

The outcomes of insured persons' access to PHC services at authorised health institutions are shown in Figure 4.15.

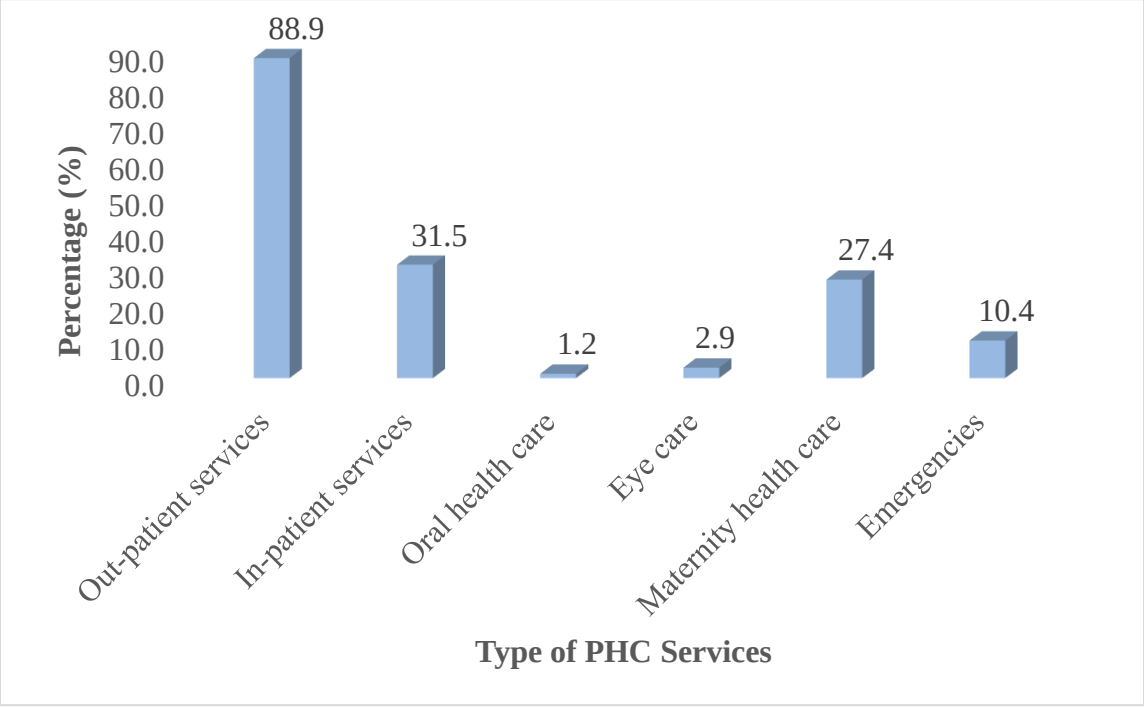


Figure 4.15: Types of PHC Services Accessed under NHIS by Insured Persons
Source: Field Survey (2022)

The result in Figure 4.15 shows that majority of the insured use more of the out-patient services (88.9 percent), as compared to in-patient services (31%), maternal health care (27.4%), and emergency (10.4%). Oral health care (1.2%) and eye care (2.9%), on the other hand, were the least used and sought after PHC services among insured people.

4.5.2 Insured Persons' View of the Dimensions of Access to PHC Services

Table 4.12 show the results on the dimensions of access to PHC services by insured persons.

Table 4.12: Insured Persons' View of the Dimensions of Access to PHC Services

Access Dimensions	PHC services	Response Scale (N = 413)			
		No idea	Disagree	Somewhat	Agree
Availability	Out-patient	46 (11.1)	1 (0.2)	116 (28.1)	250 (60.5)
	In-patient	163 (39.5)	5 (1.2)	126 (30.5)	119 (28.8)
	Oral health	292 (70.7)	3 (0.7)	84 (20.3)	34 (8.2)
	Eye care	290 (70.2)	3 (0.7)	94 (22.8)	26 (6.3)
	Maternity	204 (49.4)	3 (0.7)	90 (21.8)	116 (28.1)
	Emergencies	203 (49.2)	8 (1.9)	95 (23.0)	107 (25.9)
Acceptability	Out-patient	47 (11.4)	7 (1.7)	117 (28.3)	242 (58.6)
	In-patient	166 (40.2)	10 (2.4)	118 (28.6)	119 (28.8)
	Oral health	301 (72.9)	5 (1.2)	78 (18.9)	29 (7.0)
	Eye care	304 (73.6)	6 (1.5)	86 (20.8)	17 (4.1)
	Maternity	208 (50.4)	6 (1.5)	88 (21.3)	111 (26.9)
	Emergencies	214 (51.8)	6 (1.5)	92 (22.3)	101 (24.5)
Affordability	Out-patient	45 (10.9)	20 (4.8)	124 (30.0)	224 (54.2)
	In-patient	163 (39.5)	21 (5.1)	119 (28.8)	110 (26.6)
	Oral health	299 (72.4)	14 (3.4)	74 (17.9)	26 (6.3)
	Eye care	297 (71.9)	15 (3.6)	84 (20.3)	17 (4.1)
	Maternity	206 (49.9)	18 (4.4)	93 (22.5)	96 (23.2)
	Emergencies	213 (51.6)	18 (4.4)	84 (20.3)	98 (23.7)
Accommodation	Out-patient	45 (10.9)	9 (2.2)	130 (31.5)	229 (55.4)
	In-patient	161 (39.0)	14 (3.4)	133 (32.2)	105 (25.4)
	Oral health	301 (72.9)	7 (1.7)	85 (20.6)	20 (4.8)
	Eye care	300 (72.6)	9 (2.2)	91 (22.0)	13 (3.1)
	Maternity	208 (50.4)	13 (3.1)	96 (23.2)	96 (23.2)
	Emergencies	216 (52.3)	13 (3.1)	95 (23.0)	89 (21.5)
Safety	Out-patient	45 (10.9)	6 (1.5)	131 (31.7)	231 (55.9)
	In-patient	162 (39.2)	11 (2.7)	128 (31.0)	112 (27.1)
	Oral health	305 (73.8)	5 (1.2)	87 (21.1)	16 (3.9)
	Eye care	303 (73.4)	7 (1.7)	92 (22.3)	11 (2.7)
	Maternity	213 (51.6)	7 (1.7)	100 (24.2)	93 (22.5)
	Emergencies	216 (52.3)	7 (1.7)	101 (24.5)	89 (21.5)
Total Perceived Access to PHC * NHIS uptake [Pearson R]			**-0.117 (0.017)**		

Source: Field Survey (2022); Freq. (%); Coefficient (p-value); NHIS uptake = insured 'active' & 'not active' members

The results in Table 4.12 show that on availability of access, many of the insured individuals agreed (60.5%) that out-patient services are readily available at accredited health facilities. However, they shared 'no idea' on how available in-patient services (39.5%), oral health care (70.7%), eye-care (70.2%), maternity health care (49.4%), and emergency services (49.2%) are readily available at nearby health facilities.

Similarly, when it comes to acceptability, the results demonstrate that, on average (58.6%), insured persons' think that out-patient services offered by health care providers were adequate and satisfy their needs preferences. With the exception of a few who slightly agreed with the statement, many offered 'no clue' to validate the assumption that in-patient (40.2%), oral health care (72.9%), eye care (73.6%), maternity health care (50.4%), and emergency services (51.8%) provided were acceptable.

The results on their impressions of out-patient services were stated to be affordable, and that health care professionals were accommodating and guaranteed their safety in the provision of out-patient services. However, while a few felt that the statement was preferable, many others said they had "no knowledge" about the remaining PHC services.

Statistically, the findings revealed that between insured active and in-active person's perceptions of their access to PHC services and the specific services they use was less negatively related (rho = -0.117, p-value = 0.017). Generally, the study found that many insured individuals had positive feelings regarding out-patient treatments. However, they were unable to attest to the same for the other PHC services since they had just recently used them and the majority had never used them since they enrolled.

According to an Insured Person: "*I can't say much about how services such as inpatient, oral health care, eye care and emergency services are handled as I have never used these services since signing up with NHIS*" (27-year-old Female insured informant's view, 05/13/2022).

4.5.3 Utilisation of PHC Services by NHIS Members for the Year-2021

The section presents findings that answer the third research question on the effect of PHC service use on NHIS uptake. The results on the use of PHC services by NHIS members were determined using the year 2021 as a reference as shown in Table 4.13.

Table 4.13: Utilisation of PHC Services by NHIS Members and associations with each Service for the Year-2021

Statistics	Types of PHC services utilised by NHIS members							
	Out - patient	**In - patient**	**Oral health care**	**Eye care**	**Maternity health care**	**Emergencies**	**Laboratory test**	**Drugs**
Mean	1.43	0.30	0.05	0.07	0.66	0.06	0.56	2.40
Std. Dev.	1.934	0.690	0.394	0.412	2.129	0.271	0.942	2.971
Min.	0	0	0	0	0	0	0	0
Max.	12	6	5	5	12	2	6	30
Pearson R	1	0.305 (0.000)	0.098 (0.046)	0.106 (0.031)	0.435 (0.000)	-0.006 (0.905)	0.506 (0.000)	0.275 (0.000)

Source: Field Survey (2022); NB: Coefficient (p-value); Significance level = 0.05

The results in Table 4.13 show that out-patient services (mean = 1.43; standard deviation = 1.934) were the most popular PHC services in the year-2021, compared to in-patient services (mean = 0.30; standard deviation = 0.690), oral health care (mean = 0.05, standard deviation = 0.394), eye-care (mean = 0.07, standard deviation = 0.412), maternity health care (mean = 0.66; standard deviation = 2.169), and emergencies (mean = 0.56, standard deviation = 0.942). As a result, medications were commonly sought at health facilities (mean = 2.40, standard deviation = 2.971), requiring the use of NHIS to distribute the drugs

or give prescriptions for purchase using OOPs outside the health institution in instances where they were not easily available. The findings indicate that there was a wide range of usage among insured people across PHC services. For example, although some people did not use the services at all, others used them between 2 times and 30 times before the end of 2021, depending on the type of service.

Statistically, it was found that those who use out-patient services also use in-patient services (R = 0.305, p-value = 0.000) and got drugs dispensed to them (R = 0.275, p-value = 0.000) significantly. However, it was found that those who use out-patient services rarely use oral health care (R = 0.098, p-value = 0.046), and eye care (R = 0.106, p-value = 0.031). Additionally, using out-patient care was significantly connected with using maternal health care (R = 0.435, p-value = 0.000) and laboratory tests (R = 0.506, p-value = 0.000). The findings suggest that maternal health care and laboratory diagnosis services have a greater impact on insured people who use out-patient services more frequently.

4.5.4 Effect of Access and Use of PHC Services on NHIS Uptake

The section specifically addresses the impact of insured members' access and use of PHC services on their NHIS uptake. The results are shown in Table 4.14, with the results tested for statistical significance at a 95 percent confidence interval. The statistical results of the independent t-test analysis were almost "identical" based on the Levane's test results. The model for access for PHC services was fit at [Omnibus test of model coefficients = 37.499 (0.043); -2Log likelihood = 501.437; Cox & Snell R Square = 0.087; Nagelkerke R Square = 0.119; Hosmer and Lemeshow test = 18.171 (0.756)] using the binary logistic regression. On use of PHC services for the year 2021, the model was also fit at [Omnibus test of model coefficients = 16.892 (0.031); -2Log likelihood = 522.044; Cox & Snell R Square = 0.040;

Nagelkerke R Square = 0.055; Hosmer and Lemeshow test = 6.188 (0.626)] using the binary logistic regression.

The results in Table 4.14 show that PHC services are available (t = 2.602, p-value = 0.010, C.I at 95 percent = 0.31344 – 2.25153), acceptable (t = 2.290, p-value = 0.023, C.I at 95 percent = 0.15185 – 1.99150), accommodating (t = 2.296, p-value = 0.022, C.I at 95 percent = 0.14586 – 1.88127), and affordable for insured persons to use (t = 2.155, p-value = 0.032; C.I at 95 percent = 0.08790 – 1.91501). As a result, availability, acceptability, accommodation and affordability of PHC services were statistically the significant access indicators positively impacting insured persons' take-up of NHIS. However, there was no statistically significant (p-value > 0.05) impact of health care safety as an access indicator influencing insured persons' take-up of NHIS. According to a health expert on health care safety, the following has been reported:

> "*We are not aware of people who visit the facility for medical treatment complaining about their safety. I say this because we normally put up a suggestion box for people who complain about this, but we have not seen safety of health care issues as concerns when accessing and using PHC services from healthcare facilities. This means that they have confidence in the service delivery of health professionals*." (40-year-old Male health expert at Municipal Health Directorate, 15/05/2022).

In the survey, significant variables that influence positively insured persons' NHIS uptakes were the in-patient services offered at accredited health facilities (t = 2.766, p-value = 0.006; CI at 95 percent = 0.104 – 0.613), maternity health care (t = 2.278, p-value = 0.023; CI at 95 percent = 0.042 – 0.574), and emergencies services (t = 2.135, p-value = 0.033;

CI at 95 percent = 0.023 - 0.546). It was found that the uptake and provision of these services had a comparable impact on insured persons' use of NHIS. Among the various PHC services, maternal health services were those that significantly positively increased insured persons' uptake of NHIS. As a result, the study found that overall access to PHC services had a statistically significant positive impact on insured persons NHIS uptake of being active (t = 2.387, p-value = 0.017; C.I. at 95% = 0.90560 – 9.36635). The binary logistic regression results showed that insured persons' access to PHC services have a higher chance (OR = 1.012, p-value = 0.018; C.I. at 95% = 1.002 – 1.022) of influencing insured persons' NHIS uptake to be 'active' than 'not-active' member.

However, overall utilisation of PHC services was found to have a statistically positive (t = 1.920, p-value = 0.05; CI at 95% = 0.027 – 2.333) effect on change in NHIS status from being 'active' insured member to 'not active' member. Therefore, the study established that utilisation of the PHC service has a lower chance (OR = 0.963, p-value = 0.060, CI. 95% = 0.926 – 1.002) of influencing the insured's NHIS status into being "inactive".

Table 4.14: Effect of Access and Use of PHC Services on NHIS Uptake

Access dimensions to PHC services	Independent t-test for Equality of Means between 'active' and 'not active' members				Demand side Factors Influencing Uptake: Logistic Regression			
	95% Confidence Interval of the Difference		t	p-value	95% Confidence Interval for Odd Ratio (O.R.)		O.R.	p-value
	Lower	Upper			Lower	Upper		
Availability:	**0.31344**	**2.25153**	**2.602**	**0.010**	0.967	1.159	1.059	0.217
[out-patient services]	-0.053	0.332	1.428	0.154	0.771	1.969	1.232	0.384
[in-patient services]	**0.104**	**0.613**	**2.766**	**0.006**	0.751	1.940	1.207	0.437
[oral health care]	-0.037	0.391	1.630	0.104	0.573	2.372	1.165	0.673
[eye care]	-0.193	0.223	0.139	0.890	0.641	3.858	1.573	0.323
[maternal health care]	**0.042**	**0.574**	**2.278**	**0.023**	0.471	1.216	0.757	0.250
[emergencies]	**0.023**	**0.546**	**2.135**	**0.033**	0.589	1.286	0.870	0.486
Acceptability:	**0.15185**	**1.99150**	**2.290**	**0.023**	0.878	1.121	1.002	0.971
[out-patient services]	-0.117	0.275	0.795	0.427	0.476	1.545	0.858	0.609
[in-patient services]	**0.050**	**0.563**	**2.349**	**0.019**	0.543	1.783	0.984	0.959
[oral health care]	-0.123	0.289	0.791	0.429	0.389	1.327	0.718	0.291
[eye care]	-0.266	0.120	-0.745	0.457	0.278	1.703	0.688	0.418
[maternal health care]	**0.068**	**0.596**	**2.473**	**0.014**	0.740	2.449	1.346	0.331
[emergencies]	**0.084**	**0.604**	**2.600**	**0.010**	0.900	2.067	1.364	0.144
Affordability:	**0.08790**	**1.91501**	**2.155**	**0.032**	0.882	1.139	1.002	0.971
[out-patient services]	-0.135	0.259	0.615	0.539	0.474	1.404	0.816	0.463
[in-patient services]	**0.076**	**0.578**	**2.561**	**0.011**	**1.004**	**3.139**	**1.775**	**0.048**
[oral health care]	-0.084	0.316	1.140	0.255	0.543	3.230	1.324	0.537
[eye care]	-0.256	0.127	-0.664	0.507	0.168	1.321	0.471	0.152
[maternal health care]	**0.064**	**0.574**	**2.458**	**0.014**	0.737	2.085	1.239	0.418
[emergencies]	-0.016	0.500	1.846	0.066	0.479	1.274	0.781	0.322
Accommodation:	**0.14586**	**1.88127**	**2.296**	**0.022**	0.906	1.213	1.049	0.523
[out-patient services]	-0.092	0.294	1.028	0.304	0.761	2.664	1.424	0.269
[in-patient services]	**0.006**	**0.504**	**2.011**	**0.045**	0.406	1.193	0.696	0.188
[oral health care]	-0.060	0.332	1.363	0.173	0.589	3.000	1.330	0.492
[eye care]	-0.248	0.130	-0.610	0.542	0.298	1.867	0.745	0.531
[maternal health care]	**0.046**	**0.558**	**2.315**	**0.021**	0.775	2.154	1.292	0.325
[emergencies]	**0.024**	**0.532**	**2.153**	**0.032**	0.739	1.871	1.176	0.494
Safety:	**-0.09365**	**1.62726**	**1.752**	**0.081**	0.859	1.066	0.957	0.422
[out-patient services]	-0.167	0.217	0.256	0.798	0.436	1.628	0.843	0.436
[in-patient services]	-0.020	0.485	1.809	0.071	0.458	1.360	0.789	0.458
[oral health care]	-0.072	0.311	1.226	0.221	0.486	2.048	0.998	0.486
[eye care]	-0.247	0.126	-0.635	0.526	0.581	3.288	1.382	0.581
[maternal health care]	-0.055	0.459	1.542	0.124	0.413	1.190	0.701	0.413
[emergencies]	-0.007	0.503	1.913	0.056	0.687	1.521	1.022	0.687
Total perceived access to PHC services	**0.90560**	**9.36635**	**2.387**	**0.017**	**1.002**	**1.022**	**1.012**	**0.018**
Constant	-	-	-	-	-	-	**1.174**	**0.431**
Total perceived PHC Utilisation (2021)	**-0.027**	**2.333**	**1.920**	**0.056**	**0.926**	**1.002**	**0.963**	**0.060**
Constant	-	-	-	-	-	-	**0.682**	**0.008**

Omnibus Test of Model Coefficient	**37.499 (0.163)**	**16.892 (0.103)**
-2 log likelihood	**501.437**	**522.044**
Cox & Snell R Square (Nagelkerke R Square)	**0.087 (0.119)**	**0.040 (0.055)**
Hosmer & Lemeshow Test	**18.171 (0.756)**	**6.188 (0.626)**

Source: This study field survey (2022). NOTE: t-test results are based on equal variances assumed.

4.6 Demand and Supply-side Model of National Health Insurance and Implications for UHC

This section answers the fourth research questions on the demand and supply-side factors of the NHIS using Structural Equation Model (SEM). The section further interrogates the implications of these factors for UHC. The SEM model includes four (4) latent (unobserved) variables constructed from 39 observed variables. The model includes SEHC, determinants of supply of healthcare (SoHD), demand-side access and use (DAU) of PHC services, and insured persons' NHIS uptake. SEHC variables (i.e. gender, education level, average monthly income, location, health use behaviour, average distance in minutes to the health facility, and costs to and from the health facility) were controlled for in the model. The SoHD variables included available healthcare facilities, healthcare equipment, healthcare professionals, their attitudes and behaviours, and drug availability in healthcare facilities. Additionally, DAU variables included access to PHC services, perceived indicators of access to PHC services, and use of PHC services. SoHD and DAU were treated as explanatory variables predicting the effect on the latent dependent variable (NHIS uptake), which is also composed of three (3) indicators (ever enrolled in NHIS, category of NHIS enrolment, and current NHIS status). Overall, there are 39 variables in the model: seventeen (17) observable variables, twenty-two (22) unobserved variables. Of these variables, eighteen (18) are endogenous variables and twenty-one (21) are exogenous variables. These variables were analysed and combined together to forecast the influence of the SEHC, SoHD, and DAU models determinants on NHIS uptake thus far, and to assess the implications for UHC. According to the model specifications, the number of parameters was (NPAR = 57); with cumulative minimal occurrence (CMIN = 60898.907), showing

that the entire research model was appropriate. Figure 4.16 shows the graphical path analysis. In addition, the following tables show the results of multi-layered analyses (regression weights, standardised regression weights, intercepts, covariance, correlation, and variance) with a 95 percent confidence interval predicting the effect of demand-side and supply-side models of Ghana's National Health Insurance; Implications for UHC in Wa municipality.

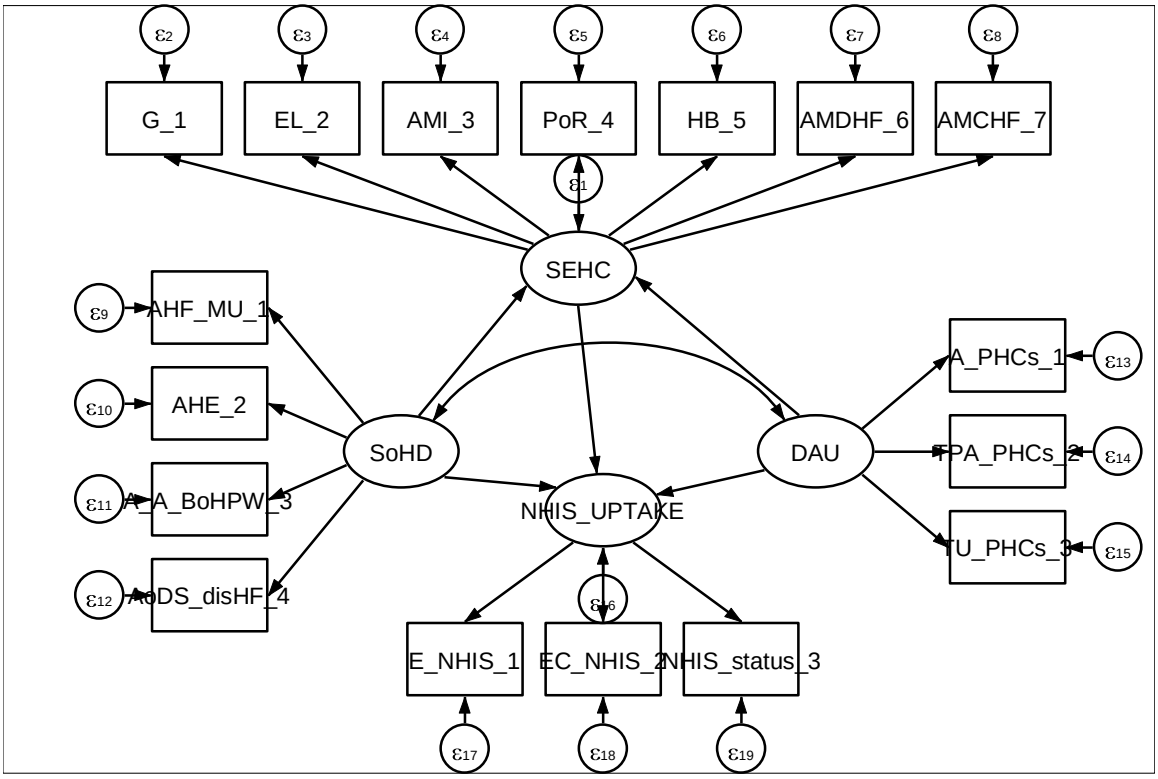


Figure 4.16: Demand and Supply-side Models of National Health Insurance in Ghana and their Implications for UHC

Source: Field Survey (2023)

4.7 Structural Results

4.7.1 Regression Weights

Table 4.15 shows the results of the structural equation model (SEM) based on regression weights, which validated two of the study hypotheses. First, it was established that insured persons' socio-economic and health characteristics (SEHCs) have a direct significant effect on NHIS uptake (Estimate = 0.237, p-value = 0.000). It also confirmed that the determinants of supply of healthcare (SoHDs) had a direct significant impact on insured persons' NHIS uptake (Estimate = 0.040, p-value = 0.01). It did not, however, back up the claim that demand for accessing and using (DAU) PHC services had a direct impact on insured persons' NHIS uptake (Estimate = 0.001, p-value = 0.823).

The study found that SEHCs have a significant positive impact on insured person's perceptions of healthcare professionals' availability, attitude, and behaviour (Estimate = 8.768, p-value = 0.000), availability of healthcare equipment at health facilities (Estimate = 1.792, p-value = 0.000), and availability of health facilities that are mostly accessed and utilized by insured people (Estimate = 0.241, p-value = 0.000). In addition, the study found that SoHDs had a substantial significant impact on insured persons' access to PHC services (Estimate = 1.000, p-value = 0.000), overall perceived access to PHC services (Estimate = 10.517, p-value = 0.000), and use of PHC services for the year 2021 (Estimate = 1.014, p-value = 0.000). As a result, it was discovered that a person's degree of education had a substantial beneficial impact on their demand for PHC services (Estimate = 0.076, p-value = 0.01). Similarly, insured people's average monthly income has a substantial beneficial impact on their demand for PHC services (Estimate = 42.142, p-value = 0.000). Average distance to health facility has a substantial beneficial influence on their demand for access

and usage of PHC services (Estimate = 1.029, p-value = 0.000), as does average cost (to and from) health facility (Estimate = 0.230, p-value = 0.000).

4.7.2 Mediations (Intercepts)

Table 4.16 shows the mediating variables that significantly influenced the effect of SEHC and SoHDs on an insured person's NHIS uptake. First, the result showed that drugs supply at health facilities (Estimate = 0.733, p-value = 0.000), available healthcare equipment (Estimate = 1.292, p-value = 0.000), and available health facilities (Estimate = 1.042, p-value = 0.000) were significant mediating factors that influenced the effect of SEHC and SoHDs on an insured person's NHIS uptake. Also, access to PHC services (Estimate = -0.449. p-value = 0.000), total use of PHC for the year-2021 (Estimate = 1.449, p-value = 0.000) were significant mediating factors that influenced the effect of SEHC and SoHDs on an insured person's NHIS uptake. In addition, level of education (Estimate = 1.830, p-value = 0.000), current place of residence (Estimate = 1.810, p-value = 0.000), average distance to health facilities (Estimate = 7.053, p-value = 0.000), and cost (to and from) health facilities (Estimate = 3.896, p-value = 0.000) were significant SEHC factors that influenced the effect of DAU and SoHDs on an insured person's NHIS uptake.

4.7.3 Covariances

Table 4.17 shows that the study data confirm the direct hypotheses on research hypothesis five (5):

1. SEHC has a substantial positive effect on SoHD (Estimate = 1.328, p-value = 0.000)
2. DAU has a statistically significant positive effect on SEHC (Estimate = 0.768, p-value = 0.000).

3. DAU has a statistically significant positive effect on SOHD (Estimate = 0.701, p-value = 0.000).

4.7.4 Correlations

The study found that insured person's SEHC has a somewhat positive relationship with SOHD (R = 0.417) in Table 4.18. In addition, insured person's DAU was less strongly related with SEHC (R = 0.182). DAU, on the other hand, was less strongly related with SOHD (R = 0.171).

4.7.5 Variances

Variations in the SEM on SEHC (Estimate = 3.267, p-value 0.01), SoHD (Estimate = 3.103, p-value 0.01), and DAU (Estimate = 5.429, p-value = 0.000) were presented in Table 4.19. The result showed that drugs supply (Estimate = 0.022, p-value = 0.01), health professionals' availability, attitude and behaviour (Estimate = 1.452, p-value = 0.000), and available health facilities, (Estimate = 1.327, p-value = 0.000) varied significantly in explaining their effect on insured persons NHIS uptake. Similarly, access to PHC services (Estimate = 1.204, p-value = 0.000), total perceived access to PHC service (Estimate = 2.868, p-value = 0.000), and total use of PHC services for the year-2021 (Estimate = 0.508, p-value = 0.000) varied significantly in explaining their effect on insured persons NHIS uptake. Again, sex/gender (Estimate = 1.682, p-value = 0.000), level of education (Estimate = 5.306, p-value = 0.000), average monthly income (Estimate = 1.345, p-value = 0.000), average distance to healthcare facilities (Estimate = 1.326, p-value = 0.000), and average cost (to and from) health facilities (Estimate = 8.428, p-value = 0.000) by respondents varied significantly in explaining their effect on insured persons NHIS uptake. Furthermore, the study found that available drugs supply at health facilities (Estimate =

3.318, p-value = 0.000) was also a significant major variable that was at variance in the model explaining it effect on insured persons NHIS uptake.

Table 4.15: Regression Weights:

Indicators			Estimate	S.E.	C.R.	P-value
Direct hypotheses:						
NHIS uptake [**cov (X, Y)]**	<---	SEHC	0.237	0.015	16.136	<0.01***
NHIS uptake **(H_1)**	<---	SoHD	0.040	0.006	6.801	<0.01***
NHIS uptake **(H_2 & H_3)**	<---	DAU	0.001	0.004	0.224	0.823
Indirect hypotheses:						
Available drugs supply at healthcare facilities	<---	SEHC	1.000			
Healthcare professionals' availability, attitude & behaviour	<---	SEHC	8.768	0.293	29.969	<0.01***
Availability of healthcare equipment	<---	SEHC	1.792	0.067	26.832	<0.01***
Available health facilities most likely used	<---	SEHC	0.241	0.031	7.793	<0.01***
Access to PHC services	<---	SoHD	1.000			<0.01***
Total perceived access to PHC services	<---	SoHD	10.517	0.628	16.752	<0.01***
Total Utilisation of PHC services (2021)	<---	SoHD	1.014	0.070	14.404	<0.01***
Current NHIS status	<---	NHIS uptake	1.000			<0.01***
Ever enrolled on NHIS	<---	NHIS uptake	0.000	0.000	-20.326	<0.01***
Category of NHIS enrolment type	<---	NHIS uptake	2.073	0.165	12.583	<0.01***
Sex	<---	DAU	1.000			
Level of education	<---	DAU	0.076	0.025	3.066	<0.05*
Average monthly income	<---	DAU	42.142	2.933	14.366	<0.01***
Current place of residence	<---	DAU	0.022	0.015	1.431	0.152
Total Utilisation of PHC services (2021)	<---	DAU	0.013	0.024	0.527	0.598
Average distance to healthcare facilities	<---	DAU	1.029	0.079	12.984	<0.01***
Average cost (to and from) healthcare facilities	<---	DAU	0.230	.040	5.729	<0.01***

Source: Field Survey (2022); Significance level = 0.05; [cov (X, Y)] = Covariance

Table 4.16: Standardised Regression Weights:

Indicators			**Estimate**
Direct hypotheses:			
NHIS uptake [**cov (X, Y)]**	<---	SEHC	0.881
NHIS uptake **(H_1)**	<---	SoHD	0.146
NHIS uptake **(H_2 & H_3)**	<---	DAU	0.004
Indirect hypotheses:			
Available drugs supply at healthcare facilities	<---	SEHC	0.832
Healthcare professionals' availability, attitude & behaviour	<---	SEHC	0.999
Availability of healthcare equipment	<---	SEHC	0.942
Available health facilities most likely used	<---	SEHC	0.369
Access to PHC services	<---	SoHD	0.721
Total perceived access to PHC services	<---	SoHD	1.000
Total Utilisation of PHC services (2021)	<---	SoHD	0.696
Current NHIS status	<---	NHIS uptake	0.725
Ever enrolled on NHIS	<---	NHIS uptake	-0.988
Category of NHIS enrolment type	<---	NHIS uptake	0.615
Sex	<---	DAU	0.711
Level of education	<---	DAU	0.151
Average monthly income	<---	DAU	1.000
Current place of residence	<---	DAU	0.071
Total Utilisation of PHC services (2021)	<---	DAU	0.026
Average distance to healthcare facilities	<---	DAU	0.637
Average cost (to and from) healthcare facilities	<---	DAU	0.282

Source: Field Survey (2022); [**cov (X, Y)] = Covariance**

Table 4.17: Intercepts:

Indicators	Estimate	S.E.	C.R.	P-value
Available drugs supply at healthcare facilities	0.733	0.107	6.852	<0.01***
Healthcare professionals' availability, attitude & behaviour	1.240	0.782	1.586	0.113
Availability of healthcare equipment	1.292	0.169	7.629	<0.01***
Available health facilities most likely used	1.042	0.058	17.902	<0.01***
Access to PHC services	-0.440	0.120	-3.658	<0.01***
Total perceived access to PHC services	1.128	0.912	1.236	0.217
Total Utilisation of PHC services (2021)	1.449	0.126	11.463	<0.01***
Current NHIS status	-0.022	0.033	-0.673	0.501
Ever enrolled on NHIS	2.000	0.000	2256307.038	<0.01***
Category of NHIS enrolment type	1.720	0.081	21.243	<0.01***
Sex	-0.105	0.161	-0.651	0.515
Level of education	1.830	0.058	31.655	<0.01***
Average monthly income	0.886	4.837	0.183	0.855
Current place of residence	1.810	0.035	51.393	<0.01***
Total Utilisation of PHC services (2021)	0.919	0.057	16.194	<0.01***
Average distance to healthcare facilities	7.053	0.185	38.025	<0.01***
Average cost (to and from) healthcare facilities	3.876	0.094	41.442	<0.01***

Source: Field Survey (2022); Significance level = 0.05

Table 4.18: Covariances:

Indicators			Estimate	S.E.	C.R.	P-value
Direct hypotheses: (H_5)						
SEHC	<-->	SoHD	1.328	0.193	6.890	<0.01***
DAU	<-->	SEHC	0.768	0.219	3.502	<0.01***
DAU	<-->	SoHD	0.701	0.215	3.262	≤0.01**

Source: Field Survey (2022); Significance level = 0.05

Table 4.19: Correlations:

Major indicators			Estimate
Direct hypotheses: (H_5)			
SEHC	<-->	SoHD	0.417
DAU	<-->	SEHC	0.182
DAU	<-->	SoHD	0.171

Source: Field Survey (2022)

Table 4.20: Variances:

Variables	Estimate	S.E.	C.R.	P-value
Direct:				
SEHC	3.267	0.313	10.423	<0.01***
SoHD	3.103	0.382	8.125	<0.01***
DAU	5.429	0.704	7.711	<0.01***
Indirect:				
Available drugs supply at healthcare facilities	0.022	0.004	5.670	<0.01***
Healthcare professionals' availability, attitude & behaviour	1.452	0.103	14.102	<0.01***
Availability of healthcare equipment	0.575	1.340	0.429	0.668
Available health facilities most likely used	1.327	0.108	12.251	<0.01***
Access to PHC services	1.204	0.084	14.347	<0.01***
Total perceived access to PHC services	2.868	0.229	12.500	<0.01***
Total Utilisation of PHC services (2021)	-0.201	12.475	-0.016	0.987
Current NHIS status	3.394	0.263	12.886	<0.01***
Ever enrolled on NHIS	0.215	0.015	13.927	<0.01***
Category of NHIS enrolment type	0.000	0.000	1.760	0.078
Sex	1.682	0.119	14.149	<0.01***
Level of education	5.306	0.458	11.591	<0.01***
Average monthly income	1.345	0.094	14.351	<0.01***
Current place of residence	-1.406	479.458	-0.003	0.998
Total Utilisation of PHC services (2021)	0.508	0.035	14.353	<0.01***
Average distance to healthcare facilities	1.326	0.092	14.353	<0.01***
Average cost (to and from) healthcare facilities	8.428	0.653	12.906	<0.01***
Available drugs supply at healthcare facilities	3.318	0.232	14.326	<0.01***

Source: Field Survey (2022); Significance level = 0.05

CHAPTER FIVE

DISCUSSIONS OF FINDINGS

5.1 Introduction

This chapter discusses the research findings in the light of existing empirical literature in the context of Ghana's NHIS, the NHIS uptake, and how the NHIS enhances access and use of primary healthcare in order to achieve UHC. The discussions focus on answering the research questions, objectives and or hypotheses as posed in Chapter One. First, the study controlled for the impact of sociodemographic, economic, and health characteristics, as previous studies have found that SEHC affects NHIS uptake. The study answered research questions on the effect of the determinants of supply of healthcare on NHIS uptake. The study also answered the impact of access to and use of primary health services on NHIS uptake. In addition, it answered the structural impact of sociodemographic, economic and health characteristics of beneficiaries, determinants of supply of healthcare, demand for access to, and use of, primary health services on NHIS uptake.

5.2 Effect of Socio-demographic, Economic, and Health Characteristics on NHIS Uptake

This study found that gender – being female has a significant positive effect on NHIS uptake. The finding validates literature in Ghana that females were thrice more likely to take-up NHIS compared with males (Seddoh & Sataru, 2018). The findings on level of education suggest that having basic education has a significant positive effect on NHIS uptake. This also aligns with literature in Ghana that people educated starting from basic

to the tertiary, and post-graduate, levels were more likely to take-up NHIS compared with people with no formal education (Seddoh & Sataru, 2018).

Regarding place of residence, this study found that residing in urban area has significant positive effect on NHIS uptake. The finding reiterates earlier literature in West Bengal, India which suggests that prevailing inequality in access to health care services and use between the rich and poor, urban and rural, and other socio-economic factors are what hinders progress of health systems, particularly national health insurance in developing countries (Banu & Biswas, 2021).

This study found that earning a monthly income between Ghc365 - 823.80 (US$1.00 = Ghc10.79) per month has significant positive effect on NHIS uptake. The finding confirmed the assertion that although the aim of national health insurance is to bridge the gap between rich and poor people, targeting remains a challenge as the rich end up benefitting more than the very poor, and thus widens the inequity gap in developing countries (Domapielle, 2021; Nshakira-rukundo et al., 2019). It is in this direction that Hailua et al., (2021) assert that achieving universal health coverage is a challenge because the poor cannot pay to enrol unto the NHIS and/or renew their NHIS membership when it expires to be able to access healthcare.

In addition, the study found that insured persons with active NHIS gained access to PHC services and had at least three uses of PHC services. The finding shares insight to prove that NHIS in Ghana has the impetus to achieve UHC because being insured is associated with increased access and utilisation of PHC services (Agbanyo & Peprah, 2021; Dalinjong et al., 2017; Kwarteng et al., 2020; Wielen et al., 2018).

The study found that when it came to the number of visits to health facilities, the mode of transport used included those who walked, used tricycles, motorbikes, private cars and some public transport. Transportation costs to and from the health facility ranged approximately between Gh¢11.00 and Gh¢20.00 (US$1.00 = Ghc10.79), which severely impacted access and use of PHC services.

In terms of what type of healthcare facility influences NHIS uptake, the study found that access to PHC services at laboratory centre, and municipal hospital both significantly increased insured persons' decision to renew their NHIS card. However, access to PHC service at CHPS compound reduced insured persons' decision to renew their NHIS card. This finding supports previous studies by Dalinjong et al. (2017) conducted in rural Northern Ghana who reported that, among the insured, the poorest use the CHPS compounds, while the average wealthy use private clinics and public hospitals for out-patient health services.

The study found that the frequency in the use of healthcare facilities for PHC services by insured persons is a function of their NHIS status. Also, the estimated cost (to and from) of visiting a health facility to receive and use PHC services has a higher chance of altering an insured person's NHIS status. Among other findings, the study generally confirmed that variation in SEHCs are the leading factors that possibly could affect a decline in NHIS uptake as previous studies conducted in Ghana have also acknowledged (Amu et al., 2018; Dake, 2018; Seddoh & Sataru, 2018; Wielen et al., 2018).

5.3 Effect of Supply of Primary Health Care Services on NHIS Uptake

On the supply-side of providing PHC services, the study established no statistical significance of the effect of available health care facilities influencing insured persons'

NHIS uptake. In Asia, although in literature health facility index is said to be associated with healthcare seeking behaviour (Hulland et al., 2019; Ma et al., 2019; Mustafa & Shekhar, 2021), it was not statistically associated with NHIS uptake in this study. This result could be influenced by the geographical difference and healthcare system context. As a result, the study found that the possibility that a health facility does not accept NHIS to treat PHC services has no significant positive effect on insured persons' NHIS uptake. Consequently, spending less distance, and or incurring higher cost (to & from) health facility and how often they used those health facilities have no significance effect on insured persons' NHIS uptake. According to a study conducted in North West Ghana, means of transportation, location and transportation costs are major factors that increase the prevalence of bypassing PHC facilities to access maternity services in Ghana (Amoro et al., 2021). Previous studies conducted in Tanzania have found that when available health facilities are in good condition and able to provide basic and safe health services to reach UHC, distance and cost are less important considerations (Kapologwe et al., 2020). This is because the elasticity of demand for health care is price inelastic (Martín et al., 2011; Zhou et al., 2011). However, on spending more travelled hours per distance by insured persons to access and use PHC services at health facilities, this study established it has less effect of influencing insured persons' NHIS uptake (status) to change. Spatially, it was shown that the distance of available health facilities to insured person's homes many were within close proximity. The finding contradicts results on geo-spatial mapping of determining access to health facilities in forty-three (43) African countries that there are gaps in health facility accessibility and highlight facilities closest to areas at risk in event of outbreaks likely to witness spill over (Hulland et al., 2019).

On health care equipment, the study found that availability of healthcare equipment as a determinant of supply has a less statistical negative effect of changing insured persons' NHIS uptake (status) to 'not active'. This is because, previous studies have attested that lack of adequate essential equipment negatively affect access to health care service in Mzimba, Malawi (Funsani et al., 2021). In Ethiopia, a study reported that because of inadequate essential supplies of equipment, staff, and medicines at health facilities, provision of quality health care services is challenged (Defar et al., 2020). In Ghana, previous studies have found that health care services are challenged because of inadequate available beds and physical space, and equipment (Adatara et al., 2021; Ameyaw et al., 2020; Seidu et al., 2020). The findings in this study reiterate that access to sustained medical devices at all levels of health care facilities is necessary to achieving UHC in Ghana. According to Williams et al. (2020), achieving UHC is possible when governments and stakeholders in the healthcare industry adopt a comprehensive approach to acquiring adequate medical equipment, and showing technical leadership of its management by facility managers.

On supply of health professionals at locality and referral health facilities, the study findings show no statistically significant variation in health professionals' availability, attitude and behaviour that might affect insured persons NHIS uptake (status) to change. Results showed that CHPS compounds have a midwife, community nurse and general nurse, while most health clinics and health centres have a physician assistant who manages the facility. In addition to other health workers, which are 0.10 to 0.50 per 100,000 population in various health facilities, the doctor-patient ratio was inadequate for the treatment of PHC services, according to the World Health Organisation. Previous studies worldwide have

recognized that there is a shortage of healthcare professionals at various levels of healthcare facilities to provide diverse services (see e.g. Adatara et al., 2020, 2021; Ameyaw et al., 2020; Defar et al., 2020; Drennan & Ross, 2019; Li et al., 2017; Williams et al., 2020), with the results in Wa municipality being no exception

With regard to drug supply, the study found no statistical differences between the local and referring healthcare facilities of insured access to drugs. The reason insured persons did not have access to prescribed medicines at healthcare facilities included in the NHIS medication basket with NHIS Card was that the medicines were not available in stores at the time of their visit. The finding confirmed literature in Afghanistan, Southwest Ethiopia, and Eastern Uganda that due to the frequent shortage of supplying essential drugs in treating insured patients when they visit health facilities to access and utilise PHC, the NHIS policy is challenged (Ansari et al., 2020; Feyisa et al., 2021; Obakiro et al., 2021). According to Rawal et al. (2021), among others, drug supply are factors that have been identified as barriers that favour the increase of noncommunicable diseases in Bangladesh.

5.4 Effect of Access to Primary Health Care Services on NHIS Uptake

According to the results, registering with the NHIS and holding an active NHIS card gave the insured access to PHC services such as out-patient services, in-patient services, maternal health care and emergency services at accredited health facilities. The findings corroborate previous studies in Ghana that NHIS has the impetus to achieve UHC because being insured is associated with increased utilisation of outpatient, inpatient, and maternity care health services (Agbanyo & Peprah, 2021; Dalinjong et al., 2017; Kwarteng et al., 2020; Wielen et al., 2018).

Assessing insured persons' perception about accessing PHC services at health facilities, the findings showed that services availability, acceptability, and affordability were the statistically significant components of access that positively affect NHIS uptake. The finding supports previous study conducted in India that there is a significant relationship between access to health facilities leading to increased health service utilisation and better health outcomes (Bohra, 2017). However, the study found that there was no statistically significant positive effect that safety of health-care caused the insured to change their NHIS status.

The study found that overall access to PHC services has a statistically significant positive effect that is higher to increase the insured chance of remaining an active NHIS member.

5.5 Effect of PHC Services Use on NHIS Uptake

Aside out-patient services being the most popular PHC services that most insured persons utilised in the year-2021, compared to in-patient services, oral health care, eye-care, maternity health care, and emergencies as the least, medications were of high demand by insured persons. According to the findings the demand for medications required the use of NHIS to receive the drugs or get prescriptions for purchase using out-of-pocket (OOP) at the pharmacy shop outside particularly when 'not easily available' at that moment. This therefore supports previous studies that in developing countries while NHIS can help reduce OOP medical expenses, directly or indirectly through obtaining and using healthcare services at authorized facilities, additional medical expenses is not completely eliminated (Mebratie et al., 2015b). According to Yilma et al. (2018), people's choice to get health insurance may be accompanied by the view of reducing higher medical expenditures. Particularly in this study, despite the accompanying extra cost borne by

insured people on drugs and laboratory services, there was still a high demand for medical usage among insured people across PHC services because health care is a necessity (Khan & Mahumud, 2015; Zhou et al., 2011). According to literature, although the introduction of NHIS has led to a decline in healthcare expenditure (i.e., out-of pocket payment), it does not completely take out all cost borne by the citizenry (Adua et al., 2017; Akazili et al., 2014; Akazili, Mcintyre, et al., 2017).

The study found that insured who used primarily out-patient services also used in-patient, oral health care, eye care, and medication services. According to the literature in Ghana, people who seek out-patient treatment for PHC have higher chances of seeking in-patient health services (Dalinjong et al., 2017; Kwarteng et al., 2020; Wielen et al., 2018). Again, this study found that the use of out-patient services was positively associated with maternal health care and laboratory testing. The finding reaffirms Kuupiel's et al. (2017) assertion that improving the accessibility and efficiency of point-of-care diagnostics services in low- and Middle-Income Countries, particularly in resource-limited settings like Ghana, may be a promising route to improving healthcare outcomes, particularly primary health care. Therefore, this study concludes that the total use of PHC services per year by insured is less likely to change their decision from an active NHIS member to a non-active member.

5.6 Effect of SEHCs, Determinants of Supply of Healthcare, to Access and Use of PHC's on NHIS Uptake

The study established that insured persons socioeconomic and health characteristics (SEHCs) have a significant positive effect on their NHIS uptake (Estimate = 0.237, p-value = 0.000). The result confirmed in the literature that inequity in access to health care is due to differences in socioeconomic and health characteristics that affect health insurance

uptake and PHC service use (Dhagarra et al., 2019; Adatara et al., 2020; Banu & Biswas, 2021).

The study found that determinants of supply of healthcare (SoHDs) had a positive impact on insured persons' NHIS uptake (Estimate = 0.040, p-value = 0.01). Previously, studies reported that the health sector, from supply view point is facing serious challenges in terms of non-availability of qualified doctors, specifically female doctors, medicines, latest equipment, poor infrastructure, and patients' queues because of the lack of quality healthcare facilities (Burney et al., 2019; Chol et al., 2018). According to a study, the determinants of supply of healthcare that remain challenging are leading to overcrowded and congested access to PHC services in public hospitals (Hirai et al., 2020). The study however, did not back up the claim that demand for accessing and using (DAU) PHC services has a significant impact on insured persons' NHIS uptake (Estimate = 0.001, p-value = 0.823). The results support previous claim that disparities in access and use of primary health care is due to uneven distribution of health facilities across geographical area (see e.g., Banu & Biswas, 2021; Mokaya, 2021; Olyaeemanesh et al., 2019; Perucca et al., 2021)

Therefore, this study concluded and accepted the research alternate hypotheses of (**H_1**) that;

1. H1: determinants of supply of healthcare significantly affect NHIS uptake.

However, it failed to reject the null hypothesis of (**H_2, & H_3**) that;

1. H0: access to primary health care services does not significantly affect NHIS uptake.
2. H0: utilising primary health services does not significantly affect NHIS uptake.

Determining the mediating variables that significantly influenced the effect of SEHC and SoHDs on insured persons' NHIS uptake: drugs supply at health facilities (Estimate = 0.733, p-value = 0.000), and available healthcare equipment (Estimate = 1.292, p-value = 0.000), were identified. Also, the study found that available health facilities (Estimate = 1.042, p-value = 0.000), access to PHC services (Estimate = -0.449. p-value = 0.000), and total PHC utilisation for the year-2021 (Estimate = 1.449, p-value = 0.000) were significant mediating factors that influenced the effect of SEHC and SoHDs on insured persons' NHIS uptake. Again, the study identified level of education (Estimate = 1.830, p-value = 0.000), current place of residence (Estimate = 1.810, p-value = 0.000), average distance to health facilities (Estimate = 7.053, p-value = 0.000), and cost (to and from) health facilities (Estimate = 3.896, p-value = 0.000) as significant mediating factors that influenced the effect of SEHC and SoHDs on insured persons' NHIS uptake. Addition to the socio-economic factors that affect the choice of one's NHIS uptake as postulated by Dixon et al. (2013), this study found a connection between SEHC, SoHD, and DAU all as covariance which could influence the one's choice to enrol in and/or renew NHIS for UHC.

On the covariance, the study findings confirmed the research hypotheses four and five (**H_4 & H_5**) that:

4. SEHC has a substantial positive effect on SoHD (Estimate = 1.328, p-value = 0.000).
5. DAU has a statistically significant positive effect on SEHC (Estimate = 0.768, p-value = 0.000).
6. DAU has a statistically significant positive effect on SOHD (Estimate = 0.701, p-value = 0.000).

These mean that insured persons' SEHC has a somewhat positive relationship with SoHD (R = 0.417). In addition, insured persons' DAU was less related with SEHC (R = 0.182), and with SoHD (R = 0.171). Therefore, in sum the aggregate result confirmed this research model that (**H_5):** there is structural positive effect of insured persons' SEHC, perception of SoHD, and DAU of primary health care services on NHIS uptake.

5.7 Theoretical Discussions and Contribution of Study to Knowledge and Policy

According to the theoretical model of the social determinants of health, the processes of health disparity focus on social status, which requires policy stratification to fill health policy gaps (Diderichsen, 2001). In this study, the finding supported the model and predicted that female gender, lower educational attainment, living in urban areas, earning an average monthly income, and behaviour to seek more healthcare frequently are stratification factors involved in of demand and supply-side models of national health insurance and must be taken into account in health policy. The study findings established that because of SEHCs, insured persons were differently confronted with varied circumstances and susceptibility in terms of health care access and use, and material resource availability thus, affected their NHIS uptake. The study findings inform policy redesign and implementation to address the disparities found to be of social, economic, and health characteristics in the consequences of ill health to benefit more and less advantaged groups. The NHIA could help address health inequities and achieve SDG 3 (i.e. universal health coverage) in Ghana by 2030 by adapting a policy framework for SEHC stratification that is more localized (see e.g Dei & Sebastian, 2018; Domapielle et al., 2020; Kipo-sunyehzi et al., 2019; Tian & Pan, 2021; WHO, 2010).

According to Anderson and Newman's (1973) model, three essential aspects explain people health seeking behaviour (Andersen & Newman, 2005; Babitsch et al., 2012). These are the predisposing (SEHCs), enabling (SoHDs), and need-for-care (DAU) variables. According to a study, the variables stated above can either facilitate or impede people's access to and use of health care services (Azfredrick, 2016), which according to this study can affect people's decision to enrol in and/or renew NHIS. The study findings supported the modified model that there is a connection between SEHCs, SoHDs, and DAU as covariance which influences NHIS uptake. The findings corroborate Seidu et al's. (2020) work which noted that socio-economic factors are barriers to access and utilisation of PHC services. The study finding contributes new knowledge that SEHCs affect both demand and supply-side models of PHC services. Thus, SEHCs, SoHDs and DAU all are critical aspects to consider for UHC in Ghana's health system because, they affect the uptake of national health insurance.

Linking this study results with Rawls's theory of justice, health care is a basic requirement for development (Green, 2010), hence the need for fair health care in Ghana. Governments worldwide have a responsibility to ensure socioeconomic equity in the distribution of health care (Garrett, 2005; Peltzer et al., 2014; Sambo & Kirigia, 2014). As indicated in Rawls' idea of justice – i.e., egalitarian and libertarianism in distribution of justice (Rawls, 1999), justice means that all generations, both future and present, should have the same right to resources (Lucca-Silveira, 2016). According to Ruger (2010), social justice is necessary in health care since it is society that makes decisions and acts that have a substantial impact on healthcare service. The results of the study indicate that provision of PHC services by the NHIS was not equitable as differences in SEHC significantly impacted

NHIS uptake and thus impacted access to and use of PHC services in the Wa municipality. In addition, the study found that the NHIS is unfair to policyholders who, despite their status as active members, have had to pay more for NHIS-covered medicines and laboratory tests. Although negative, it relieves the health care system. The results confirm previous studies that while national health insurance has made significant progress in bridging gaps in access and use of PHC services (see e.g. Adatara et al., 2020; Alatinga & Williams, 2014; Domapielle, 2021; Fenny et al., 2016; Tungu et al., 2020), administrative inefficiencies persist (see e.g. Sanyare & Tuolong, 2018).

According to the Health Capability Paradigm (HCP) theory, health inequalities occur across all social and economic categories. According to Sen's (2009) notion of equity, low public health spending and high out-of-pocket health spending are factors that create vulnerabilities in populations (see e.g. Ruger & Mitra, 2015). A shortage of resources (equipment, experts, information, facilities, diagnostic, and treatment centres) and professional skill has been found to have a significant influence on group/individual health care quality, making it difficult for everyone to get necessary and appropriate care (Ruger, 2004, 2006, 2014b). The above statements, illustrated in previous studies, show that there are significant effects of supply factors on the demand for access and use of primary health care, which was the focus of the study. The findings in this study show that health care providers have the potential to deliver PHC services to insured persons that meet their health requirements when they access and use services through NHIS. However, the study found that healthcare providers were unable to provide the services needed by the insured, particularly medication and laboratory tests, due to resource constraints. As a result, policyholders have been unable to access and use PHC services efficiently and effectively.

The study found that this is the challenge faced by many social policy interventions, particularly in health, and that makes targeting so important that it cannot be overlooked at any point throughout implementation. The study backed up Ruger's HCP theory that microeconomic analysis is required in health policy to determine the relationship or association between demand and supply in order to meet it (Ruger, 2014b; Ruger & Mitra, 2015). This was the new insight of the study, which argues that an equitable social health care system can be built through demand and supply-side models of national health insurance to design an efficient model for the effective functioning of the health care system in Ghana.

Relating to the demand and supply-side theory of social health insurance, this study found that PHC services were typically available to and used by all who signed up for the NHIS with active membership status at all NHIS recognised health facilities (local and referral). The exceptions were the accredited pharmacies, which many insured were unaware they could use NHIS to claim prescription medications, and the laboratories, whose accreditation was suspended by NHIA at the time of data collection for administrative purposes. When compared to individuals who made more than the minimum wage, those who were less advantaged (i.e., children under the age of 18, aged over 65, and LEAP recipients) were excluded from making premium contributions since they earned less than Ghc365.00 per year. Zweifel (2007) asserts that SHI may be supported using the principles of micro-demand and micro-supply. The foundations of the demand-side assumptions rest on three principles: efficiency, equity and public choice, the latter two of which have been effectively demonstrated in this study. In terms of efficiency, the NHIS supported income redistribution, access to and use of primary health care, which was confirmed by this study.

However, the study found that those with active NHIS membership still used OOPs to access medicines and laboratory services, making the NHIS in its current form inefficient as a demand-side model. In this study, healthcare providers explained the inefficiency of the NHIS as a reason for offering PHC services to insured patients through OOPs. The health professionals in this study indicated that Government of Ghana and NHIA do not pay health care providers' claims in a timely manner so that they can provide medicines and perform diagnostic tests for people who need them. According to previous studies, inefficiencies do not facilitate effective delivery of health services to a larger population (Trottmann et al., 2012; Zweifel, 2007; Ziebarth, 2018). The contribution of this study to policy and knowledge is that the results show the importance of demand and supply side models in making NHIS efficient.

5.8 Conceptual Framework

In response to the question of how the demand and supply-side models of national health insurance affected UHC in the Wa municipality, the study's findings confirmed the theoretical framework that SEHCs and SoHDs were the key elements that had a positive effect on NHIS uptake. However, DAU characteristics had no statistically significant effect on insured members' use of the NHIS. This was due to reports of disparities in their access and use of services, even though they had access to and used PHC services. The differences were reported due to the uneven distribution of health facilities across geographic areas in treating disease, and not because services were completely unavailable. The results provided reassurance that Ghana may attain UHC by 2030 with more focused efforts.

5.9 Summary of Chapter

The study findings provided answers that sought to fill the research gap identified in Chapter One. The study therefore established that although SoHD affected insured persons' NHIS uptake, thus far DAU of PHC service, SEHC are so critical as they significantly served as mediating factors that influenced the effect. The results suggest that policy makers, and or implementers need to pay much attention to or look out for these factors in order to bridge the policy gaps. The chapter concluded by confirming on the research hypothesis that there was the need to examine the demand and supply-side models of national health insurance, and its implications for UHC because they have statistically significant effect on insured persons' NHIS uptake. The findings contributed to knowledge and policy that ignites new debate and re-looks at Ghana's national health insurance scheme once more. Because, it helped to present a better gauge suitable to make recommendations for best policy efficient and effective measures as may be portrayed in theoretical discussions.

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter presents the summary of findings, conclusions, recommendations and suggested areas for further research.

6.2 Summary of Major Findings

The purpose of this study was to establish the implications of demand and supply-side models of the national health insurance in Wa municipality for universal health coverage. The study used a sequential explanatory mixed methods research design with questionnaire to solicit responses at 47 health facilities, and 413 insured respondents sampled for the quantitative analysis. In the qualitative phase, an interview guide was used to collate data from 17 health providers and 20 insured participants who were purposively sampled. The quantitative analyses were performed using descriptive and inferential statistics, with a qualitative data phase complementing the quantitative phase. On the supply-side, the study measured the available and functional provisions of health care facilities, equipment, capable and qualified health professionals, and drugs at all times of providers' and clients' perspectives. On the demand-side, it was contended that primary health services must be readily available, affordable, accommodative, acceptable, and safe for those who need them.

On socio-demographic factors, the study established a significant positive statistical difference of association between female gender, level of education (basic) and current place of residence (urban) affecting insured persons' NHIS uptake. On economic factors,

it was established that an average monthly income that meets the minimum wage rate of Ghc365 to Ghc823.8 per month, statistically was significantly positively associated with insured persons' NHIS uptake. On health behaviour characteristics, it was found that the frequency of using PHC services (at least four times visit in a year), approximate transportation expenditure to and from health facility (Ghc11.00 to Ghc20.00), to access PHC Services at laboratory centre, and municipal hospital significantly positively affected insured persons NHIS uptake. However, access to CHPS compound was negatively statistically associated with insured persons NHIS uptake. The result means that as more insured persons access PHC services at CHPS compound the less their chances of them renewing NHIS. The reason is "*because health staffs to handle complicated health issues at CHPS compounds were inadequate, thus far they often times refer cases, due to lack of functional medical equipment, and drugs supplies to treat ailments"*. Explaining the likelihood of effect, the binary logistic regression results showed that the number of times an insured person visits a health facility to seek PHC treatment has a higher likelihood of changing an insured persons NHIS status. Also, the estimated cost (to and from) of visiting a health facility to receive and use PHC services has a higher chance of changing an insured persons' NHIS status.

For the SoHDs, the study found no statistically significant difference between the available health facilities used primarily by insured persons' to access PHC services, the acceptance of health facilities for NHIS to treat PHC services, the average distance travelled to access services, the cost of (to and from) health care facilities outside of their place of residence and how often they have used health care facilities result in a change in their NHIS uptake (status). However, the binary logistics regression results showed that the average distance

travelled by insured persons as travel times (in minutes) to access and use PHC services at health facilities has less impact on changing insured persons' NHIS uptake (status) from ‘active’ to ‘inactive’. Regarding the availability of medical equipment, the study found that the unavailability of medical equipment in healthcare facilities less significantly reduces the use of NHIS for access to PHC services by insured members. However, on workforce, and drugs supply, the study found no statistically significant variation in workforce availability, attitude and behaviour, or drug supply that affect insureds' NHIS uptake (status) to change from ‘active’ to ‘inactive’.

Regarding insureds' access to PHC services, the study found that outpatient services were the most commonly used services by insureds. In addition, inpatient services, maternal health care, and emergencies also saw higher access compared to oral health and eye care services. Regarding insured person’s perception of these services on the access dimensions, it was reported that availability, acceptability, and affordability statistically were the significant access indicators that have positive effect on insureds’ NHIS uptake. However, there was no statistically significant positive effect that health-care safety influenced their NHIS uptake. Therefore, the significant PHC services that positively influenced insured persons’ NHIS uptake were availability of in-patient services at accredited health facilities, maternity health care, and emergencies services. Acceptability and accommodation had comparable outcomes, with respondents stating that it had a good impact on their NHIS uptake. Despite this, the only statistically significant PHC service that positively increased insured persons’ NHIS uptake was maternal health care services. As a consequence, the study discovered that total perceived access to PHC services has a statistically significant positive influence on changing insured persons’ NHIS uptake. The result of the binary

logistic regression shows that insureds' perceptions of access to PHC services have a higher likelihood of insureds' uptake of the NHIS being an 'active' than a 'non-active' member.

Furthermore, on utilisation of PHC services in the year-2021, the study found that out-patient services (mean = 1.43; standard deviation = 1.934) were the popular PHC services which most insured persons utilised in the year-2021, compared to in-patient services, oral health care, eye-care, maternity health care, and emergencies. Additionally, the study found that medications were commonly sought at health facilities (mean = 2.40, standard deviation = 2.971), requiring the use of NHIS to distribute the drugs or prescriptions for purchase using OOPs outside the health facility in instances where they were unavailable. The findings indicated that there was a wide range of drugs usage among insured persons across PHC services. For example, although some people did not at all use services (minimum = 0 times), others used them (maximum = at least ranges between 2 – 30 times) before the year 2021 ended. Statistically, the study found that use of outpatient services was essentially positively associated with use of inpatient services, maternal health care, and laboratory testing. However, use of outpatient services was much less associated with use of oral health care, eye care, and drug dispensing. The results suggest that maternal health care and laboratory diagnostic services have a greater impact on an insured person renewing NHIS as an active member than an inactive membership status. The results show that while overall utilization of PHC services has a statistically positive impact on insureds' NHIS uptake, there is a lower likelihood that their NHIS uptake (status) will change to inactive.

Based on the structural equation model (SEM) results, the regression weights, validated two of the study hypotheses. First, it was established that insured persons' socio-economic

and health characteristics (SEHCs) have a direct significant effect on NHIS uptake. It also confirmed that the determinants of supply of health care (SoHDs) had a direct positive impact on insured persons' NHIS uptake. However, the study did not accept the hypothesis that demand for access to and use of (DAU) PHC services had a direct impact on insured persons' NHIS uptake. The mediating factors that significantly influenced the effect of SEHC and SoHDs on insured person's NHIS uptake includes: drugs supply at health facilities, available healthcare equipment, available health facilities, access to PHC services, total PHC utilization for the year-2021, level of education, current place of residence, average distance to health facilities, and cost (to and from) health facilities. In terms of covariance, study results supported research hypothesis five (5) that:

1. SEHC has a substantial positive effect on SoHD.
2. DAU has a statistically significant positive effect on SEHC.
3. DAU has a statistically significant positive effect on SOHD.

The correlation results showed that insured persons' SEHC has a somewhat positive relationship with SOHD in Table 18. In addition, insured persons' DAU was less related with SEHC and SOHD.

6.3 Conclusions

The results on demand and supply-side models of national health insurance, implications for universal health coverage are both practical and theoretical. On the effect of determinants of the supply of healthcare on NHIS uptake, the study found a statistically significant association between proximity to healthcare facilities and where people live. Distance, estimated cost (to and from) and frequency in the use of healthcare facilities to access and use PHC services has less significant effect of altering an insured person's NHIS

status. Equipment availability and their functionality has a significant effect of changing insured persons' NHIS uptake (status) to 'not active'.

On the effect of access to primary health care services on NHIS uptake, study found that dimensions of access to PHC; availability, acceptability, affordability, and accommodation as provided by healthcare providers were important factors influencing insureds' decision to renew membership. The frequency with which the insured used NHIS to access PHC services had a positive impact on their decision to renew membership.

On the structural effect of socio-economic, and health characteristics of insured persons, supply of healthcare, access to and use of PHC services on NHIS uptake, practically, the study established that although SoHD affected insured persons' NHIS uptake, thus far DAU PHC service, SEHC are so critical as they significantly served as mediating factors that influence the effect. The findings behove policy makers, and or implementers to pay much attention to or look out for SEHCs, DAU, and SoHD factors in order to bridge the administrative inefficiencies.

In theory, the study concluded by supporting the need to examine the demand and supply-side models of NHI for UHC, as they have statistically significant structural implications for explaining insureds' take-up of NHIS. The findings contributed to knowledge and policy that ignites new debate and re-look at Ghana's national health insurance scheme once more. The study presented a better gauge suitable to make recommendations for best policy efficient and effective measures as portrayed in the study conceptual framework (see Figure 2.4).

6.4 Recommendations

The following measures are advised in order to address the administrative inefficiencies shown by this study's findings:

1. Adapting a SEHC stratification framework is recommended for NHIA to effectively implement policies that keep an eye on SoHD and DAU in addressing health inequities to achieve SDG 3.
2. The NHIA should develop diplomatic administrative procedures that deal expeditiously with conflicts of interest when laboratory diagnostic centre managers who also hold positions as laboratory technicians in the public health facility make the NHIA suspect of fraud in their operations. If the action is taken, it will prevent healthcare practitioners and laboratory service providers from ceasing to provide PHC services due to administrative matters. This will help reduce healthcare providers who take this opportunity to push the cost of drugs and laboratory services covered by the NHIS onto insured patients, leaving them feeling a huge burden.
3. The NHIA should expand its public relations, education, and outreach campaigns to inform the public about all accredited medical institutions, especially pharmacies authorised to distribute medications and campaign to educate the public about drugs' list under the NHIS. This will assist clients in properly using prescription forms provided by a licensed healthcare provider at clinical health facilities that may be out of medicine supplies to avoid paying for medications that are on the permitted list but are paid for by insured clients. In addition, the NHIS' campaign to educate the public about the drug listed under the NHIS would help insureds hold

managers of health care providers accountable for value for money, particularly in relation to drug issues, which weigh heavily on the health care costs of insureds.

4. The NHIA should be committed to delivering on its promise to compensate healthcare providers in a timely manner to provide trust, confidence and transparency in service delivery and claims settlement. However, if NHIA has difficulty immediately releasing funds to reimburse submitted claims, they should notify the healthcare provider within one month of the reasons for the delay. New deadlines for starting payments should also be communicated and, if possible, payment should start when funds are ready.
5. The Government of Ghana (GoG), Ministry of Health (MoH), Ghana Health Service (GHS) and other collaborating organisations should further enhance health infrastructure development with viable health equipment and skilled health workers. The CHPS policy framework should be reviewed to ensure that it has the necessary human resources, basic equipment and necessary medications to make it more robust and functional to meet local health needs. The foregoing is fundamental because it is possible to fully equip the determinants of supply of healthcare at all levels in close proximity to neighbourhood of residence. The action when taken would reduce the waiting time in referral health facilities, reduce travel time and reduce the cost of enlisting PHC services by the insured.
6. Finally, GoG, MoH, GHS, administrators, managers, and/or healthcare facility officials should motivate healthcare professionals by increasing their salaries so that they can deliver quality healthcare that is worth their hard work. In addition, healthcare facility administrators and managers, with board approvals, should

develop low-interest loan packages by reinvesting a portion of internally generated funds (IGFs) at affordable interest rates to hard working personnel. This could serve as a stimulus package to boost the morale of healthcare workers. The loan should be accessible such that it is more interesting for health professionals to use that loan facility compared to what the banks provide. This avenue would motivate healthcare workers in providing services with less financial burden and address attitudinal and behavioural changes that often stem from irritation at receiving small rewards for completing challenging tasks.

6.5 Areas for Future Research

1. This study advises future researchers to concentrate on conducting a qualitative study to understand how claims submitted could be disbursed timely to avert the administrative inefficiency.
2. Future research should also investigate the technology used by service providers to ensure that claims submissions are accurate, devoid of fraud, and cost-effective on both sides.

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APPENDICES

Appendix I: Ethical Clearance

In case ofreply the number and date of this letter should be quoted.

My Ref App/DSSM-NHV03/2022 Your Ref:

Navrongo Health Research Centre
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22nd March 2022

Mr Justine Guguneni Tuolong

SDD-UBIDS

P.O. Box WA64

ETHICS APPROVAL ID: NHRCIRB455

Dear Mr Tuolong,

Approval of protocol titled 'Demand and Supply-Side Models ofNational Health Insurance in Ghana: Implications for Universal Ilealth Coverage in the Wa Municipality'

I write to inform you that the Navrongo Health Research Centre Institutional Review Board (NHRCIRB) has reviewed your protocol and is happy to grant you approval.

The following documents were reviewed and approved;

1.1 Study Protocol version 2 dated 21/03/2022

2.1 Adult Respondent's and Caregiver Consent Form: English version 2 dated 21/03/2022

- Adolescents (12-17 years) Assent Form: English version 2 dated 21/03/2022

3.1 Adult Respondent's and Caregiver Consent Form: Waala/Dagaare version 2 dated 21 /03/2022

4.1 Adolescents (12-17 years) Assent Form: Waala/Dagaare version 2 dated 21/03/2022 • Questionnaire for NHIS Patients

5.1 Semi-structured interview guide for Health Care providers (Facility In-Charges and/ Health Directors)

6.1 Semi-structured interview guide for NHIS Patients

7.1 CV of the investigator (Mr Justine Guguneni Tuolong)

Please, note that any amendment to these approved documents must receive prior NHRCIRB approval before implementation. This approval expires on 21 st March 2023.

The Board wishes you all the best in the study.

Sincerely,

Dr Nana Akosua Ansah Vice-chair, NHRCIRB

Cc: The Director

Appendix II: Survey Questionnaire for Insured Persons'

INTERVIEW SCHEDULE (QUESTIONNAIRE)

SIMON DIEDONG DOMBO UNIVERSITY OF BUSINESS AND INTEGRATED BUSINESS STUDIES (SDD UBIDS), WA

FACULTY OF PUBLIC POLICY AND GOVERNANCE.

DEPARTMENT OF GOVERNANCE AND DEVELOPMENT MANAGEMENT

"DEMAND AND SUPPLY SIDE MODELS OF NATIONAL HEALTH INSURANCE IN GHANA: IMPLICATIONS FOR UNIVERSAL HEALTH COVERAGE IN THE WA MUNICIPALITY"

INTERVIEW SCHEDULE FOR NHIS PATIENTS

Instructions: Please answer the questions by ticking (√) in the box space and where required indicate in absolute number, and or amount. This questionnaire is structured into SECTIONS and PARTS. Section A: contains the socio-demographic information of respondents. On the supply-side model, Section B: contains questions asked on the supply of health care towards the delivery of Primary Health Care under NHIS in Parts of (I=Health facility, II=Equipment, III=Workforce, and IV=Drug's supply issues). On the demand-side, Section C: contains questions on access to PHC services under NHIS in Parts of (I=Availability, II=Acceptability, III=Affordability, IV=Accommodation, and V=Safety of Care) and lastly Section D; which ask questions pertaining to the frequency of utilising PHC services under NHIS in a period of 12 months/1year using 2021 as reference point.

Informed Consent: Please do you acknowledge your consent to participate in this study: Yes [ ] No [ ]

Section A: Socio-demographic information

A. Pick GPS coordinate of respondent: ……
B. Sex: 1. male [ ], 2. female [ ]
C. Age: ……
D. Marital status: 1. single [ ], 2. In a relationship [ ], 3. married [ ], 4. Divorced/separated [ ], 5. widowed [ ]
E. Level of education: 1. No formal education [ ] 2. Basic education [ ] 3. JHS/MSL [ ] 4. SHS/O' level [ ] 5. Tertiary [ ]
F. Employment status: 1. salary earner in public sector [ ] 2. salary earner in private sector [ ] 3. farmer [ ] 4. engaged in profit venture [ ] 5. student [ ] 6. retiree [ ] 7. dependent [ ] 8. other, specify [ ] ….
G. Monthly Income: Ghc……
H. Place of residence: 1. rural [ ] 2. urban [ ] 3. pre-urban [ ]
I. Ever enrolled on NHIS since 2003? 1. No [ ] 2. Yes [ ]
J. Current NHIS status: 1. [active] 2. [not active]
K. Why is your current NHIS status [active] or [not active]? ……

L. Enrollment type/category: 1. child under 18 yrs [ ] 2. pregnant mother [ ] 3. leap beneficiary [ ] 4. elderly over 70 yrs [ ] 5. Premium charge [ ] 6. SSNIT Contributor [ ]

M. Frequency of seeking healthcare (number: **e.g., 0, 1, 2, etc.** of times in a year): ……

M. Mode of transport to the facility: 1. Walking [ ] 2. Tricycle [ ] 3. Motorbike [ ] 4. Public Transport [ ]

5. Private Car [ ] 6. Other, specify……..

N. Approximate mean distance to this healthcare facility (km/hr) from residence: ……

O. Health facility type by ownership: 1. Public [ ] 2. Private [ ] 3. Quasi-Government [ ]

P. Health facility type by status: 1. Hospital [ ], 2. Health Clinic [ ]. 3. Health centre [ ], 4. CHPS [ ] Laboratory centre [ ] Pharmacy [ ]

Q. Location of health facility: 1. Rural [ ] 2. Urban [ ]

Section B: Supply of Healthcare Determinants (PART 1: The Supply of Healthcare facility)

1. Awareness of Healthcare facility by type in the municipality

[Responses: 1. No [ ] 2. Not sure [ ] 3. Yes [ ]

Healthcare facility type in your locality accepting NHIS for providing Primary Health Care (PHC) services	Awareness		
	1	2	3
i. Regional hospital			
ii. Municipal /District Hospital			
iii. Clinics			
iv. Health centre			
v. CHPS compound			
vi. Laboratory Diagnostic Centre			
vii. Pharmacy			
viii. My "**access"** or "**use"** of any the above health facility types at locality or referral facility ever influenced my NHIS status changed to 'not active'			

2. Of all the health care facility types above, which one is located **closest** to your community / area of residence?
   1. Regional hospital [ ]
   2. Mun./Dist. Hospital [ ]
   3. Clinic [ ]
   4. Health centre [ ]
   5. CHPS compound [ ]
   6. Laboratory Diagnostic Centre [ ]
   7. Pharmacy [ ]
   8. None of the above [ ]

3. **In order of ranking,** which of the following health facility types do you **first approach** whenever you are seeking PHC? **MULTIPLE RANKING (beginning from 1st – 8th positions)**

1 Regional hospital [ ] Distance from house: ……(km/hr) Cost: Ghc……
2 Mun./Dist. Hospital [ ] Distance from house: ……(km/hr) Cost: Ghc……
3 Clinics [ ] Distance from house: ……(km/hr) Cost: Ghc……
4 Health centre [ ] Distance from house: ……(km/hr) Cost: Ghc……
5 CHPS compound [ ] Distance from house: ……(km/hr) Cost: Ghc……
6 Laboratory Diagnostic Centre [ ] Distance from house: ……(km/hr) Cost: Ghc……
7 Pharmacy [ ] Distance from house: ……(km/hr) Cost: Ghc……
8 Other, specify……[ ] Distance from house: ……(km/hr) Cost: Ghc……

4. Between public and private health facilities, which one do you prefer in accessing health care:

1. Public [ ] 2. Private [ ]

5. Give reason(s) for your choice in Q4 above?.....

PART II: Equipment Supply

This section seeks to assess respondents knowledge on health care equipment used in providing PHC; its availability and functionality status at locality and referral health facility: [For example, Sphygmomanometer, Thermometer, Weighing scale; Hematology; Chemistry analyzer; Microscope; Ultrasound Machine; X-Ray Machine; X-Ray Viewer; Blood pressure monitor; Biological Microscope; Examination lamp; Electrolyte analyzer; Anesthesia Machine; Patient Monitor; Dental chair; Autoclave; Slit lamp; Tonometer; Retinoscopes; Fetal Monitor; Bed; Suction machine; Infusion pumps; Cervical collar; Defibrillator; Ventilators; Heamogulcometer; Pulse Oximeter] **Instruction:** Please use this information as guide to respond to the following questions under the supply of equipment at health care facilities

6. At my locality health facility, they have `the requisite health equipment that are functional for providing PHC. 1. Disagree [ ] 2. Somewhat [ ] 3. Agree [ ]
7. If you 'agree' to the statement in Q6, please mention some of the equipment you have ever seen been used for providing PHC in your locality health facility:

……..

8. If you 'disagree' to the statement in Q6, please mention which type of equipment your locality health facility lacks in providing PHC:

……..

9. The [un]availability and [non]functionality of equipment by types at locality health facility ever influenced your NHIS status changed to 'not active': 1. Disagree [ ] 2. Somewhat [ ] 3. Agree [ ]

10. At referral health facility, they have the requisite and functional equipment available for providing PHC. 1. Disagree [ ] 2. Somewhat [ ] 3. Agree [ ]
11. If you agree to Q10, please mention some of the equipment you ever seen being used for providing PHC at the referral facility:

……

12. If you disagree, please mention which type of equipment the health facility lacks in proving PHC:

……..

13. The [un]availability and [non]functionality of equipment by types at referral health facility ever influenced my NHIS status changed to 'not active'. 1. Disagree [ ] 2. Somewhat [ ] 3. Agree [ ]

PART III: Supply of Workforce:

This part assesses respondent's knowledge and awareness of the availability of health professional at locality and referral health facility in providing PHC. **Instruction:** Please indicate your awareness of the following workforce by TICKING (√) in the Boxes below.

14. Awareness of Workforce availability (medical doctors, physicians, dentist, medlab, clinical anaesthesian, midwives, nurses) at health facility where you seek PHC [**Responses: 1. No [ ], 2. Not sure [ ] 3. Yes [ ]**]

Workforce types	**Availability at locality facility**			**Availability at referral facility**		
	1	2	3	1	2	3
a) Medical doctor						
b) Physician assistant						
c) Dentist,						
d) Pharmacist						
e) Lab technician						
f) Clinical anaesthesian,						
g) Midwives,						
h) Nurse						
i) Public health practitioner						

j. The [un]availability and [non]functionality of workforce by types at health facilities ever influenced my NHIS status changed to 'not active': **1. No [ ], 2. Not sure [ ] 3. Yes [ ]**

PART IV: Drug's supply

This dimension of health care supply seeks to assess respondents' experiences of access to drugs covered under NHIS, and prescribed for treating ailments under the PHC. **Instruction:** Per your experience of using NHIS to access PHC services, please choose from the options available on how you access drug's when you visit health care facilities at locality, referral, and pharmacy outside to complete the following sentences.

15. Drugs supply at locality health facility by treatment types at the time of seeking health care services [**Response by access type: 1. Out-of-pocket payment [ ], 2. NHIS [ ], 3. Mixed [ ]**)

Drugs by treatment type covered by NHIS	**Responses**		
	1	2	3
a. Drugs covered by NHIS prescribed for Out-Patient Service are dispensed at health facility using… If accessed using 'OOP' or 'mixed', what is the name of the drugs purchased? ……			
b. Drugs covered by NHIS prescribed for In-Patient Services are dispensed at health facility using… If accessed using 'OOP' or 'mixed', what is the name of the drugs purchased? ……..			
c. Drugs covered by NHIS prescribed for Oral Health Care are dispensed at health facility using… If accessed using 'OOP' or 'mixed', what is the name of the drugs purchased? ……..			

d. Drugs covered by NHIS prescribed for as Eye Care Service are dispensed at health facility using…			
If accessed using 'OOP' or 'mixed', what is the name of the drugs purchased? ……..			
e. Drugs covered by NHIS prescribed for as Maternal Care are dispensed at health facility using… If accessed using 'OOP' or 'mixed', what is the name of the drugs purchased? ……..			
f. Drugs covered by NHIS prescribed for as Emergencies Service are dispensed at health facility using… If accessed using 'OOP' or 'mixed', what is the name of the drugs purchased? ……..			
g. Drug's prescriptions dispensed at locality health facility by access type influenced my NHIS status changed to 'not active': 1=No [ ], 2=Not sure [ ] 3=Yes [ ])			

16. Drugs supply at referral health facility by treatment types at time of seeking health service [**Response by access type: 1. Out-of-pocket payment [ ], 2. NHIS [ ], 3. Mixed [ ]**)

Drugs by treatment type covered by NHIS	**Responses**		
	1	2	3
a. Drugs covered by NHIS prescribed for Out-Patient services are dispensed at referral health facility using… If accessed using 'OOP' or 'mixed', what is the name of the drugs purchased? ……..			
b. Drugs covered by NHIS prescribed for as In-Patient Services are dispensed at referral health facility using… If accessed using 'OOP' or 'mixed', what is the name of the drugs purchased? ……..			
c. Drugs covered by NHIS prescribed for as Oral Health Care are dispensed at referral health facility using… If accessed using 'OOP' or 'mixed', what is the name of the drugs purchased? ……..			
d. Drugs covered by NHIS prescribed for as Eye Care Service are dispensed at referral health facility using… If accessed using 'OOP' or 'mixed', what is the name of the drugs purchased? ……..			
e. Drugs covered by NHIS prescribed for as Maternal Care are dispensed at referral health facility using… If accessed using 'OOP' or 'mixed', what is the name of the drugs purchased? ……..			
f. Drugs covered by NHIS prescribed for as Emergencies Service are dispensed at referral health facility using… If accessed using 'OOP' or 'mixed', what is the name of the drugs purchased? ……..			

g. Drug's prescriptions dispensed at pharmacy by access type ever influenced my NHIS status changed to 'not active': 1=No [ ], 2=Not sure [ ] 3=Yes [ ]			

17. Drugs supply at pharmacy by treatment types at time of seeking health service outside health facility [**Response by access type: 1. Out-of-pocket payment [ ], 2. NHIS [ ], 3. Mixed [ ]**)

Drugs by treatment type covered by NHIS	**Responses**		
	1	2	3
a. Drugs covered by NHIS prescribed as Out-Patient Services are dispensed at pharmacy using… If accessed using 'OOP' or 'mixed', what is the name of the drugs purchased? ……..			
b. Drugs covered by NHIS prescribed as In-Patient Services are dispensed at pharmacy using… If accessed using 'OOP' or 'mixed', what is the name of the drugs purchased? ……..			
c. Drugs covered by NHIS prescribed as Oral Health Care are dispensed at pharmacy using… If accessed using 'OOP' or 'mixed', what is the name of the drugs purchased? ……..			
d. Drugs covered by NHIS prescribed as Eye Care Services are dispensed at pharmacy using… If accessed using 'OOP' or 'mixed', what is the name of the drugs purchased? ……..			
e. Drugs covered by NHIS prescribed as Maternal Care are dispensed at pharmacy using… If accessed using 'OOP' or 'mixed', what is the name of the drugs purchased? ……..			
f. Drugs covered by NHIS prescribed as Emergencies Services are dispensed at pharmacy using… If accessed using 'OOP' or 'mixed', what is the name of the drugs purchased? ……..			
g. Drug's prescriptions dispensed at pharmacy by access type ever influenced my NHIS status changed to 'not active': 1=No [ ], 2=Yes [ ])			

Section C (PART I): Access to Primary Health care: (Instructions, please indicate as to whether you have ever accessed the following PHC services under NHIS by ticking, stating and indicating the right CODE (either 1 or 2 to respond to the following questions**)**

18. Which of the following primary health care have you ever accessed using NHIS?

a) Primary Health Care Services under NHIS:	b) If 'Yes' specify ailment types diagnosed (state as many types reported/diagnosed)	c) For this ailment, were you referred to the Laboratory? (1=No, 2=Yes)	d) If 'yes' did you pay for the laboratory test? (1=No, 2=Yes), specify cost Ghc.....	e) Was the Laboratory Test paid for covered by NHIS? (1=No, 2=Yes)	f) If 'yes' please specify Test conducted:
1. Out-patient services (1=No [ ], 2=Yes [ ])	.....				.....
2. In-patient services (1=No [ ], 2=Yes [ ])	.....				.....
3. Oral health care (1=No [ ], 2=Yes [ ])	.....				.....
4. Eye care (1=No [ ], 2=Yes [ ])	.....				.....
5. Maternal Health Care (1=No [ ], 2=Yes [ ])	.....				.....
6. Emergency services (1=No [ ], 2=Yes [ ])	.....				.....

7. My access to PHC as stated above ever changed my NHIS to 'not active': 1=No [ ], 2=Yes [ ] **Section**

C (PART II): Dimensions of Access to Primary Health care:

Instructions: Based on the answers in **PART I (i.e., YES TO 17a)**, please TICK in the Box as applicable as observed when seeking health care at providers facility.

Responses in three (3) Points Likert Scale: [1 = Disagree, 2 = Somewhat, and 3 = Agree]

Access Dimensions	Primary Health Care	Scale		
		1	2	3
A. Availability [the provider has requisite resources; personnel and technology to meet the needs of the client**]**	**1.** Out-patient services			
	2. In-patient services			
	3. Oral health care			
	4. Eye care			
	5. Maternal Health Care			
	6. Emergency services			
	7. Laboratory services			

	8.	Pharmacy services			
B. Acceptability [services delivered or received as health care intervention is considered to be appropriate**]**	**1.**	Out-patient services			
	2.	In-patient services			
	3.	Oral health care			
	4.	Eye care			
	5.	Maternal Health Care			
	6.	Emergency services			
	7.	Laboratory services			
	8.	Pharmacy services			
C. Affordability [clients consider the cost of premium paid or exemption under the NHIS compensating for health care services from providers**]**	**1.**	Out-patient services			
	2.	In-patient services			
	3.	Oral health care			
	4.	Eye care			
	5.	Maternal Health Care			
	6.	Emergency services			
	7.	Laboratory test			
	8.	Pharmacy			
D. Accommodation [the provider's operation is organized in ways that meet the constraints and preferences of the client**]**	**1.**	Out-patient services			
	2.	In-patient services			
	3.	Oral health care			
	4.	Eye care			
	5.	Maternal Health Care			
	6.	Emergency services			
	7.	Laboratory services			
	8.	Pharmacy services			
E. Safety [services under NHIS are environmentally, professionally, and technically safe from harm, neglect, infectious waste and injury**]**	**1.**	Out-patient services			
	2.	In-patient services			
	3.	Oral health care			
	4.	Eye care			
	5.	Maternal Health Care			
	6.	Emergency services			
	7.	Laboratory services			
	8.	Pharmacy services			

D. My perception about access to PHC as stated above ever changed my NHIS to 'not active': 1=No [ ], 2=Yes [ ]

<u>Section D: Demand for Utilising Primary Health care</u>:

<u>Instructions:</u> Based on the answers in **<u>PART I (i.e., YES TO 17a)</u>**, please state the number (**e.g. 0, 1, 2, 3, etc.**) of times these services were sought in a year [using 2021 year as reference]

Please specify the number of times you visited the health facility and or hospital and sought for the following PHC services using NHIS in a year (i.e., in the year-2021)	Number in a year (2021)
1. Out-patient services	……
2. In-patient services	……
3. Oral health care	……
4. Eye care	……
5. Maternal Health Care	……
6. Emergency services	……
7. Laboratory services	……
8. Pharmacy outside health facility services	……

9. My extent of utilising PHC as stated above ever changed my NHIS to 'not active': 1=No [ ], 2=Yes [ ]

Based on the information provided, would you be interested to participate in a follow-up qualitative interview for further clarifications on some of these issues? Yes [ ] No [ ]

END OF QUESTIONING!

THANK YOU FOR YOUR TIME!

Appendix III: Interview Guide for Insureds Persons'

VERSION – 002 (21/03/2022)

SEMI-STRUCTURED INTERVIEW GUIDE

SIMON DIEDONG DOMBO UNIVERSITY OF BUSINESS AND INTEGRATED BUSINESS STUDIES (SDD UBIDS), WA

FACULTY OF PUBLIC POLICY AND GOVERNANCE.

DEPARTMENT OF GOVERNANCE AND DEVELOPMENT MANAGEMENT

"DEMAND AND SUPPLY SIDE MODELS OF NATIONAL HEALTH INSURANCE IN GHANA: IMPLICATIONS FOR UNIVERSAL HEALTH COVERAGE IN THE WA MUNICIPALITY"

INTERVIEW GUIDE FOR NHIS PATIENTS

Instructions: This interview questions are open-ended and require your thought of the issues. Please feel free to express yourself as there is **NO RIGHT** OR **WRONG** answer, but rather your constructive idea's is the utmost priority. The interview is structured in sections, from A to C. Section A, requires you to briefly introduce yourself; Section B, ask questions about the supply-side issues pertaining to healthcare, while section C asked about access and utilisation of Primary Health Care (PHC) services under NHIS.

Section A: Interviewee SELF Introduction

I. Please have you ever been registered for NHIS?

II. Current NHIS status: ……..

III. Please could you tell me a little about yourself? Probe: sex, age, education, marital status etc.

IV. Any health care concerns you would like to share with me as regards PHC under NHIS?

Section B: Supply of Healthcare:

Part I: Availability of Health Facility:

1. What is your experience about this health facility availability/openness to treating NHIS patients when visit?
2. In your experience of using NHIS to access health care, what specific types of health care services have you ever been treated using NHIS at this health facility?
3. How often do you utilise this health facility for treating ill-health using NHIS?
4. What informs your choice of selecting a particular health facility compared to others when utilising NHIS to access health care / treat ill-health?

Part II: Available Equipment at Health Facility/Hospital

5. How do you think about the **availability** of equipment for providing PHC at this health facility affect access?

6. How do you think about the **functionality** of equipment for treating PHC at this health facility affect utilisation?

Part III: Workforce: (e.g., medical doctors, physicians, dentist, medlab, clinical anaesthesian, midwives, nurses, etc.)

7. How would you describe the workforce situation as regards to patient's ratio at this health facility/hospital?

8. In your observation how is the attitude of the workforce in relation to providing PHC to NHIS Patients in this facility?

Part IV: Drug's supply

9. What is your experience about access to the drugs prescribed by a Doctor/Physician for treating PHC when it is covered by NHIS?

10. How do you feel when you are asked to buy drugs that you know are covered by NHIS at a health facility/hospital?

Section C: Access and utilisation of primary health care

Instruction: Please provide description of the narrative in regards to it corresponding PHC service ever sought for in relation to what happens at health facility/hospital.

Access Dimensions	**Primary Health Care:** how do provider's respond to you at the facility to meet your health needs covered by NHIS
A. Availability [the provider has requisite resources; personnel and technology to meet the needs of the client**]**	**1.** Out-patient services
	2. In-patient services
	3. Oral health care
	4. Eye care
	5. Maternal Health Care
	6. Emergency services
	7. Laboratory services
	8. Pharmacy services
B. Acceptability [services delivered or received as health care intervention is considered to be appropriate**]**	**1.** Out-patient services
	2. In-patient services
	3. Oral health care
	4. Eye care
	5. Maternal Health Care
	6. Emergency services

	7. Laboratory services
	8. Pharmacy services
C. Affordability [clients consider the cost of premium paid or exemption under the NHIS compensating for PHC services from providers**]**	**1.** Out-patient services
	2. In-patient services
	3. Oral health care
	4. Eye care
	5. Maternal Health Care
	6. Emergency services
	7. Laboratory test
	8. Pharmacy
	1. Out-patient services
D. Accommodation [the provider's operation is organized in ways that meet the constraints and preferences of the client**]**	**2.** In-patient services
	3. Oral health care
	4. Eye care
	5. Maternal Health Care
	6. Emergency services
	7. Laboratory services
	8. Pharmacy services
E. Safety [services under NHIS are environmentally, professionally, and technically safe from harm, neglect, infectious waste and injury**]**	**1.** Out-patient services
	2. In-patient services
	3. Oral health care
	4. Eye care
	5. Maternal Health Care
	6. Emergency services
	7. Laboratory services
	8. Pharmacy services

10. What is your experience of utilising NHIS compared to OOP when seeking for PHC at health facilities/hospital?

11. Any recommendation to make NHIS work better for the insured patient:

……

END OF INTERVIEW THANK

YOU!!

Appendix IV: Semi-Structured Interview Guide for Health Care Providers (Facility In-Charges and or Health Directors)

Brief Study Introduction:

My name is JUSTINE GUGUNENI TOLONG, a ***Doctoral Candidate*** studying ***Development Management and Governance*** at **Simon Diedong Dombo University of Business and Integrated Development Studies (SDD-UBIDS)** Wa.

My research work is titled: '**Demand and Supply Side Models of National Health Insurance in Ghana: Implications for Universal Health Coverage in the Wa Municipality**'.

The purpose of this research is to earn an academic terminal degree **(Ph.D.)**, and further publish the rich findings of the outcome to the academic discourse community in health-related Journals.

Informed Consent:

I would be happy if you take about **1 Hour** of your time to respond to this interview guide to enable me continue with this research work. I assure you of confidentiality and anonymity in this work. However, should in-case otherwise, you reserve the right to opt-out of this study anytime you so wish if you think your integrity is jeopardised. Do I have your consent to continue the interview?

Yes [ ] No[ ]

Thank you.

I. Contact of respondent: ……..
II. Name of health facility where interview is collected: …….

Instructions: In the best of your knowledge, please respond to the following set of questions orally or in writing and where required indicate in absolute number, and or amount. This interview guide is semi-structured into SECTIONS and PARTS. Section A: contains the socio-demographic information of respondents. On the supply-side model, Section B: contains questions asked on the supply of health care towards the delivery of Primary Health Care under NHIS in Parts of (I=Health facility, II=Equipment, III=Workforce, and IVIV=Drug's supply issues). On the demand-side, Section C: contains questions on access to PHC services under NHIS in Parts of (I=Availability, II=Acceptability, III=Affordability, IV=Accommodation, and V=Safety of Care) and lastly Section D; which ask questions pertaining to the frequency of utilising PHC services under NHIS in a period of 12 months/1year using 2021 as reference point. Section E asks about effective ways and recommendations to make the NHIS policy better.

Section A: Socio-demographic information

A. Sex: 1. male [ ], 2. female [ ]
B. Age: ……
C. Marital status: 1. single [ ], 2. In a relationship [ ], 3. married [ ], 4. divorced [ ], 5. widowed [ ]
D. Level of education: 1. No formal education [ ] 2. Basic education [ ] 3. JHS [ ] 4. SHS [ ] 5. Tertiary [ ]

E. Employment status: 1. salary earner in public sector [ ] 2. salary earner in private sector [ ] 3. farmer [ ] 4. engaged in profit venture [ ] 5. student [ ] 6. retiree [ ] 7. dependent [ ] 8. other, specify [ ]……..
F. Monthly Income: Ghc……
G. Place of residence: 1. rural [ ] 2. urban [ ] 3. pre-urban [ ]
H. Ever enrolled on NHIS since 2003? 1. No [ ] 2. Yes [ ]
I. Current NHIS status: 1. [active] 2. [not active]
J. Enrollment type/category: 1. child under 18 yrs [ ] 2. pregnant mother [ ] 3. leap beneficiary [ ] 4. elderly over 70 yrs [ ] 5. Premium charge [ ] 6. SSNIT Contributor [ ]
K. Mode of transport to the facility: 1. Walking [ ] 2. Tricycle [ ] 3. Motorbike [ ] 4. Public Transport [ ] 5. Private Car [ ] 6. Other, specify……..
L. Health facility type by ownership: 1. Public [ ] 2. Private [ ]
M. Health facility type by status: 1. Hospital [ ], 2. Health Clinic [ ]. 3. Health centre [ ], 4. CHPS [ ] Laboratory centre [ ] Pharmacy [ ]
N. Location: 1. Rural [ ] 2. Urban [ ]

Section B: Supply of Healthcare: Part I: Availability of Health Facility:

i. How would you describe this health facility availability/openness to treating NHIS patients when visit?
ii. What are the Primary Health Care (PHC) services offered by this health facility that you know are covered by NHIS?
iii. How often do NHIS patients access and utilise this health facility for PHC?

Part II: Available Equipment at Health Facility/Hospital

EQUIPMENT TYPE FOR HEALTHCARE SERVICES	DESCRIPTION Statement	AVAILABILITY			FUNCTIONALITY		
		1	2	3	1	2	3
a) Sphygmomanometer	measures blood pressure						
b) Thermometer	checks body temperature						
c) Weighing scale	checks weight of patient						
d) Hematology	count blood cells						
e) Chemistry analyzer	Determines the concentration of body fluid (erum, urine, etc)						
f) Microscope	Examines objects that are too small to be seen by the naked eye						
g) Ultrasound Machine	Capture live images from the inside of your body						
h) X-Ray Machine	Examines bones and joints						
i) X-Ray Viewer	Viewing all types of radiographs						
j) Blood pressure monitor	Measures blood pressure						
k) Biological Microscope	view small samples that cannot be identified with the naked eye						
l) Examination lamp	for local illumination of the patient's body during diagnostic procedures and minor procedures						
m) Electrolyte analyzer	For quantitative measurement of sodium, potassium, and chloride in the human body						
n) Anesthesia Machine	For delivering general anesthesia to patients as they undergo a medical procedure						
o) Patient Monitor	To display a patient's medical vital signs						
p) Dental chair	To support a patient's body when a dental procedure is being performed on them						
q) Autoclave	To sterilized instruments, cotton, etc						
r) Slit lamp	a microscope with a bright light used during an eye exam						
s) Tonometer	To measures the pressure inside your eye						
t) Retinoscopes	To determine whether your eyes are "20/20," or have difficulties in seeing things up close or far away						

u) Fetal Monitor	To check the heart rate of your baby (fetus) during labor.						
v) Bed	specially designed for hospitalized patients or others in need of some form of health care						
w) Suction machine	For removing obstructions — like mucus, saliva, blood, or secretions — from a person's airway						
x) Infusion pumps	To delivers fluids, such as nutrients and medications, into a patient's body in controlled amounts						
y) Cervical collar	To support the neck and spine and limit head movement after an injury						
z) Defibrillator	To gives a high energy electric shock to the heart of someone who is in cardiac arrest						
aa) Ventilators	Breathing machines that help keep your lungs working						
bb) Heamogulcometer	To determine sugar level in a blood						
cc) Pulse Oximeter	To determine the oxygen level in the blood						

i. How do you think about the **availability** of the above equipment for treating PHC at this health facility affect access?
ii. How do you think about the **functionality** of above equipment for treating PHC at this health facility affect utilisation?

<u>Part III:</u> Workforce: Please could you provide me with the number of the following workforce at your health facility/hospital? [**e.g., 0, 1, 2, 3, etc.**]

Workforce types	**Number of workforces**	**Number of Patients to workforce daily [ratio] in this facility**
a) Medical doctor		
b) Physician assistant		
c) Dentist,		
d) Pharmacist		
e) Lab technician		
f) Clinical anaesthesian,		
g) Midwives,		
h) Nurse		
i) Public health practitioner		

i. How would you describe the workforce situation in regards to patient's ratio at this health facility/hospital?

Part IV: Drug's supply

ii. At your health facility, do NHIS patients get access to **all** the drugs as prescribed by Doctor/Physician for treating PHC when it is covered by scheme? **Please explain your answer**

iii. What do you think about the supply of drugs covered by NHIS in terms of its readily availability to dispense to patients upon prescription at this health facility?

Section C: Access to primary health care

Instruction: Please provide description of the narrative in regards to it corresponding PHC service in relation to what happens at your health facility/hospital.

Access Dimensions	**Primary Health Care:** how do you ensure that offering these services at the health facility meet the needs of NHIS patients
A. Availability [the provider has requisite resources; personnel and technology to meet the needs of the client**]**	**1.** Out-patient services
	2. In-patient services
	3. Oral health care
	4. Eye care
	5. Maternal Health Care
	6. Emergency services
	7. Laboratory services
	8. Pharmacy services
B. Acceptability [services delivered or received as health care intervention is considered to be appropriate**]**	**1.** Out-patient services
	2. In-patient services
	3. Oral health care
	4. Eye care
	5. Maternal Health Care
	6. Emergency services
	7. Laboratory services
	8. Pharmacy services
C. Affordability [clients consider the cost of premium paid or exemption under the nhis compensating for PHC services from providers**]**	**1.** Out-patient services
	2. In-patient services
	3. Oral health care
	4. Eye care
	5. Maternal Health Care
	6. Emergency services
	7. Laboratory test
	8. Pharmacy
D. Accommodation [the provider's operation is organized in ways that meet the constraints and preferences of the client**]**	**1.** Out-patient services
	2. In-patient services

	3. Oral health care
	4. Eye care
	5. Maternal Health Care
	6. Emergency services
	7. Laboratory services
	8. Pharmacy services
E. Safety [services under nhis are environmentally, professionally, and technically safe from harm, neglect, infectious waste and injury**]**	**1.** Out-patient services
	2. In-patient services
	3. Oral health care
	4. Eye care
	5. Maternal Health Care
	6. Emergency services
	7. Laboratory services
	8. Pharmacy services

Section D: Utilisation of Primary Health Care:

Instructions: Based on Medical/Administrative records, please could you provide me the frequencies of the following PHC services over the 2021-year period at your health facility?

Please specify the number of times visit in a year (2021) insured patients sought for the following PHC services using NHIS	**Total Number in a year (2021)**
1. Out-patient services	**……**
2. In-patient services	**……**
3. Oral health care	**……**
4. Eye care	**……**
5. Maternal Health Care	**……**
6. Emergency services	**……**
7. Laboratory services	**……**
8. Pharmacy outside health facility services	**……**

i. Recounting on the frequency at which NHIS patients utilise PHC services, how pressured it is at this health facility on:
Staff; ……..
Equipment; ……
Resources; ……..
drugs supply: ……

Section E: Effectiveness of NHIS in health care delivery

a. How would you describe **Collaboration** in NHIS services management?……
b. How would you describe **Interactions** in NHIS services management?……
c. How would you describe the **Channel of communications** in NHIS services management? ……
d. How would you describe **Feedback** in NHIS services management? ……
e. How would you describe Grievance resolution and **Negotiations** in NHIS services management? ……

Any recommendation to make the policy better?

……
……

END OF INTERVIEW
THANK YOU!

Appendix V: Interview Guide for Key Informant Municipal NHIS Manager

1. NHIS uptake by subscriber category type from 2014 - 2021

Subscriber category	2012 (Ref yr)	2013		2014		2015		2016		2017		2018		2019		2020		2021	
		New	Renewal	New	Renewal	New	Renewal	New	Renewal	New	Renewal	New	Renewal	New	Renewal	New	Renewal	New	Renewal
Informal																			
SSNIT																			
Indigenes																			
Under 18																			
70 + (elderly)																			
Pregnant women																			
SSNIT pensioners																			

2. Active NHIS subscribers by category type for the year 2021:

Informal: ……..

SSNIT : ……..

Indigenes : ……..

Under 18 : ……..

70 + (elderly) : ……..

Pregnant women : ……..

SSNIT pensioners : ……..

Appendix VI: Interview Guide for Municipal Health Director

1. Staff strength of the municipality by profession types

Profession Type	**Number**	**Patient to health officer ratio**
a) Medical doctors		
b) Physician assistants		
c) Dentists		
d) Pharmacists		
e) Lab technicians		
f) Clinical anaesthesians		
g) Midwives		
h) Nurses		
i) Public health practitioners		

2. What is the state of health equipment supplies, capacity, and functionality at various health facilities in the municipality.
   ……
   ……
   ……
   ……
   ……
   ……

3. What is the state of drugs supplies for treating primary health care covered by NHIS; its availability, and readiness to be dispensed to NHIS patients at various health facilities in the municipality.
   ……
   ……
   ……
   ……
   ……
   ……

   NOTE: Please is there information on the breakdown of drug's supply for treating primary health care covered by NHIS – statistics between **2015 – date** that is supplied to the municipality?
   I WILL BE INTERESTED IN SUCH INFORMATION

3. **Primary health care utilization based on submission of health Insurance claims by health care providers at various levels by service type over the period of 2015 – 2021 [number of clients captured]**

Facility levels	Services	2015	2016	2017	2018	2019	2020	2021
Hospitals	Out-patient							
	In-patient							
	Oral-health care							
	Eye care							
	Maternity							
	Emergencies							
Health clinics	Out-patient							
	In-patient							
	Oral-health care							
	Eye care							
	Maternity							
	Emergencies							
Health centres	Out-patient							
	Oral-health care							
	Eye care							
	Maternity							
	Emergencies							
CHIPS	Out-patient							
	Oral-health care							
	Maternity							
	Emergencies							
Laboratory centre	Diagnostic services							
Pharmacy shops	Pharmacy services							

4. Yearly breakdown in amount of claims disbursement to service providers (GHc)

2015	2016	2017	2018	2019	2020	2021

4. NHIS Out-patient visits for the year 2021:
   Daily: ……..
   Monthly: ……
   Quarterly: ……..
   Yearly: ……..

5. NHIS In-patient admissions for the year 2021:
   Daily: ……..
   Monthly: ……
   Quarterly: ……..
   Yearly: ……..

6. Maternity visits

Service visits	**Daily**	**Monthly**	**Quarterly**	**Yearly**
Antenatal visits				
Delivery visits				
Post-natal visits				

7. NHIS patients access to oral health care for the year 2021:
   Daily: ……..
   Monthly: ……
   Quarterly: ……..
   Yearly: ……..

8. NHIS patients access to eye health care for the year 2021:
   Daily: ……..
   Monthly: ……
   Quarterly: ……..
   Yearly: ……..

9. NHIS patients access to emergencies for the year 2021:
   Daily: ……..
   Monthly: ……
   Quarterly: ……..
   Yearly: ……..

10. What would you say is the situation of the municipality experience of receiving medical supplies (health facility distribution, health officer's workforce, equipment/tools/apparatus, and drugs) in the provisioning of primary health care services to meet patients' basic health needs?

……
……
……
……
……
……
……
……
……

11. What is your take on the NHIS health policy on patients access and use of primary health care?

……
……
……

……
……
……

12. Generally, what will you say about payment of claims by the NHIA to health care service providers?

……
……
……
……
……
……

Thank you!

Appendix VII: Reliability Test

Reliability (Main Results Dataset)

```
[DataSet1] C:\Users\tuolo\OneDrive\Desktop\Justine PhD\Justine PhD Data
Spreadsheet.sav
```

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	413	100.0
	Excluded[a]	0	.0
	Total	413	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.823	72

Intraclass Correlation Coefficient

	Intraclass Correlation[b]	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.061[a]	.052	.071	5.658	412	29252	.000[a]
Average Measures	.823[c]	.798	.847	5.658	412	29252	.000[c]

Two-way mixed effects model where people effects are random and measures effects are fixed.

a. The estimator is the same, whether the interaction effect is present or not.

b. Type C intraclass correlation coefficients using a consistency definition-the between-measure variance is excluded from the denominator variance.

c. This estimate is computed assuming the interaction effect is absent, because it is not estimable otherwise.

Appendix VIII: Levene's Test of Equality of Variance

Table 21: SEHC s factors that affect NHIS uptake in Wa municipality

SEHC s factors and its effect on NHIS uptake		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Sex	Equal variances assumed	16.223	.000	2.181	411	.030	.102	.047	.010	.193
	Equal variances not assumed			2.123	280.849	.035	.102	.048	.007	.196
Age	Equal variances assumed	.407	.524	-1.301	411	.194	-2.099	1.614	-5.272	1.074
	Equal variances not assumed			-1.294	299.970	.197	-2.099	1.622	-5.290	1.092
Marital Status	Equal variances assumed	.081	.775	-.253	411	.800	-.025	.098	-.217	.168
	Equal variances not assumed			-.250	293.098	.803	-.025	.099	-.220	.170
Educational Level	Equal variances assumed	2.991	.084	2.976	411	.003	.423	.142	.144	.703
	Equal variances not assumed			3.052	327.698	.002	.423	.139	.150	.696
Employment	Equal variances assumed	1.413	.235	.837	411	.403	.163	.194	-.219	.544
	Equal variances not assumed			.858	327.195	.392	.163	.190	-.210	.535
Average Income	Equal variances assumed	.027	.871	.227	411	.820	13.528	59.507	-103.447	130.504
	Equal variances not assumed			.188	180.146	.851	13.528	72.130	-128.801	155.857
Place of residence	Equal variances assumed	2.542	.112	3.312	411	.001	.209	.063	.085	.333
	Equal variances not assumed			3.432	337.126	.001	.209	.061	.089	.329
Enrolled on NHIS	Equal variances assumed	10.524	.001	1.614	411	.107	.025	.016	-.006	.056
	Equal variances not assumed			1.420	210.907	.157	.025	.018	-.010	.061
NHIS enrolment type	Equal variances assumed	1.169	.280	.507	411	.613	.104	.204	-.298	.505
	Equal variances not assumed			.498	289.133	.619	.104	.208	-.306	.513
How often do you access primary health care	Equal variances assumed	24.155	.000	3.608	392	.000	.187	.052	.085	.289
	Equal variances not assumed			3.721	323.507	.000	.187	.050	.088	.286
For_this_year_2022_how many times have you use PHC	Equal variances assumed	37.813	.000	5.559	411	.000	.771	.139	.499	1.044
	Equal variances not assumed			6.367	409.211	.000	.771	.121	.533	1.009
Mode of transportation to access PHC services	Equal variances assumed	10.975	.001	4.778	411	.000	.601	.126	.354	.849
	Equal variances not assumed			4.946	336.270	.000	.601	.122	.362	.841
Travel Cost (to and from) [REGIONAL HOSPITAL]	Equal variances assumed	3.898	.049	-.023	411	.982	-.017	.766	-1.523	1.488
	Equal variances not assumed			-.026	409.898	.979	-.017	.652	-1.298	1.263
Travel Cost (to and from) Municipal/District hospital	Equal variances assumed	3.928	.048	-.639	411	.523	-.408	.639	-1.664	.848
	Equal variances not assumed			-.732	409.303	.465	-.408	.558	-1.504	.688
Travel cost (to and from) health clinic	Equal variances assumed	2.325	.128	.355	411	.723	.227	.639	-1.029	1.483
	Equal variances not assumed			.402	405.154	.688	.227	.565	-.883	1.337
Travel cost (to and from) health centre	Equal variances assumed	1.504	.221	.077	411	.939	.054	.704	-1.329	1.437

	Equal variances not assumed			.087	406.374	.930	.054	.620	-1.165	1.273
Travel cost (to and from) CHPS Compound	Equal variances assumed	1.902	.169	2.323	411	.021	.970	.418	.149	1.791
	Equal variances not assumed			2.523	379.090	.012	.970	.385	.214	1.726
Travel cost (to and from) Laboratory/Diagnosis centre	Equal variances assumed	3.408	.066	-.548	411	.584	-.375	.685	-1.723	.972
	Equal variances not assumed			-.635	410.967	.526	-.375	.591	-1.537	.786
Travel cost (to and from) pharmacy shop	Equal variances assumed	1.736	.188	-.483	411	.629	-.254	.526	-1.289	.780
	Equal variances not assumed			-.482	302.228	.630	-.254	.527	-1.292	.784
Type of Health Facility	Equal variances assumed	14.573	.000	1.859	411	.064	.069	.037	-.004	.142
	Equal variances not assumed			2.166	410.951	.031	.069	.032	.006	.131

Table 22: Supply-side factors that affect NHIS uptake with Levene's Test for Equality of Variances

Supply-side factors that affect NHIS uptake		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
L_How_often_do_you_primary_health_care	Equal variances assumed	24.155	.000	3.608	392	.000	.187	.052	.085	.289
	Equal variances not assumed			3.721	323.507	.000	.187	.050	.088	.286
Where likely insureds access PHC under NHIS including herbalist	Equal variances assumed	.403	.526	.979	411	.328	.01400	.01430	-.01412	.04211
	Equal variances not assumed			.979	304.274	.329	.01400	.01430	-.01414	.04213
Health facilities that accepts NHIS for treating PHC	Equal variances assumed	.081	.776	1.573	411	.116	.02958	.01880	-.00738	.06653
	Equal variances not assumed			1.606	323.113	.109	.02958	.01842	-.00666	.06581
Supply of equipment at HF's	Equal variances assumed	15.361	.000	-2.501	411	.013	-.08477	.03390	-.15141	-.01813
	Equal variances not assumed			-2.650	358.091	.008	-.08477	.03199	-.14768	-.02187
Supply of health professionals at HF's	Equal variances assumed	3.445	.064	-1.815	411	.070	-.06660	.03669	-.13871	.00552
	Equal variances not assumed			-1.886	339.623	.060	-.06660	.03531	-.13605	.00286
Drugs supply at HF's	Equal variances assumed	.725	.395	.709	411	.479	.02213	.03120	-.03920	.08346
	Equal variances not assumed			.723	321.497	.470	.02213	.03062	-.03811	.08237
Closeness of health facilities to residence home	Equal variances assumed	1.174	.279	2.116	411	.035	.12793	.06045	.00911	.24675
	Equal variances not assumed			2.036	271.094	.043	.12793	.06283	.00423	.25163
Travel cost to and from health facilities	Equal variances assumed	3.597	.059	.059	411	.953	.02453	.41331	-.78793	.83700
	Equal variances not assumed			.070	409.569	.944	.02453	.35111	-.66566	.71473

Table 23: Independent t-test with Levene's test of equality for insured demand for access and use of PHC services on NHIS uptake in Wa Municipality

Insured demand for access and use of PHC services on NHIS uptake		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Availability_scale_of access	Equal variances assumed	.056	.813	2.602	411	.010	.18321	.07042	.04478	.32165
	Equal variances not assumed			2.629	313.745	.009	.18321	.06969	.04609	.32033
Out-patient services	Equal variances assumed	1.641	.201	1.428	411	.154	.140	.098	-.053	.332
	Equal variances not assumed			1.389	280.491	.166	.140	.101	-.058	.338
In-patient services	Equal variances assumed	.152	.696	2.766	411	.006	.358	.130	.104	.613
	Equal variances not assumed			2.787	311.142	.006	.358	.129	.105	.611
Oral health care	Equal variances assumed	14.764	.000	1.630	411	.104	.177	.109	-.037	.391
	Equal variances not assumed			1.721	354.613	.086	.177	.103	-.025	.380
Eye care	Equal variances assumed	.468	.494	.139	411	.890	.015	.106	-.193	.223
	Equal variances not assumed			.141	318.054	.888	.015	.104	-.191	.220
Maternity health care	Equal variances assumed	2.745	.098	2.278	411	.023	.308	.135	.042	.574
	Equal variances not assumed			2.310	316.998	.022	.308	.133	.046	.571
Emergencies services	Equal variances assumed	3.397	.066	2.135	411	.033	.284	.133	.023	.546
	Equal variances not assumed			2.173	320.064	.031	.284	.131	.027	.541
Acceptability_scale_of_access	Equal variances assumed	.306	.580	2.290	411	.023	.15310	.06685	.02169	.28450
	Equal variances not assumed			2.306	310.563	.022	.15310	.06638	.02248	.28371
Out-patient services	Equal variances assumed	.426	.514	.795	411	.427	.079	.100	-.117	.275
	Equal variances not assumed			.783	290.839	.434	.079	.101	-.120	.279

In-patient services	Equal variances assumed	.041	.840	2.349	411	.019	.306	.130	.050	.563
	Equal variances not assumed			2.364	309.869	.019	.306	.130	.051	.561
Oral health care	Equal variances assumed	3.143	.077	.791	411	.429	.083	.105	-.123	.289
	Equal variances not assumed			.813	329.621	.417	.083	.102	-.118	.283
Eye care	Equal variances assumed	2.009	.157	-.745	411	.457	-.073	.098	-.266	.120
	Equal variances not assumed			-.734	291.049	.464	-.073	.100	-.269	.123
Maternity health care	Equal variances assumed	3.058	.081	2.473	411	.014	.332	.134	.068	.596
	Equal variances not assumed			2.507	316.466	.013	.332	.133	.071	.593
Emergencies services	Equal variances assumed	7.303	.007	2.600	411	.010	.344	.132	.084	.604
	Equal variances not assumed			2.655	323.298	.008	.344	.130	.089	.599
Affordability_scale_of_access	Equal variances assumed	.155	.694	2.155	411	.032	.14306	.06639	.01256	.27357
	Equal variances not assumed			2.144	299.542	.033	.14306	.06674	.01173	.27440
Out-patient services	Equal variances assumed	.000	.998	.615	411	.539	.062	.100	-.135	.259
	Equal variances not assumed			.611	297.975	.542	.062	.101	-.137	.260
In-patient services	Equal variances assumed	.002	.964	2.561	411	.011	.327	.128	.076	.578
	Equal variances not assumed			2.578	310.145	.010	.327	.127	.077	.577
Oral health care	Equal variances assumed	5.351	.021	1.140	411	.255	.116	.102	-.084	.316
	Equal variances not assumed			1.183	338.467	.238	.116	.098	-.077	.309
Eye care	Equal variances assumed	1.605	.206	-.664	411	.507	-.065	.097	-.256	.127
	Equal variances not assumed			-.657	294.579	.512	-.065	.099	-.259	.129
Maternity health care	Equal variances assumed	4.298	.039	2.458	411	.014	.319	.130	.064	.574
	Equal variances not assumed			2.499	319.472	.013	.319	.128	.068	.570
Emergencies services	Equal variances assumed	.548	.459	1.846	411	.066	.242	.131	-.016	.500
	Equal variances not assumed			1.855	308.864	.065	.242	.131	-.015	.499
	Equal variances assumed	.156	.693	2.296	411	.022	.14479	.06306	.02084	.26875

Accommodation scale of access	Equal variances not assumed			2.289	301.277	.023	.14479	.06327	.02030	.26929
Out-patient services	Equal variances assumed	.728	.394	1.028	411	.304	.101	.098	-.092	.294
	Equal variances not assumed			1.007	285.539	.315	.101	.100	-.096	.298
In-patient services	Equal variances assumed	.002	.966	2.011	411	.045	.255	.127	.006	.504
	Equal variances not assumed			2.025	310.365	.044	.255	.126	.007	.503
Oral health care	Equal variances assumed	9.002	.003	1.363	411	.173	.136	.100	-.060	.332
	Equal variances not assumed			1.419	341.385	.157	.136	.096	-.053	.325
Eye care	Equal variances assumed	1.295	.256	-.610	411	.542	-.059	.096	-.248	.130
	Equal variances not assumed			-.602	291.742	.548	-.059	.098	-.251	.133
Maternity health care	Equal variances assumed	3.695	.055	2.315	411	.021	.302	.130	.046	.558
	Equal variances not assumed			2.349	317.547	.019	.302	.129	.049	.555
Emergencies services	Equal variances assumed	2.803	.095	2.153	411	.032	.278	.129	.024	.532
	Equal variances not assumed			2.177	314.140	.030	.278	.128	.027	.530
Safety_scale_of_access	Equal variances assumed	.142	.707	1.752	411	.081	.10954	.06253	-.01338	.23247
	Equal variances not assumed			1.757	306.656	.080	.10954	.06236	-.01317	.23226
Out-patient services	Equal variances assumed	.039	.843	.256	411	.798	.025	.098	-.167	.217
	Equal variances not assumed			.257	306.675	.797	.025	.097	-.167	.217
In-patient services	Equal variances assumed	.668	.414	1.809	411	.071	.233	.129	-.020	.485
	Equal variances not assumed			1.807	303.482	.072	.233	.129	-.021	.486
Oral health care	Equal variances assumed	8.648	.003	1.226	411	.221	.119	.097	-.072	.311
	Equal variances not assumed			1.287	349.304	.199	.119	.093	-.063	.302
Eye care	Equal variances assumed	1.452	.229	-.635	411	.526	-.060	.095	-.247	.126
	Equal variances not assumed			-.626	291.833	.532	-.060	.096	-.250	.129
Maternity health care	Equal variances assumed	.805	.370	1.542	411	.124	.202	.131	-.055	.459

	Equal variances not assumed			1.551	309.557	.122	.202	.130	-.054	.458
Emergencies services	Equal variances assumed	3.386	.066	1.913	411	.056	.248	.130	-.007	.503
	Equal variances not assumed			1.939	316.559	.053	.248	.128	-.004	.500
Total_use_PHC_2021	Equal variances assumed	.034	.855	1.218	411	.224	.09056	.07435	-.05559	.23671
	Equal variances not assumed			1.144	252.729	.254	.09056	.07915	-.06532	.24644

Appendix IX: Collinearity Test

Collinearity test of SEHC using Variable Inflation Factor (VIF of independent variables)

VIF	1/VIF
1.310	0.764
2.280	0.438
1.150	0.870
3.080	0.325
1.100	0.907
1.800	0.555
1.650	0.606
1.900	0.527
1.830	0.547
2.160	0.462
1.850	0.539
2.160	0.464
3.260	0.307
9.460	0.106
8.680	0.115
7.420	0.135
1.220	0.817
9.430	0.106
3.300	0.303
1.370	0.732
1.070	0.935
3.300	0.303
3.880	0.258
1.310	0.764
1.450	0.690
1.350	0.741
1.380	0.722
1.170	0.858
1.100	0.912
1.040	0.963
2.780	

Collinearity test for supply-side factors of PHC under NHIS using Variable Inflation Factor (VIF of independent variables)

VIF	1/VIF
1.380	0.684
1.400	0.671
1.890	0.529
1.830	0.547
1.500	0.667
1.480	0.674
1.100	0.912
1.080	0.923
1.450	

Collinearity test of demand for access and use of PHC services using Variable Inflation Factor (VIF of independent variables)

VIF	1/VIF
9.000	0.111
7.800	0.128
7.230	0.138
4.530	0.221
4.150	0.241
1.040	0.960
5.630	

Appendix X: Letters of Introduction to Health Facilities

FACULTY OF PUBLIC POLICY AND GOVERNANCE
SDD UNIVERSITY OF BUSINESS AND INTEGRATED DEVELOPMENT STUDIES
P. O. BOX WA64, WA
info.fppg@gmail.com contacts:0541837332/050484860
Our ref: PG0010321 **Your ref:**

August 20, 2021.

To Whom It May Concern

Dear Sir/Madam

INTRODUCTORY LETTER

I write to introduce **Mr Justice Tuolong Gugunani (PG0010321)** a PhD candidate in Development Governance and Management at the Faculty of Public Policy and Governance.

He is working on his research project titled **"Demand and Supply Side Models of National Health Insurance in the Wa Municipality: Implications for Universal Health Coverage in Ghana".** This therefore requires him to collect data from your institution to support his project.

Kindly provide him the necessary assistance needed.

Thank you.

Yours faithfully,

Sumaila Chakurah
Faculty Officer

JUNIOR ASSISTANT REGISTRAR
FACULTY OF PUBLIC POLICY AND GOVERNANCE
SDD - UBIDS

In case of reply, the number and
date of this letter should be quoted.

OUR CORE VALUES
Professionalism
People-Centeredness
Team Work
Integrity
Discipline
Innovation

Regional Health Directorate
Ghana Health Service
P. O. Box 298
Wa
Upper West Region

March 25rd, 2022

Tel: +2330392096685
GPS Address: XW -0020 -2007
Email: rhds.uwr@ghsmail.org

My Ref: UWR/RHD/ADM/ TP-51
Your Ref:

THE MUNICIPAL DIRECTOR OF HEALTH SERVICES - WA

INTRODUCTORY LETTER: MR. JUSTINE GUGUNENI TUOLONG

The bearer of this letter is a second year PhD student pursuing Governance and Development Management at the Faculty of Public Policy and Governance at the SSD University of Business and Integrated Development Studies, Wa.

He is seeking to conduct a research on the topic **"Demand and Supply Side Models of National Health Insurance in Ghana: Implications for Universal Health Coverage in the Wa Municipality".**

He has duly complied with all the requirements of the Ghana Health Service in conducting research.

Please ensure that all the national guidelines or protocols towards the prevention of COVID – 19 are adhered to.

Kindly accord him the necessary support and cooperation and take the necessary steps to ensure that the privacy and confidentiality of our staff and clients are guaranteed.

Thank you.

DR. DAMIEN PUNGUYIRE
REGIONAL DIRECTOR OF HEALTH SERVICES

Cc:
1. Research file

3 Affected I/C
Pls assist the bearer of this letter with all the help he may require in the conduct of this research process
25/04/22

In case of the reply the number and date of this letter should be quoted

OUR CORE VALUES
People Centered
Professionalism,
Team Work,
Innovation,
Discipline
Integrity

*My Ref. No GHS/*WMHA/

GHANA HEALTH SERVICE
Your Health · Our Concer

MUNICIPAL HEALTH ADMINISTRATION
GHANA HEALTH SERVICE
P. O. BOX 231
WA UWR
GHANA

8TH April, 2022

Tel: +233 03920 22524
Fax: +233 03920
GPS Address : XW-0021-5473
Email : wamunicipalhealthdirectorate@gmail.org

ALL SUB-MUNICIPAL IN-CHARGES
WA MUNICIPAL HEALTH DIRECTORATE
UPPER WEST
WA

INTRODUCTORY LETTER—MR. JUSTINE G. TUOLONG

The bearer of this letter has my approval to conduct a research in your facility on the topic "Demand and Supply Side Models of National Health Insurance in Ghana: Implications for Universal Health Coverage in the Wa Municipality. He is a second year PhD student of SDD-UBIDS pursuing Governance and Development Management.

He has complied with all Ghana Health Service standards and protocols of conducting research.

Kindly accord him the due recognition and maximum support in conducting his research.

Thank you.

DR. PASCAL KINGSLEY MWIN
MUNICIPAL DIRECTOR OF HEALTH SERVICES
WA MUNICIPAL

Cc: Mr. Justine G. Tuolong
Research File