UNIVERSITY OF NAIROBI

HEALTH INSURANCE AND DEMAND FOR INPATIENT SERVICES IN PRIVATE HOSPITALS IN KENYA

BARTILOL PAUL KIPROP

X53/37294/2020

A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF ECONOMICS, POPULATION AND DEVELOPMENT STUDIES FOR THE PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF MASTER OF SCIENCE IN HEALTH ECONOMICS & POLICY OF THE UNIVERSITY OF NAIROBI

NOVEMBER, 2022

DECLARATION

This study is original work and to the best of my knowledge, has not been presented for a degree award in any other University.

Signature……  …… Date……23/11/2022……

BARTILOL PAUL KIPROP

X53/37294/2020

SUPERVISOR

This research project has been submitted for review with my approval as university supervisor.

Signature…….. Date……23/11/2022…….

Dr. Martine Oleche

DEDICATION

I dedicate this research work to my family. They have been a great source of motivation and encouragement to me.

ACKNOWLEDGEMENT

My heartfelt gratitude to my Supervisor Dr. Martine Oleche for his guidance and kindness during the entire process of the study.

I overwhelmingly appreciate my family members and friends for their financial and moral support.

TABLE OF CONTENTS

DECLARATION ii

DEDICATION iii

ACKNOWLEDGEMENT iv

LIST OF TABLES viii

LIST OF FIGURES ix

ABBREVIATIONS AND ACRONYMS x

ABSTRACT xi

CHAPTER ONE 1

INTRODUCTION 1

1.1 Background 1

1.2 Problem statement 3

1.3 Research questions 4

1.4 Research objectives 5

1.5 Significance of the study 5

CHAPTER TWO 7

LITERATURE REVIEW 7

2.1 Introduction 7

2.2 Theoretical review 7

2.2.1 Andersen's Health Behavior Model 8

2.2.2 Grossman Model of Health Production 8

2.2.3 Conventional health insurance theory 9

2.3 Empirical Literature 9

2.4 Overview of Literature 15

CHAPTER THREE 17

RESEARCH METHODOLOGY 17

3.1 Introduction....17
3.2 Theoretical Framework....17
3.3 Probit Estimation....18
3.4 Estimable model....20
3.5 Definition of Variables, Measurement and Expected sign....20
3.6 Data Type and Sources....22
3.7 Diagnostic Tests....22
CHAPTER FOUR....24
RESULTS AND DISCUSSIONS....24
4.1 Introduction....24
4.2 Patterns in demand for inpatient healthcare services among private hospitals....24
4.3 Trends in demand for inpatient healthcare services and insurance status....25
4.4 Demographic and Socio-Economic Characteristics of the respondents....25
4.5 Diagnostic Tests....27
4.5.1 Multicollinearity Analysis....27
4.5.2 Tests for Heteroscedasticity....29
4.6 Model Estimation and Interpretation of the results....30
4.6.1 Introduction....30
4.6.2 Interpretation of the probit results....31
4.7 Discussions of Regression Results....34
CHAPTER FIVE....39
SUMMARY, CONCLUSIONS AND POLICY RECOMMENDATIONS....39
5.1 Introduction....39
5.2 Summary of the study findings....39
5.3 Conclusions....40
5.4 Policy Recommendations....40
5.5 Areas for Further Studies....41

REFERENCES 43

APPENDICES 47

Appendix 1: Correlation matrix 47

LIST OF TABLES

Table 3.1: Description of Variables used in the Study 21
Table 4.1: Trends in demand for inpatient hospitalization (private hospitals) 24
Table 4.2: Summary Statistics 26
Table 4.3: Variance Inflation Factor Analysis 28
Table 4.4: Probit Marginal Effects (Dependent variable - Uptake of Inpatient services) 30

LIST OF FIGURES

Figure 4.1: Demand for inpatient care and insurance status 25
Figure 4.2: Heteroscedasticity test 29

ABBREVIATIONS AND ACRONYMS

CHE	Catastrophic Health Expenditures
HBM	Health Behavior Model
KDHS	Kenya Demographic Household Survey
KHHEUS	Household Health Expenditure and Utilization Survey
NHIF	National Hospital Insurance Fund
OOPE	Out-of-pocket expenditure
UHC	Universal Health Coverage
WHO	World Health Organization

ABSTRACT

Several studies have looked at the factors that play a role in determining whether an individual would use a health care provider, whether private or public, as well as whether or not to get health insurance. Costs of services and efficiency of access to services in either institution are the most researched elements thought to affect such choices. In Kenya, there is a persistent trend towards use of healthcare services in private hospitals even as the government invests huge amounts of resources annually in public health facilities. The main purpose of this study was to analyse the effect of health insurance ownership on demand for inpatient services in private hospitals in Kenya. The specific objectives include; to assess the patterns of inpatient services between the insured and the uninsured patients in private hospitals in Kenya, and to examine the effects of health insurance ownership on utilization of inpatient services in private hospitals in Kenya. Kenya Household Health Expenditure and Utilization Survey (KHHEUS, 2018) dataset was utilized. Binary probit regression model was used in estimation. From the findings, the demand for admissions in the private hospitals were 39.3 percent of the total inpatient admissions during the entire period preceding the survey or 1.31 percent of the total population surveyed. Those who consumed inpatient healthcare services in public hospitals, only 35.7 percent were insured compared to 77.2 percent in private hospitals. The study also concluded that medical insurance or health insurance coverage was significantly related to inpatient healthcare services use in private hospitals in Kenya. Among the control variables, it was revealed that age, age squared, education levels (primary, secondary and tertiary), employment, and awareness levels had a significant effect. To promote increased use of public healthcare services via admissions across the country, the study recommends for policy shift that is patient centred and cost friendly with effective service delivery for all age groups. It is important to understand that educational interventions can help increase knowledge of available healthcare services in public hospitals, enabling individuals to make informed decisions and use them more effectively. Lastly, there is need for public private sector partnership in health to empower community to access health services in public hospitals.

CHAPTER ONE

INTRODUCTION

1.1 Background

When it comes to health, governments and international organizations throughout the globe have come to agree that implementing equitable health systems is crucial to meeting sustainable development targets (Wambua et al., 2021). Therefore, stable healthcare finance systems have been seen as crucial for guaranteeing access to healthcare for everyone. This would imply that no one in the country faces financial ruin as a consequence of being sick, and that everyone has healthcare treatments access that are both necessary and of adequate quality (Wambalaba et al., 2019). To ensure that everyone has access to essential curative, preventative, promotive, and healthcare rehabilitative at a reasonable price and thereby achieve equality in access, the 58th World Health Assembly in 2005 urged countries to work towards universal coverage in their health systems. Different nations have instituted varying health finance models, some including universal health insurance coverage via National Health Insurance Services and others involving a plethora of health insurance options but little out-of-pocket costs for patients (Suchman, 2018).

Several studies have looked at the variables that play a role in determining whether an individual would use a health care provider, whether personal or public, as well as whether or not to get health insurance. Costs of services and efficiency of access to services in either institution are the most researched elements thought to affect such choices. This comparison may be difficult to make, however, since public healthcare expenses are seldom specified Considering the user charges for the services delivered throughout all hospitals. People decide whether or not to join waiting lists based on how long they think they will have to wait. Obadha et al. (2019) say that this is a form of rationing because there are no clear fees for public health care when using public health services doesn't come with any hidden costs.

However Mose & Orayo, (2020)) point out that people in need of public health services may weigh the expense of waiting on the waiting list against the cost of accessing private health care services when making selections in situations when both options are available.

Private health insurance was shown to be positively connected with decreased private medical insurance rates, which in turn increased demand for private health care services. In another study, Mbau et al. (2020) looked at the Australia's need for private healthcare services. They found that people with health insurance tended to choose private hospitals. Similar results were found in a study of Jamaicans who had private health insurance (Sieverding et al., 2018). These results indicated that private health insurance owners were most likely to seek out preventive or curative treatment from private providers, rather than from the public system. We found that in Jamaica, People who can afford private health insurance are less likely to get routine checkups at public hospitals and more likely to visit private facilities for their medical needs. Adinan et al., (2017), performed research on whether customers tended to choose private or public hospitals and found that people tended to stick with their first preference.

The majority of Kenya's healthcare system is made up of public sector elements, which are supplemented by private sector elements such faith-based healthcare organizations, independent medical practitioner clinics, and private hospitals... Unfortunately, government-funded hospitals by the private sector, which consists of faith-based healthcare organizations, commercial hospitals, and independent medical practitioners' clinics. Regrettably, public funded hospitals have been accused for providing poor quality healthcare owing to a shortage of medical resources. According to the Household Health Expenditure and Utilization Survey (KHHEUS, 2018) report, out of the total yearly budget of shs24.4 billion for the health sector, 10% or went toward the procurement of pharmaceuticals. The research highlighted that health-related spending fell significantly from the time of independence until the early 2000s. Because of the high cost of medical treatment, low income, and unwillingness to increase service rates,

there has been a dramatic decrease in both access to and usage of health facilities. Even though there has been a lot of development and enlargement of quality enhancement programs, like the increase in the number of hospitals because of devolution, not many There has been study into the relationship between the ever-increasing demand for healthcare and the steadily rising quality of service provided by the medical establishment in a variety of contexts. Even though devolution has led to more health care facilities, this is still the case. (Gillam & Siriwardena, 2014).

KHHEUS (2018) found that people tended to choose hospitals that were farther distant from their homes even if there was another option closer by. The study found that skipping local health care providers was a sign that the Patients had concerns about the treatment they would get at these facilities. It was also determined that low-income people sometimes choose to forego government-subsidized public healthcare in favor of private medical centers, despite the fact that this results in greater out-of-pocket expenses.

Kenya's health care delivery system faces two main challenges: cost and accessibility. In a 2018 report by KHHEUS, a survey about why some people with health problems never went to the hospital is mentioned. The survey lists reasons like the choice to self-medicate, the distance to providers, and the belief that the condition wasn't severe enough to need a hospital visit.

1.2 Problem statement

Paying for medical treatment out of pocket can be both expensive and wasteful. A consequence of this is reduced need for medical treatment. In Kenya, many people still pay a significant portion of their healthcare bills out of their own pockets. In Kenya, individuals pay 26.6% of their own income on healthcare. Since it is easier for low-income families to fall into poverty as a result of this, it creates an obstacle to receiving medical treatment. Definition of poverty according to the World Health Organization's (WHO) states that more than 46.6% of the

population of Kenya is poor (World Bank, 2010). The Health Ministry reports approximately 15percent of the impoverished utilize medical services. owing to monetary restrictions, while 38percent of the poor constantly sell off assets or borrows to cover medical expenditures. Because of this, 1.5% more families are now living in poverty (Kenyan Government, Health Systems 2020 Project, 2009.) A quarter of all Kenyans now have health insurance, compared from 9.8 percent in 2009. As opposed to 41.5 percent of the wealthy who have some kind of insurance, just 2.9% of the poor do. This is disappointingly low given that expanding access to health insurance is a key goal of the health funding reforms that will lead the nation to achieve universal health care.

In Kenya Patients have the option of using either public or private healthcare facilities, with the former having to adapt to the specific requirements of the communities they serve. The government's attempts to increase healthcare access and equality are greatly aided by the private sector. In spite of the Constitution of Kenya's mandate that health care be devolved to the Counties, demand for services in private healthcare facilities remains high (2010). Patients' priorities in selecting a healthcare provider include, but are not limited to, proximity, affordability, quality of facilities, word-of-mouth recommendations, and professional recommendations (Singh & Shah, 2011). As a result, the goal of this research was to see whether consumers' choices for healthcare services in Kenya's private hospitals are impacted by their insurance status.

1.3 Research questions

The research was guided by the following research questions.

1. What are the patterns in inpatient services between the insured and the uninsured patients in Private Hospitals in Kenya?
2. What are the effects of health insurance ownership on utilization of inpatient services in private hospitals in Kenya?
3. What are the policy recommendations?

1.4 Research objectives

The main objective of the study was to analyze the effect of health insurance ownership on demand for inpatient services in private hospitals in Kenya

The research was guided by the following specific objectives.

1. To assess the patterns of inpatient services between the insured and the uninsured patients in Private Hospitals in Kenya.
2. To analyses the effects of health insurance ownership on utilization of inpatient services in private hospitals in Kenya.
3. To provide recommendations for policy.

1.5 Significance of the study

Both public and private healthcare systems are comprised of a well-oiled network of healthcare providers, payers (individuals, families, and businesses), planners, and enforcers. Together, these organizations will better be able to meet the health requirements of the people or families in the community. Kenya's policy context is committed to lowering the financial barriers that prevent people from receiving high-quality medical care. In spite of the government's best efforts to expand access to publicly financed secondary health services in Kenya via measures like the devolution of health services, more and more people are opting to pay for their own medical treatment. More than 40% of health services in the nation come from the private sector. The majority of these services are inpatient care. Because of this, it's important to identify the factors that influence patient interest in healthcare. Those in policymaking positions, those managing healthcare facilities, and practicing doctors would all benefit from this study's examination of insurance as a driver of healthcare demand in Kenyan private hospitals. Also, managers and planners would benefit from this research as they work to advance the quality of treatment and the appeal of publicly supported health services. Finally, the study's results

would add to the existing body of information on the issue of health care demand in private hospitals.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter focuses on the literature in two distinct ways. In addition to presenting the study's underlying theories, this section demonstrates the empirical literature that has been evaluated in relation to the topic of interest. In addition, the overview of the study summarizes major findings from the analyzed theories and investigations.

2.2 Theoretical review

The increasing complexity of healthcare systems has adverse influence on the capacity of healthcare personell to provide high-quality treatment, resulting in a decline in demand of expert medical attention. Bertch (2012) recommends that care may be detected and quantified by a number of means, including underuse, abuse, and misuse of medical resources, adverse medication incidents, hospital-acquired infections, and medical mistakes.

However, according to Ede (2015), health-care perception demand involves a person's impression on the efficacy of current medical therapy, the severity of disease, and health care providers quality. Individuals' and families' education and cultural beliefs may impact their health care needs (Assefa et al., 2020). Considered an essential consideration in determining the selection of a healthcare provider, service quality is prevalent among providers of healthcare. A healthcare service company might potentially enhance demand by attempting to recruit new customers. They may also attempt to improve this by upgrading the care they provide to their current clients (Ede, 2015). Even if services are economically priced, they may be hampered by inexperienced personnel, limited staffing, and inadequate medicine supplies in health institutions. According to Kasirye et al. (2004), healthcare institutes throughout the world have been using a number of improvement initiatives to refine health care, increase the

efficiency of operations, and reduce the price of medical services. The following are some of the researched health insurance and demand for health theories:

2.2.1 Andersen's Health Behavior Model

Estimates of health-care demand differ significantly, particularly when services are disaggregated. Ringel et al. (2002), notes that several of the factors of demand for health care differ by kind of health care. The authors advocate for the importance of building a connection with healthcare providers, particularly when selecting a health care provider in the health sector. Andersen (1995) developed the Health Behavior Model (HBM) to describe the variables affecting the use of healthcare. His thesis states that three dynamics—predisposing circumstances, enabling factors, and necessity—determine the utilization of health care. Age, race and health attitudes are identified as predisposing variables, while family support, access to health insurance, and community are stated as enabling factors. The need variables reflect both the perceived and real demand for medical care. The primary premise of this theory is that individuals who believe that hospitals offer effective treatment for ailments are more inclined to seek attention from healthcare providers.

2.2.2 Grossman Model of Health Production

According to Grossman (1999), the underlying desire for health is what drives the demand for healthcare and related services. Since receiving medical treatment immediately satisfies their demands and being unwell is a source of disutility, people see it as a commodity. He said that since it has an impact on the overall amount of time available for gainful work, healthcare is required as an investment good. Therefore, people are born with a basic level of health that declines with age and may be improved by investments. According to Grossman, the amount of health capital that people demand increases proportionally with wage rate. More healthier

time means better earnings, thus individuals are motivated to spend more money on health when their wage rate is high.

2.2.3 Conventional health insurance theory

Pauly (1968) first put out this idea and said that moral hazard was viewed negatively by economists since it led to higher health care costs and decreased public welfare. This is because insurance drives down the expense of medical care to zero, encouraging consumers to acquire more services. This shows that customers value these services below the market cost, even if the extra services are still expensive for the provider. The difference in price between the expensive resources utilized to provide this treatment as well as its low perceived worth to those who are insured, which is reflected in a low insurance premium, demonstrates inefficiency. By enforcing Coinsurance, deductibles, and capitations will raise the price of insured patients' medical treatment. customers and limit excessive spending, the concept provided an obvious legislative answer to this moral hazard. This approach led to the present managed health care system (Besley, 1991).

2.3 Empirical Literature

Various countries have seen health insurance as crucial to obtaining universal health coverage. This is to guarantee that every individual has access to effective, acceptable-quality healthcare services and that no one faces financial ruin due to illness. However, recent figures reveal that in Kenya, 26.6% of total health expenditures are being paid privately. Nguru et al., (2018) conducted research to determine the percentage of Embu hospital patients with health insurance. The research was a descriptive cross-sectional investigation. Participants were selected using a technique of stratified random sampling, with eight hospitals constituting each stratum. During a two-week period, the researcher used self-administered and researcher-administered questionnaires to gather data. SPSS version twenty was used to generate both inferential and descriptive statistics from the collected data. The majority of persons with health

insurance were working in the formal sector and insured by the NHIF. The level of understanding of health insurance was found to be 52.6%, which may be a key reason for poor adoption. Coverage for medical care was significantly correlated with demographic variables such gender, education level, marital status, and employment status. There was additional evidence that occupational characteristics, such as employment status, industry, and working conditions, influenced health insurance coverage. Even though public health insurance participation was substantial, the majority of the population prefers private health insurance.

Shah et al. (2022) conducted a study on household usage of a social health security plan in the Illam area of Nepal. The goal of the research was to ascertain how social health security programs are used in Nepal as well as what the general public thinks about it. In the district of Illam, 300 houses enrolled in the program of social health underwent a descriptive cross-sectional mixed-methods study. The use of a multistage random sampling procedure. Focus group discussions (FGDs) were performed to collect qualitative data, while a semi-structured questionnaire was used to get quantitative data. Bivariate, multivariate, and descriptive analyses were performed. Theme analysis and FGD transcription were carried out. According to the study, 88.7% of the social health security system was used. The existence of children under 5, chronic illness in the household, gender, residence and age all had an impact on program utilization. Discussions in focus groups indicated that social health insurance was known and that people were happy with the way the government was running the program. The social health insurance hospitals were unable to accomplish their objectives, nevertheless.

In low- and middle-income nations, understanding health-care usage is critical. with differences in illness burden and access to basic healthcare. In a Kenyan informal urban settlement, Wambiya et al. (2021) looked at the patterns and factors that influence how people use private and public health care. Data from a 2018 survey conducted between June and July by Lown academics were utilised in the investigation. A total of 364 participants from different

households were surveyed and reported seeking medical treatment for a condition in the twelve months before to the investigation, from around 300 randomly selected households. Proportions were used to describe health care use trends. The use of public or private health care was predicted using multinomial logistic regression, with other providers acting as the reference group. The majority of participants (47%) and the public (33%), while just 20% turned to alternative providers including neighborhood pharmacies and natural healers. Members who expressed satisfaction with the quality of medical treatment. In the model, public hospitals were less likely to be used than alternative institutions., while members who had recently had an acute infection were more inclined to do so. Health insurance coverage accessibilty coverage, satisfaction with the cost of care, and the presence of an acute infection were substantially correlated with the use of private facilities in the second model comparing them to other facilities.

Garg, Bebarta and Tripathi (2020) conducted a study on Healthcare Rounds of the National Sample Survey, 1996–2017: Patterns of Use and Out-of-Pocket Expenditure (OOPE) in Public and Private Hospitals in India, and Implications for Universal Health Coverage. Periodically, the Indian government undertakes a study of Indian households called the National Sample Survey (NSS). Four waves of NSS data on healthcare usage were analyzed (1996-2017). Utilization, provider selection, out-of-pocket expenses, and catastrophic medical bills (CHE) were all investigated using multivariate analysis. The study used propensity score matching to examine the effect of individual predictors on out-of-pocket expenditure (OOPE) and CHE. The data indicated that the percentage of hospital visits made by the public sector dropped from 1996 to 2004, but then steadily increased to 51% by 2017. Parts of society less fortunate economically were more inclined to use public services. From 2004 to 2017, the average OOPE for a public hospitalization fell, whereas the corresponding figure for a private treatment rose dramatically. Private sector in 2017 OOPE was almost six times bigger than public sector

OOPE, while CHE incidence was 9 times higher in the private sector. Using the private sector was a significant risk factor for accumulating CHE. Publicly financed insurance coverage did not help lower OOPE or CHE.

Mose and Orayo (2020) studied how insurance affects the availability and quality of maternal health care in Kenyan private hospitals. The link was made using the most recent data from the 2014 Kenya Demographic Household Survey (KDHS). Only 15% of moms had health insurance, yet 14% of women said they used private clinics for prenatal treatment, and 13% said they gave birth in a hospital that met their needs. Results also showed that having health insurance greatly improved the likelihood of receiving maternity care at one of Kenya's private hospitals. Health care use was also significantly related to maternal age, marital status, birth order, educational attainment, awareness, wealth (socioeconomic) in all categories, and employment. The research found that private hospitals saw a significant rise in demand for maternity care after the introduction and expansion of health insurance coverage. According to the study, health care subsidies would be more effective if spent on health insurance that provides better protection for patients in private hospitals.

Private hospitals, pharmacies, and hospitals are quickly becoming a component of a universal health care system that is funded entirely or in part by government-run health insurance in low- and middle-income countries. Montagu and Chakraborty (2021) examined Standard Survey Data: Insights into Private Sector Utilization. First, the research was more current than previous studies since it only analyzes data from 2010 to 2019, and it was also more typical of total inpatient treatment because of the changes in maternal health seeking trends since 2010. Data was gathered and analyzed across all World Health Organization (WHO) areas. The private sector was still quite important and accounts for more than 50% of all care in several countries outside of the EUROzone. Up to 40 percent of healthcare in PAHO, AFRO, and WPRO areas came from the private sector, while in SEARO and EMRO, those numbers were 57% and 62%,

respectively. For the rich, private inpatient care was the most significant kind, but the public versus private provision of outpatient treatments varied less by country of origin and level of income. Mwabu et al. (1993) found similar evidence that rising incomes lead to greater demand for medical services, with patients moving from unregulated, home-based care to more structured, institutionalised care, with the majority of these patients ultimately being seen in private or mission-run clinics.

Maina, Kithuka and Tororei (2016) conducted research to evaluate the variables that influence pregnant women's adoption of health insurance. A total of 139 pregnant women visiting the prenatal level five Kenyan hospital were sampled for this cross-sectional research. The data was gathered using a pretested interview plan. Around 86 respondents out of 139 intended to Cover the cost of their delivery with insurance. Knowing the advantages of insurance and the limitations to which claims would be settled was connected with a rise in the prevalence of insurance. income per month and the number of children had no bearing on insurance enrollment. Medical insurance adoption was correlated with marital status, postsecondary education, and an understanding of how insurance payments are paid. The study's findings, if implemented, would have given A deeper knowledge of the reasons why insurance coverage could be inadequate might serve as the basis for changes in insurance companies' policies that would increase coverage.

Ng'ang'a (2021) conducted research on the factors influencing the adoption of In Kenya's Kibera-Nairobi, low-income people have access to health insurance. Semi-structured questionnaires that were sent to Kibera houses were used to collect the data. 399 participants were selected using simple random selection. The dependent variable of the research was health insurance coverage, while the independent variables were gender, marital status, age, educational level, household size, level of income, employment, religion, and cultural views. The study utilized a binary Probit regression model for estimation. Only 27.6% of respondents,

according to the findings, had health insurance. In Kibera, Nairobi, low-income people with health insurance were strongly influenced by employment, income levels, and religion, as shown through model estimates. The most common kind of health insurance was public health insurance. In order to boost insurance penetration. It was recommended that key stakeholders and the ministry of health to increase awareness of the existing health insurance options and enhance the products' flexibility.

Kenya has made achievements Increasing the availability of health insurance via the National Hospital Insurance Fund (NHIF) which helps achieve universal health coverage (UHC). The premium contribution rates, benefit programs, and provider payments have all been modified by the NHIF procedures in 2015. The NHIF of Kenya's purchasing adjustments in the direction of universal healthcare were investigated by Mbau et al. (2020). NHIF functioned as the research's case, and the reforms served as its embedded analytical units. Through 41 in-depth interviews with key players in health financing, facility managers, and frontline healthcare providers, four focus groups with 51 members of the National Health Insurance Fund, and document reviews, the research gathered data at the national level and in two specially picked counties. An analysis of the data was done utilizing the Framework approach. The results showed that the poor buying activity were associated with the new NHIF amendments. First off, some citizen groups found the higher premium contribution rates to be exorbitant and ill justified. Furthermore, despite the fact that it was claimed that the new benefit plans were based on the demands, desires, and values of the population, they were not well explained and dispersed inequitably across different group of people.

Mutisya (2021) conducted research on the factors influencing health insurance adoption in Kitui County, Kenya. Around 357 out of 96,651 registered homes constitute the sample size. Utilizing questionnaires to acquire data. These tools were piloted in Makueni County with a sample of 35 respondents, representing 10% of the study's sample of 357. The 14 hospitals in

Kittie County were surveyed for this research during a two-month period. Statistical Package for the Social Sciences (SPSS) was used to analyze data. The study used a probit model to address the primary research question and showed that certain variables were statistically important in determining Kitui County Health Insurance uptake, while others were statistically inconsequential. The survey found that 50.98% of females had health insurance, compared to 49.02 % of men. The married had a greater enrollment rate of 247 (69.19%) than the unmarried (110; 30.81%), and education level was a significant determinant in the choice to enroll in health insurance (registration for those with higher income and the ones affiliated to social welfare groupings).

2.4 Overview of Literature

The research has examined key theories that illuminate the topic. Both Andersen's Health Behavior Model, the Grossman Model of Health Production, and Conventional health insurance theory identify demographic, social, economic, and environmental factors as crucial in determining the patterns of inpatient services between insured and uninsured patients and the effects of health insurance coverage on inpatient service utilization in kenyan private hospitals. According to the empirical research, there are several correlations between health insurance and the demand for inpatient care in Kenyan private hospitals. It was found that factors such as age, gender, occupation, marital status, household size, education level, income level, religion, cultural background, number of visits to the hospital, premium cost, and presence of preexisting conditions all play a role in whether or not low-income people have health insurance. (Mose & Orayo 2020; Ng'ang'a, 2021; Mutisya, 2021).

In addition, the research indicated a significant correlation between degree of education, gender and marital status and health insurance coverage. There is also evidence that work position, kind of employment, and employment circumstances influence health insurance enrollment. Even though participation in public health insurance is high, the majority of the people choose

private health insurance (Nguru et al., 2018; Shah et al., 2022). In addition, according to studies such as (Montagu & Chakraborty, 2021), the private sector remains relatively significant and accounts for more than half of all care in a number of nations. For the rich, private hospital care is paramount, but the debate over public versus private provision of outpatient treatments differs less by country of origin and income level.

The majority of research provides varying findings according to the variables utilized, the country of study, the target population, and the estimating technique applied. Consequently, other studies demonstrated contradictory results. Analyzing the association between different parameters and the respective health insurance and demand for inpatient care in private hospitals has used a number of estimating approaches. Among these are binary regression models such as probit, logit, and ordinary least squares. Few empirical researches have been conducted in Kenya on health insurance and the need for inpatient care in private hospitals. The majority of research has focused on either the prevalence of health insurance or the need for inpatient services in both public and private hospitals. This research fills this gap.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

In this chapter, the study presents theoretical and model specification employed in this study. Further, the description of the variables, dataset and test diagnostic test were conducted.

3.2 Theoretical Framework

The model for this research is based on the utility maximisation theory. In order to optimise utility and provide a positive health outcome, it is hypothesised that people directly benefit from health care services. A consumer's choice is influenced by the need to compare the marginal utility of two competing alternatives before selecting the option that maximises their predicted future lifetime utility while staying within their budgetary constraints.

This study adopted Mwabu (2007) framework. Rosenzweig and Schultz created a combined model of input demand for the health sector and health production,which is shown in the 1983 framework. The following utility function is expected to be maximized by an individual:

$$U = U(X, Y, H)$$ ……..…… Equation 3. 1

Therefore, a health neutral good (X), a health related good or personal activity that affects health (Y), and the individual's state of health are used to derive the corresponding utility (Y). The following health creation function is used to create the individual's health.

$$H = F(Y, Z, \mu)$$…….....… Equation 3. 2

Where Z denotes healthcare services paid by the individual, such as inpatient services. μ refers to the hereditary and environmental elements that may have an effect on a person's health condition but over which he or she has no control.

The individual optimizes his or her utility function while taking into account the budgetary constraints and the health production function;

$I = XP_x + YP_y + ZP_z$ ..... Equation 3. 3

Exogenous income is denoted by I,

P_x is the price of the health neutral good

P_y is the price of the health related good

P_z is the Cost of inpatient services

The following expression describes the demand for healthcare products, non-healthcare products, and hospital inpatient services:

$X = Dx\ (Px, Py, I, \mu)$ ..... Equation 3. 4

$Y = Dy\ (Px, Py, I, \mu)$..... Equation 3. 5

$Z = Dz\ (Px, Py, I, \mu)$..... Equation 3. 6

This data demonstrates that the demand for inpatient care is related to the pricing of other goods and services and consumer income.

3.3 Probit Estimation

The study used Probit regression model with maximum likelihood to estimate the relationship. In this study, dependent variable is measured on an individual who sought inpatient services

hence binary Probit model. This model was also used by (Muriithi, 2013) in estimation of health seeking behaviour. Binary Probit regression model assumes a normal distribution of errors (ε). This model generally makes an assumption that there exists a linear relationship between the dependent variable y^* and independent variables (X) represented as:

$y^* = \alpha + \beta' x' + \varepsilon$ …….. Equation 3. 7

Where $y^*$is the dependent/latent variable that is uptake of Inpatient services.

$x'$are the independent variables such as: socioeconomic status, distance to health and awareness levels amongst the inpatient.

α is the coefficient of constant

$\beta'$are the other parameters to be estimated

ε is the error term.

Binary Probit model assumes predictions that lie between the limiting interval (0, 1). From the equation 3.7 above, the link between unobserved variable y* to the observed variable x' is expressed as;

$$y = \begin{cases} 1 \quad \text{if} \quad y^*>0 \\ 0 \text{ if otherwise} \end{cases}$$ ……. Equation 3. 8

Where y_i is the probability of Uptake of Inpatient services; 1 if visited and was admitted, 0 otherwise. Hence adoption of the Probit model. The values of *Xs*, the probability of y* is as shown below:

Probability (y=1/x) = Probability (y>0/x)* ……. Equation 3. 9

Substituting equation 3.8 into equation 3.9; we get the cumulative density function of the error term (ε) and assuming ε assumes a normal distribution, the Probit model can be presented as:

Probability (y*=1/x) = $\Phi\ (\alpha + \beta' x' + \varepsilon)$…….. Equation 3. 10

Whereas $\Phi,$, on the other hand, stands for the standard normal distribution's cumulative distribution function. The Probit model is estimated with the maximum likelihood method, which means that any increase in explanatory factors either makes it more likely that y is observed or makes it less likely.

3.4 Estimable model

The resulting empirical model is therefore specified as follows:

$y = \beta 0 + \beta 1x1 + \beta 2x2 + \beta 3x3 + \beta 4x4 + \beta 5x5 + \beta 6x6 + \beta 7x7 + \beta 8x8 + \beta 9x9 + \beta 10x10 + \varepsilon$ …… Equation 3. 11

Where ***y*** is dummy variable (Uptake of Inpatient services), then variables of interest include; X_1= Socioeconomic status, X_2= Distance to health facility, X_3= Awareness levels, and the control variables include; X_4= Age of the patient, X_5= Marital status, X_6= Education level of the patient, X_7= Residence, X_8=Employment status, X_9= Medical insurance, X_{10}= Religion, β=coefficient of *x* which represents the marginal effect of the exploratory factor on y and έ=error term.

3.5 Definition of Variables, Measurement and Expected sign

The Table 3.1 indicates the variables definition and measurement for both dependent and independent variables under study.

Table 3.1: Description of Variables used in the Study

Variable name	Definition	Measurement	Expected Sign	Source/ Supporting literature
Dependent Variable				
Uptake of Inpatient services	Uptake of Inpatient services in Private hospitals	Dummy where 1= uptake of Inpatient services, 0 otherwise		Adinan et al., (2017) Akech et al (2020)
Independent Variables				
Medical insurance	Health insurance coverage	1 if covered by medical insurance, 0 if not medical insurance	*Positive*	Adinan et al., (2017)
Age of the patient	Age of patient	Age in complete years	*Positive*	Sigunga, (2020)
Age of patient squared	The square age of patient	Continuous variable	*Negative*	Sigunga, (2020)
Sex	This the gender of the patient	Dummy variable 1 -if Male 0- Female	*Negative*	Addai-Mensah et al (2018)
Marital status	Currently patient married	1 -if married 0- otherwise	*Positive*	Shah et al., (2015)
Education level	Education status of the patient	1 – Primary, 0 otherwise 1– Secondary, 0 Otherwise 1–post-Secondary,0 otherwise	*Positive*	Addai-Mensah et al (2018)
Socioeconomic status	Wealth Index	1=Poor, 0 if otherwise 1=middle, 0 otherwise 1 = rich, 0 otherwise	*Positive*	Ochako et al (2011)
Employment	Current working status	1 -if employed 0- otherwise	*Positive*	Shah et al., (2015)

Residence of the patient	Place where the patient stays	1- if Rural 0 – Urban	*Positive*	Adinan et al., (2017)
Religion	Individual faith/ denomination	1-if has religion, 0 if no religion	*Negative*	Adinan et al., (2017)
Distance to health facility	The distance from the nearest health facility	1 if ≥5km, 0 otherwise	*Positive*	Nkunzimana (2020)
Awareness levels	Exposure to health information	1 if access to radio, TV or newspaper, 0 otherwise	*Positive*	Akinleye, Falade, and Ajayi (2019)

3.6 Data Type and Sources

Secondary data from the Kenya Household Expenditure and Utilization Survey were used for this analysis (2018). The 2018 KHHEUS sample was created so that estimates could be obtained for a wide range of indicators on both the national and county levels. The study aimed to reach out to 37,500 families from a total of 1,507 clusters (923 in rural and 577 in urban regions). First, clusters were chosen using a stratified sampling technique, and then, using the same design, 25 homes were randomly selected from each cluster. The 2018 KHHEUS gathered data from 31662 families throughout the 47 Counties, shedding light on the demographic and socioeconomic factors that impact healthcare usage and spending. The study takes a cross-sectional approach to gathering data on demographics, health-seeking habits, and health insurance coverage within homes.

3.7 Diagnostic Tests

Multicollinearity analysis is necessary because individuals are seen at the same instant in time, and heteroscedasticity is present because the variances of the error components in regression models often change between observations. Multicollinearity and heteroscedasticity undermine the efficiency of estimators used for modelling data with unknown uncertainty. Since this is

the case, correcting for multicollinearity and heteroscedasticity, if they exist, is required for accurate standard errors to be applied in hypothesis testing.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Introduction

The research set out to see whether there was a correlation between having health insurance and using private hospitals as an inpatient. The study's overarching purpose was to investigate the relationship between health insurance ownership and the use of inpatient treatments in Kenya's private hospitals. Specifically, a probit regression model was utilised to estimate the multiple regression model's parameter coefficients. There are a few presumptions made by the model. To guarantee that model features hold, diagnostic tests are performed before real estimate. In this study, we employ cross-sectional data.

4.2 Patterns in demand for inpatient healthcare services among private hospitals

A total of 31, 662 individuals were surveyed. The inpatient admission rate was estimated to be 3.3 percent of the total population in the 12 months preceding the survey. Those who demanded private hospitals were 39.3 percent of the total inpatient admissions during the entire period preceding the survey. Thus, on the total population, the demand for private admissions in the private hospitals were 1.31 percent. The findings are as shown in table 4.1.

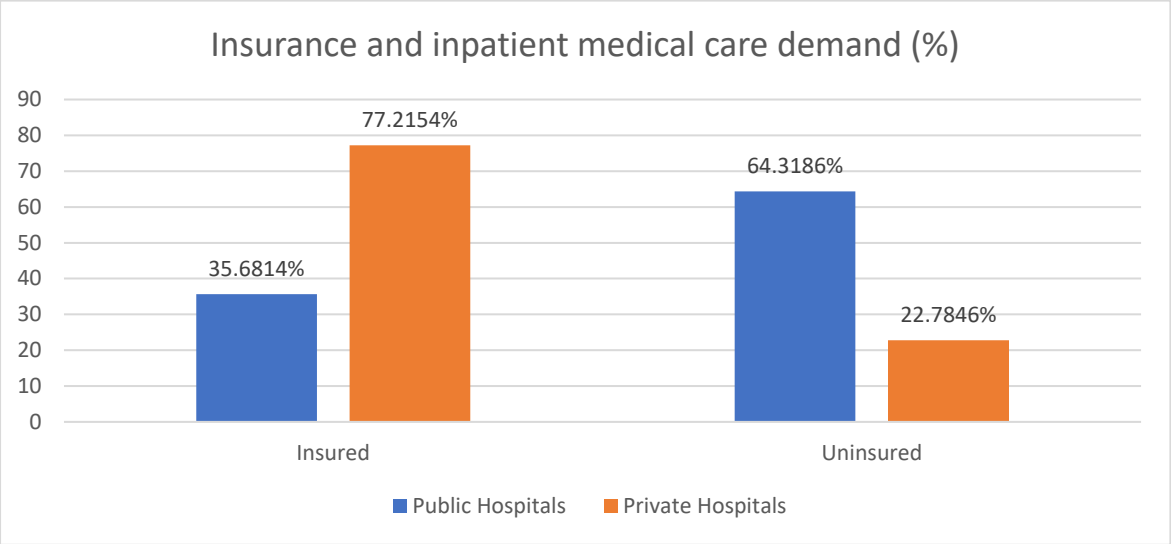
Table 4.1: Trends in demand for inpatient hospitalization (private hospitals)

Variables	Observations	Mean	Std. Dev.	Min	Max
Demand for Inpatient care (overall)	31,662	.0334	.2287	0	1
Demand for Inpatient care (Private)	31,662	.0131	.1849	0	1

4.3 Trends in demand for inpatient healthcare services and insurance status

A total of 1,058 individuals demanded for inpatient admission in the private hospitals in the 12 months preceding the survey. Figure 4.1 shows the trends;

Figure 4.1: Demand for inpatient care and insurance status



Those who consumed inpatient healthcare services in public hospitals, 35.7 percent were insured while 64.3 percent were not insured. On the other hand, those who consumed inpatient healthcare services in private hospitals, 77.2 percent were insured while 22.8 percent were not insured. It could thus be concluded that insurance and health seeking behaviour for private hospital are highly correlated.

4.4 Demographic and Socio-Economic Characteristics of the respondents

In this analysis, we take into account descriptive statistics like mean, standard deviation, minimum, and maximum. Variations from the mean are represented by the standard deviation, whereas the mean itself is represented by the mean. Specific independent variables included participants' ages, sexes, marital and educational statuses, incomes, health care coverage, levels of knowledge and understanding, places of employment and residence, religious affiliations, and travel times to medical facilities. The findings are as shown in table 4.2.

Table 4.2: Summary Statistics

Variables	Observations	Mean	Std. Dev.	Min	Max
Medical insurance	31,662	0.2021	0.3214	0	1
Age of the patient	31,662	36.03	22.24	12	89
Sex (male=1)	31,662	0.4864	0.5007	0	1
Marital status	31,662	0.3141	0.4636	0	1
Education level					
Primary	31,662	0.5492	0.4976	0	1
Secondary	31,662	0.2373	0.4274	0	1
Post-Secondary	31,662	0.04103	0.2123	0	1
Socioeconomic status					
Poor	31,662	0.5457	0.4283	0	1
Middle	31,662	0.2321	0.4255	0	1
Rich	31,662	0.2041	0.3685	0	1
Employment	25,748	0.2564	0.4394	0	1
Residence of the patient	31,662	0.3315	0.4692	0	1
Religion	23,167	0.9611	0.1914	0	1
Distance to health facility	18,492	0.2719	0.4440	0	1
Awareness levels	14,745	0.3742	0.4842	0	1

Source: Computation Based on KHHEUS (2018)

From the finding in table 4.1, respondents who had insurance cover were 20.0 percent. The respondents were approximately aged 36 years on average with the youngest being less than 12 years while the oldest was 89 years. About half of the participants in the survey were identified as male. According to the results, little over half of the population has completed at least the first level of schooling. Only around a quarter had completed high school, while only about 4% had completed college.

Most respondents (80%) fell within the top two wealth quintiles on the index. That so, it was noticeable that there was essentially no difference in distribution amongst the five wealth quintiles. The poor respondents were 55 percent. Those who were in middle wealth level were 23 percent and the rich were 20 perecent respectively. The results further revealed that 26% of the respondents had reported to have been employed whereas 33% of the respondents were reported to be living in urban areas. Majority of the respondents that is 96% had a religion and finally only 27 percent of the respondents who were living far from the healthcare services facility. On the awareness level 37 percent of the respondents were reported to those who access to radio, TV or newspaper.

4.5 Diagnostic Tests

Multicollinearity analysis is necessary because individuals are seen at the same instant in time, and heteroscedasticity is present because the variances of the error components in regression models often change between observations. Multicollinearity and heteroscedasticity undermine the efficiency of estimators used for modelling data with unknown uncertainty. Since this is the case, correcting for multicollinearity and heteroscedasticity, if they exist, is required for accurate standard errors to be utilised in hypothesis testing.

4.5.1 Multicollinearity Analysis

Multicollinearity develops when independent variables have a clear linear connection. The appendix 1 correlation matrix and table 4.3 VIF test results are shown. According to the findings of the VIF test, all variables had a VIF value less than 10 and a tolerance value more than 1, indicating the absence of multicollinearity. In addition, to test for pairwise correlation, the correlation matrix revealed that the variable uptake of inpatient services had a positive correlation with Age, age of the patient squared, marital status, education level, wealth index, medical insurance, employment, patient residence, and distance to the health facility. On the

other hand, gender, degree of awareness, and religion were revealed to have a negative connection with the dependent variable of inpatient care use. Observably, the correlation coefficients were below 0.5, indicating the lack of multicollinearity. However, the correlation coefficient between age of the patient squared and age of the patient was very high (r=0.940), but this was due to the secondary variable being derived from the primary variable. To verify Multicollinearity, the research calculated Variance of Inflation Factors (VIF). The suggested threshold is a VIF of 10 with a minimum tolerance value of 1. 0.1. The results are in table 4.3.

Table 4.3: Variance Inflation Factor Analysis

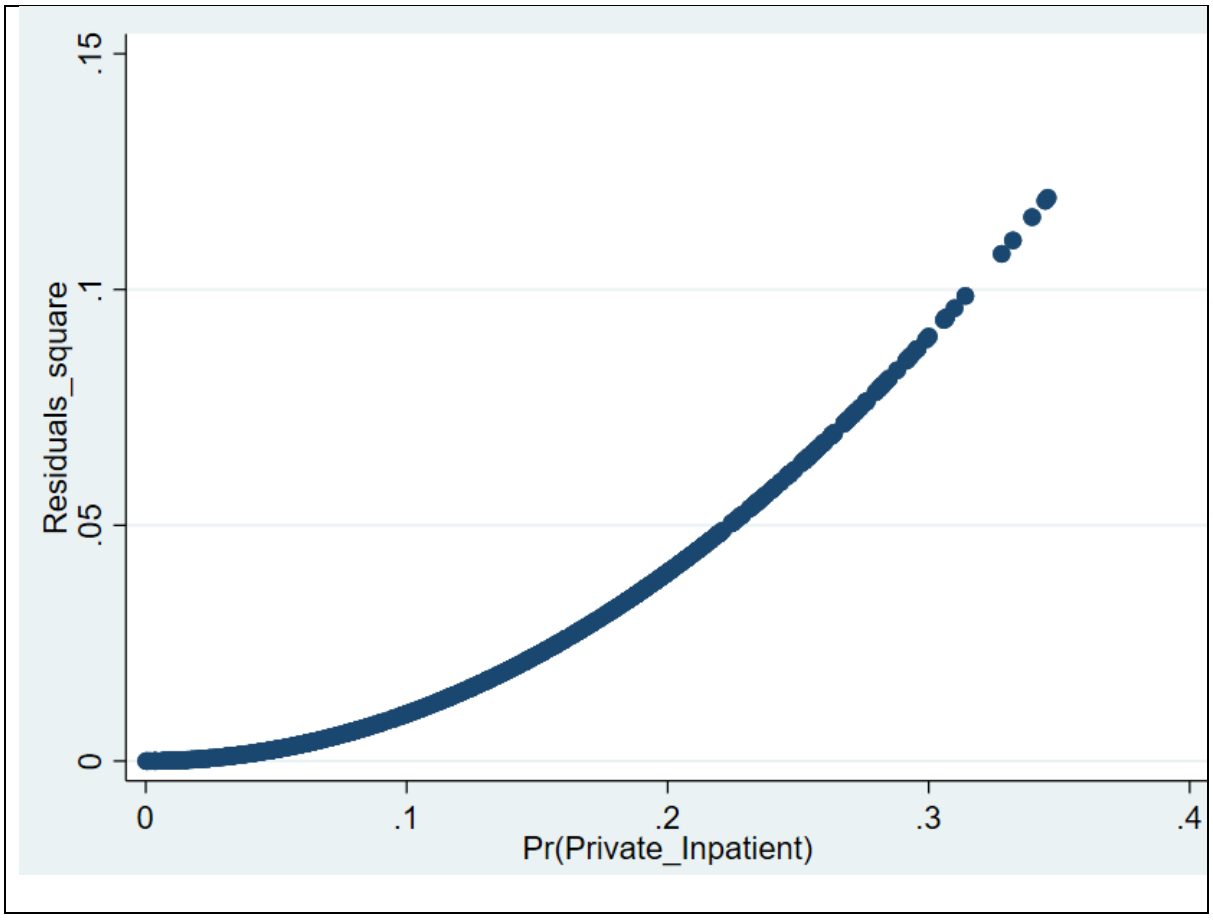
Variable	VIF	1/VIF
Age	1.221	0.8190
Age sq.	1.345	0.7435
Gender	1.521	0.6575
Marital status	1.460	0.6849
Education		
Primary	2.482	0.4036
Secondary	2.451	0.4074
Post-Secondary	1.533	0.6546
Wealth Index		
Middle	1.712	0.5844
Rich	1.651	0.6050
Awareness level	1.178	0.8489
Medical insurance	1.212	0.8250
Employment	1.128	0.8865
Residence of the patient	1.293	0.7734
Religion	1.022	0.9785
Distance to health facility	1.052	0.9506

Source: Computation Based on KHHEUS (2018)

4.5.2 Tests for Heteroscedasticity

The Breusch Pagan test was used to identify instances of heteroscedasticity. In order to determine whether heteroscedasticity existed, graphs had to be plotted as part of the test. The consistent trend established infers presence of heteroscedasticity. Since estimation of the model with no constant variance leads to ambiguous estimates, the study used robust standard errors which correct the problem.

Figure 4.2: Heteroscedasticity test



4.6 Model Estimation and Interpretation of the results

4.6.1 Introduction

Probit indexes and marginal effects were assessed to shed light on the relative importance of each factor found to have on the proportion of Kenyans who need inpatient care. Table 4.4 displays the results of an analysis of the suggested probit model and its associated indices. Overall, the p-values from the model estimate were less than the 5% threshold of significance (Prob > chi2 was 0.0000), suggesting that the discovered determinants adequately described the dependent variable (uptake of inpatient services in private hospitals in Kenya). Pseudo R2 = 0.2404 (24%); this illustrates how much explanation can be attributed to outside factors when examining use of private hospitals' inpatient services in Kenya.

Table 4.4: Probit Marginal Effects (Dependent variable - Uptake of Inpatient services)

Probit regression
Number of obs = 14,730
Wald chi2(14) = 215.50
Prob > chi2 = 0.0000
Log pseudo-likelihood = -1619.2184
Pseudo R2 = 0.2404

Demand for INP	**Marginal Effects (dy/dx)**	**Robust Std. Errors**	**t-statistics**	**P values**	**[95% Conf. Interval]**	
Medical insurance	.076455**	.0169306	4.52	0.000	.0432715	.1096384
Age of the patient	.1164755**	.0216045	5.39	0.000	.0741313	.1588196
Age squared	-.1437804**	.015015	-9.58	0.000	-.1732093	-.1143516
Sex (male=1)	-.0156652	.012859	-1.22	0.223	-.0408684	.009538
Marital status	-.0167006	.0152579	-1.09	0.274	-.0466055	.0132042
Education level						
Primary	.479012**	.084630	5.66	0.000	.314328	.643717
Secondary	.446325**	.090794	4.92	0.000	.268593	.624189
Post-Secondary	.5778413**	.101629	5.69	0.000	.378653	.777015

Socioeconomic status						
Middle	.020484	.039814	0.51	0.609	-.057727	.098574
Rich	.108927	.059937	1.82	0.069	-.00861	.226332
Employment	.091804**	.038823	2.37	0.018	.015974	.167884
Residence of the patient	-.1182591	.0765338	-1.55	0.122	-.2682625	.0317443
Religion	-.0057218	.0172801	-0.33	0.741	-.0281465	.0395901
Distance to health facility	.0159887	.0134626	1.19	0.235	-.0103975	.042375
Awareness levels	.1056102**	.0194084	5.44	0.000	.0675704	.1436499

(**) Significant at 5% level.

4.6.2 Interpretation of the probit results

Marginal impacts are shown in table 4.4. In Kenya, private hospitals had a positive and statistically significant increase in inpatient treatment use after adjusting for the variable of interest, medical insurance coverage (=.076455, p value=0.000). The likelihood of inpatient care use was 7.6% higher for insured patients as compared to uninsured individuals while controlling for confounding variables.

At the 5% level, it was discovered that the age correlation was positive and statistically significant (β=.1164755, p =0.000). This indicates that, if other variables remain constant, an increase in the respondent's age raises the likelihood that a person would need inpatient care by 11.6%. However, it was discovered that the age squared correlation (β= -0.1437804, p = 0.000) had a detrimental and statistically significant impact at the 5% level. This indicates that the individual consumption of inpatient care was not linearly related to age. The fact that the age of the patients was not linearly correlated with their utilisation of inpatient treatments suggested that as the patients age, this impact becomes smaller.

Sex of the patients (β=-.0156652, p=0.223) were found to have negative effect and statistically not significant in determining uptake of inpatient services in private hospitals in Kenya. It was shown that, males were associated with reduced probability of using inpatient services by 1.6 percent holding other factors constant compared to female.

The coefficient on marital status (β=-.0156652, p=0.223) had a negative and a non-significant effect on uptake of inpatient services in private hospitals in Kenya. This means that married patients were less likely to utilize inpatient services by 1.7 percent at ceteris paribus. The effect was however not significant.

In terms of educational attainment, the primary education coefficient (β=.479012, p=0.000) shows that respondents with elementary education had a 47.9 percent greater likelihood of using inpatient services than those without any education. According to the secondary education coefficient (β=.446325, p=0.000), respondents who had at least a secondary education took use of inpatient care at a rate that was 44.6 percent higher than that of respondents without any formal education. The results also showed a positive and statistically significant coefficient for post-secondary education (β=0. 5778413, p value=0.000). This indicates that people with higher stated levels of education had a 57.8% greater likelihood of using inpatient treatment compared to persons with lower levels of education. This means that one prefers to correlate with the absorption of inpatient care thought to be supplied at the private health institutions as one develops intellectually.

Three levels of respondents' quintiles of wealth were evaluated by the research. As a starting point, those in the lowest percentile of wealth were considered. The coefficient for the middle quintile of wealth was not statistically significant (β=0. 020484, p value = 0.609,). This indicates that, when controlling for other variables, patients in the medium income quintile were 2.0 percent more likely to use inpatient treatment than those in the low wealth quintile.

The coefficient for the richest quintile of wealth was not statistically significant (β=0. 108927, p value = 0.069). The outcome suggests that inpatients in the wealthy wealth quintile were 10.9 percent ceteris paribus more likely to use inpatient services than those in the poor wealth quintile. The data on wealth quintiles suggest that people in higher wealth quintiles are more likely to use inpatient treatments in Kenyan private hospitals. However, neither level showed statistical significance. This may be explained by people with higher income levels caring more about their health and being able to afford the expensive medical treatment provided at private hospitals.

The employment coefficient was positive and statistically significant at 5% (β=.091804, p value=0.018). The findings demonstrate that, when controlling for other variables, employment substantially increased the likelihood of using inpatient treatment by 9.18 percent. According to this research, patients who are working in any capacity are more likely to cover the cost of receiving inpatient care in private hospitals as well as other related expenses than patients who are unemployed.

The coefficient on residence (β= -.1182591, p value=0.122) was negative and statistically not significant at 5 percent. The results show that residing in rural areas decreased the probability of uptake of inpatient services significantly by 11.8 percent holding other factors constant. This finding means that patients who are on in rural areas may be facing other difficulties in accessing the health facilities.

The coefficient on religion (β= -.0057218, p value=0.741) was negative and statistically not significant at 5 percent. The results show that having a religious affiliation decreased the probability of uptake of inpatient services insignificantly by 0.6 percent holding other factors constant. This finding means that patients who are on affiliated religiously may be depending on their spiritual believes with regards to seeking care.

On the coefficient for distance to health facility was positive and statistically not significant (β=.0159887, p value= 0.235). The study indicated that individuals residing in had lower likelihood of demand for uptake of inpatient services in private hospital at 5% level of significance by 1.6% holding other factors constant.

A positive and statistically significant coefficient for awareness levels was found (β=.1056102, p 0.000). The research found that, at a 5% level of significance, those who had access to health information via the media were very likely to increase demand for inpatient treatments in private hospitals by 10.6% while controlling for other variables. Health information promotes consumers to use health services more often, some of which may be primarily found in private hospitals owing to a higher possibility of medical supply availability.

4.7 Discussions of Regression Results

The results presented from the marginal effects table are discussed in line with the reviewed literature. The coefficient on the variable of interest that is medical insurance ownership had a positive and statistically significant effect on uptake of inpatient services in private hospitals in Kenya. These finding was confirmed by the results obtained by Mose and Orayo (2020) who studied how insurance affects the availability and quality of maternal health care in Kenyan private hospitals. The research found that private hospitals saw a significant rise in demand for maternity care after the introduction and expansion of health insurance coverage. According to the study, health care subsidies would be more effective if spent on health insurance that provides better protection for patients in private hospitals. Also, the finding confirms to the study results conducted in a Kenyan informal urban settlement, by Wambiya et al. (2021) who looked at the patterns and factors that influence how people use private and public health care. Health insurance coverage accessibility coverage, satisfaction with the cost of care, and the presence of an acute infection were significantly correlated with the use of private facilities in the second model comparing them to other facilities.

Age was shown to have a positive coefficient that was statistically significant at the 5% level. This shows the likelihood that a person will need inpatient care grows as the respondent's age does. However, it was shown that the coefficient of age squared had a detrimental and statistically significant impact at the 5% level. This indicates that the individual consumption of inpatient care was not linearly related to age. Because patient ages were not linearly analysed, it was inferred that a patient's advancing age had a smaller impact on how often they need inpatient care. The results coincide with those of Shah et al. (2022), who performed research on how social health security is used in households plan in the Illam area of Nepal. The study concluded that the existence of children under 5, chronic illness in the household, gender, and age all had a significant impact on program utilization.

Sex of the patients were found to have negative effect and statistically not significant in determining uptake of inpatient services in private hospitals in Kenya. It was shown that, males were associated with reduced probability of using inpatient services compared to female. Nguru et al., (2018) conducted research to determine the percentage of Embu hospital patients with health insurance. The correlation between gender and health insurance consumption was statistically significant . Also, a study by Ng'ang'a (2021) on the factors influencing the adoption of health insurance services in Kenya's Kibera-Nairobi, revealed that gender, marital status, age, educational level, sizes of households, level of income, employment, religion, and cultural views influence use of health insurance services.

The coefficient on marital status (β=-.0156652, p=0.223) had a negative and a non-significant effect on uptake of inpatient services in private hospitals in Kenya. This indicates that patients that were in marriage’s utilization of the inpatient services was less likely by 1.7 percent at ceteris paribus. The effect was however not significant. This was also revealed by Ng'ang'a

(2021) on the variables influencing Kenya's adoption of health insurance services in Kenya's Kibera-Nairobi, revealed that marital status influence use of health insurance services.

In terms of educational attainment, the primary education coefficient (β=.479012, p=0.000) shows that respondents with elementary education had a 47.9 percent greater likelihood of using inpatient services than those without any education. According to the secondary education coefficient (β=.446325, p=0.000), respondents who had at least a secondary education took use of inpatient care at a rate that was 44.6 percent higher than that of respondents without any formal education. The results also showed a positive and statistically significant coefficient for post-secondary education (β=0. 5778413, p value=0.000). This indicates that people with higher stated levels of education had a 57.8% greater likelihood of using inpatient treatment compared to persons with lower levels of education. This suggests that when a person's academic standing increases, so does their propensity to use the inpatient treatments thought to be provided by private healthcare institutions. Ng'ang'a's (2021) results, which showed that educational levels affect utilisation of health insurance services, provide credence to the research. But it was different than Mahinda's (2013) results, which indicated that schooling had a statistically inconsequential impact.

Three levels of respondents' quintiles of wealth were evaluated by the research. As a starting point, those in the lowest percentile of wealth were considered. The middle wealth quintile's coefficient was positive but not statistically significant. Also, the coefficient on the rich wealth quintile was positive but not statistically significant. The study differs from the findings of Montagu and Chakraborty (2021) who examined standard survey data by exploring the insights into private sector utilization. They concluded that the rich, private inpatient care was the most significant kind, but the public versus private provision of outpatient treatments varied less by country of origin and level of income. There were three tiers of wealth assessment in this

research. People in the bottom wealth quintile were used as a benchmark. Not statistically significant positive results were found for the coefficient on the middle wealth quintile.

At 5%, the employment coefficient was both positive and statistically significant. A higher likelihood of using inpatient care was seen among those who had a job. This finding concurs with those of Ng'ang'a (2021) who revealed that level of income and employment, influence use of health insurance services. Mose and Orayo (2020) supported this finding, by concluding that health care use was also significantly related to wealth (socioeconomic) index in all categories, and employment.

The coefficient on residence was negative and statistically not significant at 5 percent. The results show that residing in rural areas decreased the probability of uptake of inpatient services significantly. This finding means that patients who are on in rural areas may be facing other difficulties in accessing the health facilities. Despite agreeing with the finding of Shah et al. (2022) on the fact that residence reduces use of care, it differed on the significance. Shah et al (2022) concluded that the existence of children under 5, chronic illness in the household, gender, residence and age all had an impact on program utilization.

The coefficient on religion was negative and statistically not significant at 5 percent. The results show that having a religious affiliation decreased the probability of uptake of inpatient services insignificantly. This finding means that patients who are on affiliated religiously may be depending on their spiritual believes with regards to seeking care. Also, Ng'ang'a (2021) concluded that religion, and cultural views influence use of health insurance services.

On the coefficient for distance to health facility was positive and statistically not significant. The study indicated that individuals residing in had lower likelihood of demand for uptake of inpatient services in private hospital. The findings differed with the results of Mose and Orayo

(2020) who revealed that health care use was significantly related distance to the nearest health facility.

There was a positive and statistically significant coefficient for degrees of awareness. At a 5% significance level, the research found that those who had access to health information via the media were more likely to use the inpatient services of a private hospital. Mose and Orayo (2020) supported this finding, by concluding that health care use was also significantly related to educational attainment and awareness.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND POLICY RECOMMENDATIONS

5.1 Introduction

This chapter gives a presentation of the study's results as well draws some inferences from them on the connection between health insurance demand and use of inpatient healthcare services in private hospitals in Kenya. Afterwards, the study proposes areas for further study as well as propositions for policymakers.

5.2 Summary of the study findings

Different nations have instituted varying health finance models, some including universal health insurance coverage via National Health Insurance Services and others involving a plethora of health insurance options but little out-of-pocket costs for patients. Several studies have looked at the variables that play a role in determining whether an individual would use a health care provider, whether personal or public, as well as whether or not to get health insurance. Costs of services and efficiency of access to services in either institution are the most researched elements thought to affect such choices. The study's primary aim was to examine how having health insurance influences the demand for inpatient treatments in Kenya's private hospitals. The following were the specific objectives; to assess the patterns of inpatient services between the insured and the uninsured patients in private hospitals in Kenya, and to examine the effects of health insurance ownership on utilization of inpatient services in private hospitals in Kenya. The study utilized KHHEUS (2018) dataset.

The influence of many control variables was determined using a probit regression model to establish the connection. The level of significance used in the investigation was 5%. Utilization of private Kenyan hospitals' inpatient care facilities served as the study's dependent variable. The independent variable of interest was medical insurance ownership. Control variables used

in this study include elements such as physical age, sexual orientation, marital status, and level of education, and socioeconomic status, awareness level, employment, residence of the patient, religion and distance to health facility.

5.3 Conclusions

From the findings, the inpatient admission rate was estimated to be 3.3 percent of the total population (31, 662 households). However, the demand for private hospital admissions were 39.3 percent of the total inpatient admissions during the entire period preceding the survey. Considering the total population, it could also be seen that the demand for admissions in the private hospitals were 1.31 percent. Those who consumed inpatient healthcare services in public hospitals as well as insurance status, 25.7 percent were insured while 64.3 percent were not insured. On the other hand, those who consumed inpatient healthcare services in private hospitals as well as insurance status, 77.2 percent were insured while 22.8 percent were not insured.

The study also concluded that medical insurance or health insurance coverage was significantly related to inpatient healthcare services use in private hospitals in Kenya. Among the control variables, it was revealed that age, age squared, education levels (primary, secondary and tertiary), employment, and awareness levels had a significant effect whereas sex, marital status, socioeconomic status, residence, religion and distance to the health facility had a non-significant effect on use of inpatient healthcare services in private hospitals in Kenya. Among the significant factors, only age squared had a negative effect on demand for inpatient healthcare services in private hospitals.

5.4 Policy Recommendations

To promote increased use of public healthcare services across the country, the study recommends for policy shift that is patient centred and cost friendly with effective service

delivery. The age of the woman came out as a strong determinant linked to the use of inpatient healthcare services. Age of the woman came out as a strong determinant associated with utilization of inpatient healthcare services. Thus, there is need to customize inpatient healthcare services so as to fit the needs of older population to encourage utilization of public healthcare services. Since healthcare is devolved, there is need for county governments to benchmark the good practices employed by their counterparts in the private hospitals so that they can attract use of inpatient healthcare services in public hospitals. Well educated inpatients have high chances to find work within the contemporary economy as well, as a result, will be at the vanguard of the privately invested infrastructure. Hence the government needs to have a soft or policy approach to the employees to use healthcare services from the public hospitals across the country especially on inpatient care. Individuals will be better able to make educated choices and take use of public hospital healthcare services if they have a better understanding of such services thanks to educational interventions aimed at expanding their knowledge of those services. This is due to the fact that in Kenya, private hospital inpatient care use was significantly correlated with educational attainment and health literacy.

Finally, public and private sectors need to work together to improve health in order to provide individuals and families more agency in using public health facilities. This is due to the fact that inpatient healthcare use in Kenyan private hospitals was significantly influenced by a patient's job level. An individual's ability to advocate for themselves is widely acknowledged as a key factor in their use of Kenya's publicly funded healthcare system.

5.5 Areas for Further Studies

The main objective of this study was to establish a connection between the need for health insurance and the receipt of inpatient medical treatment in private hospitals in Kenya. The research focused on the use rates of private hospital inpatient healthcare services among both insured and uninsured individuals. Also explored is how the availability of medical insurance

affects the rate at which private hospitals in Kenya's capital city of Nairobi are used for inpatient treatment. Although information on family income would have helped paint a more complete picture of the expenditure income balance, it was not included in the data set utilised.

The method of estimate used was purely binary. Other methods, such as the more dynamic two-stage least-squares models or the more traditional ordinary least-squares (OLS), need to be tried as well. Using primary (qualitative) data for comparison, this study calls for further research on the usage of inpatient care services at the facility level (primary healthcare facilities) in Kenya. More research is needed to determine the exact role that cultural values, sociocultural characteristics, and health system issues play in determining whether or not a patient utilises inpatient healthcare services. More empirical research is needed, taking into account political and other issues.

REFERENCES

Addai-Mensah, O., Annani-Akollor, M. E., Fondjo, L. A., Sarbeng, K., Anto, E. O., Owiredu, E. W., & Arthur, S. N. (2018). Regular antenatal attendance and education influence the uptake of intermittent preventive treatment of malaria in pregnancy: a cross-sectional study at the university hospital, Kumasi, Ghana. Journal of Tropical Medicine, 2018.

Adinan, J., Damian, D. J., Mosha, N. R., Mboya, I. B., Mamseri, R., & Msuya, S. E. (2017). Individual and contextual factors associated with appropriate healthcare seeking behavior among febrile children in Tanzania. PLoS One, 12(4), e0175446.

Adinan, J., Damian, D. J., Mosha, N. R., Mboya, I. B., Mamseri, R., & Msuya, S. E. (2017). Individual and contextual factors associated with appropriate healthcare seeking behavior among febrile children in Tanzania. PLoS One, 12(4), e0175446.

Akinleye, S. O., Falade, C. O., & Ajayi, I. O. (2019). Knowledge and utilization of intermittent preventive treatment for malaria among pregnant women attending antenatal clinics in primary health care centers in rural southwest, Nigeria: a cross-sectional study. BMC pregnancy and childbirth, 9(1), 1-9.

Andersen, R. M. (1995). Revisiting the behavioral model and access to medical care: does it matter?. *Journal of health and social behavior*, 1-10.

Assefa, Y., Hill, P. S., Gilks, C. F., Admassu, M., Tesfaye, D., & Van Damme, W. (2020). Primary health care contributions to universal health coverage, Ethiopia. *Bulletin of the World Health Organization*, *98*(12), 894.

Berry, W. D., Feldman, S., & Stanley Feldman, D. (1985). Multiple regression in practice (No. 50). Sage.

Bertch D. A. (2012). *Quality and Safety Education in Newly Hired RNs and RNs in Staff Leadership Roles*. Doctoral Dissertations Graduate Research and Creative Practice 12-11-2012. *Grand Valley State University*

Besley, T. (1991). *The Demand for Health Care and Health Insurance. Providing health care: The economics of alternative systems of finance and delivery*. Paperback reprint. A. McGuire, P. Fenn and K. Mayhew. Oxford and New York, Oxford University Press: 46-64.

Costa, K., & Siganga, S. (2020). Implementing The COSTA Municipal Change Model (MCM).

Costa, K., & Siganga, S. (2020). Implementing The COSTA Municipal Change Model (MCM).

Ede, Victor, Martha Okafor, Rosemary Kinuthia, Zena Belay, Teclemichael Tewolde, Ernest Alema-Mensah, and David Satcher. "An examination of perceptions in integrated care practice." *Community mental health journal* 51, no. 8 (2015): 949-961.

Everitt, B. S., & Skrondal, A. (2010). The Cambridge dictionary of statistics.

Garg, S., Bebarta, K. K., & Tripathi, N. (2020). Assessing the Pattern of Utilisation and Out of Pocket Expenditure in Public and Private Hospitals in India–Lessons for Universal Health Coverage from the Healthcare Rounds of National Sample Survey 1996 to 2017.

Gillam, S., & Siriwardena, A. N. (2014). Evidence-based healthcare and quality improvement. *Quality in primary care*, *22*(3), 125-132.

Grossman, M. (1999). The human capital model of the demand for health.

Kasirye, I., Ssewanyana, S., Nabyonga, J., & Lawson, D. (2004). Demand for health care services in Uganda: implications for poverty reduction.

Maina, J. M., Kithuka, P., & Tororei, S. (2016). Perceptions and uptake of health insurance for maternal care in rural Kenya: a cross sectional study. Pan African medical journal, 23(1).

Mbau, R., Kabia, E., Honda, A., Hanson, K., & Barasa, E. (2020). Examining purchasing reforms towards universal health coverage by the National Hospital Insurance Fund in Kenya. International Journal for Equity in Health, 19(1), 1–18.

Mbau, R., Kabia, E., Honda, A., Hanson, K., & Barasa, E. (2020). Examining purchasing reforms towards universal health coverage by the National Hospital Insurance Fund in Kenya. *International journal for equity in health*, *19*(1), 1-18.

Montagu, D., & Chakraborty, N. (2021). Standard Survey Data: Insights Into Private Sector Utilization. *Frontiers in Medicine*, *8*, 624285.

Mose, G. N., & Orayo, J. A. (2020). Health Insurance Deepening and Its Impact on Maternal Healthcare Demand in Private Hospitals in Kenya.

Mose, G. N., & Orayo, J. A. (2020). Health Insurance Deepening and Its Impact on Maternal Healthcare Demand in Private Hospitals in Kenya.

Muriithi, M. K. (2013). The determinants of health-seeking behavior in a Nairobi slum, Kenya. *European Scientific Journal*, 9(8).

Mutisya, J. N. (2021). *Factors Influencing Kitui County Health Insurance Cover Uptake in Kenya* (Doctoral dissertation, University of Nairobi).

Mwabu, G. (2007). Health economics for low-income countries. Handbook of development economics, 4, 3305-3374.

Ng'ang'a, E. W. (2021). *Determinants of Health Insurance Uptake Among Low Income Populations in Kibera-nairobi, Kenya* (Doctoral dissertation, University of Nairobi).

Nguru, C. N., Kodhiambo, M. O., & Yitambe, A. (2018). Uptake of Health Insurance among Patients Attending Public and Private Hospitals in Embu County, Kenya. *International Journal of Innovative research and Studies*, *8*.

Nkunzimana, E. (2020). Knowledge and Utilization of Intermittent Preventive Treatment of Malaria among Pregnant Women in Muramvya Health District, Burundi, 2018. *EA Health Research Journal*, 4(1), 81-91.

Obadha, M., Chuma, J., Kazungu, J., & Barasa, E. (2019). Health care purchasing in Kenya: Experiences of health care providers with capitation and fee-for-service provider payment mechanisms. The International Journal of Health Planning and Management, 34(1), e917–e933.

Ochako, R., Fotso, J. C., Ikamari, L., & Khasakhala, A. (2011). Utilization of maternal health services among young women in Kenya: insights from the Kenya Demographic and Health Survey, 2003. BMC pregnancy and childbirth, 11(1), 1-9.

Pauly, M. (1968). *The Economics of Moral Hazard: Comment.* American Economic Review 58: 531-537.

Ringel, J. S., Hosek, S. D., Vollaard, B. A., & Mahnovski, S. (2002). The elasticity of demand for health care. A review of the literature and its application to the military health system.

Shah, S., Bellows, B. A., Adedipe, A. A., Totten, J. E., Backlund, B. H., & Sajed, D. (2015). Perceived barriers in the use of ultrasound in developing countries. *Critical ultrasound journal*, 7(1), 1-5.

Shah, S., Jha, N., Khanal, V. K., Nepal Gurung, G., Sharma, B., & Shrestha, M. (2022). Utilization of social health security scheme among the households of Illam district, Nepal. *PloS one*, *17*(5), e0265993.

Sieverding, M., Onyango, C., & Suchman, L. (2018). Private healthcare provider experiences with social health insurance schemes: Findings from a qualitative study in Ghana and Kenya. PLoS One, 13(2), e0192973.

Suchman, L. (2018). Accrediting private providers with National Health Insurance to better serve low-income populations in Kenya and Ghana: A qualitative study. International Journal for Equity in Health, 17(1), 1–18.

Wambalaba, F. W., Son, B., Wambalaba, A. E., Nyong'o, D., & Nyong'o, A. (2019). Prevalence and capacity of cancer diagnostics and treatment: A demand and supply survey of health-care facilities in Kenya. Cancer Control, 26(1), 1073274819886930.

Wambiya, E. O., Otieno, P. O., Mutua, M. K., Donfouet, H. P. P., & Mohamed, S. F. (2021). Patterns and predictors of private and public health care utilization among residents of an informal settlement in Nairobi, Kenya: a cross-sectional study. *BMC Public Health*, *21*(1), 1-11.

Wambua, S., Malla, L., Mbevi, G., Nwosu, A.-P., Tuti, T., Paton, C., Cheburet, S., Manya, A., English, M., & Okiro, E. A. (2021). The indirect impact of COVID-19 pandemic on inpatient admissions in 204 Kenyan hospitals: An interrupted time series analysis. PLOS Global Public Health, 1(11), e0000029.

APPENDICES

Appendix 1: Correlation matrix

Variables	Age of the patient	Gender	Age of the patient Squared	Marital status	Education Level	Wealth Index	Awareness Level	Medical Insurance	Employment	Residence of the patient	Religion	Distance to the health facility
Age of the patient	1	-.011**	.940**	.528**	.089**	.028**	-.050**	.099**	.465**	.001	-.048**	.099**
Gender	-.011**	1	-.004	-.006*	.057**	-.005*	.145**	.017**	.098**	-.002	-.047**	-.005
Age of the patient Squared	.940**	-.004	1	.354**	-.035**	-.009**	-.061**	.057**	.317**	-.018**	-.048**	.091**
Marital Status	.052**	-.006*	.354**	1	.101**	.083**	.108**	.156**	.502**	.037**	-.029**	.052**
Education Level	.089**	.057**	-.035**	.101**	1	.297**	.285**	.224**	.202**	.153**	.027**	-.006
Wealth Index	.028**	-.005*	-.009**	.083**	.297**	1	.321**	.287**	.156**	.482**	.034**	-.088**
Awareness levels	-.050**	.145**	-.061**	.108**	.285**	.321**	1	.186**	.192**	.102**	.027**	.019
Medical insurance	.099**	.017**	.057**	.156**	.224**	.287**	.186**	1	.196**	.142**	.009**	.039**
Employment	.465**	.098**	.317**	.500**	.202**	.156**	.192**	.196**	1	.081**	-.057**	.020**
Residence of the patient	.001	-.002	-.018**	.037**	.153**	.482**	.102**	.142**	.081**	1	.000	-.157**
Religion	-.048**	-.047**	-.048**	-.029**	.027**	.034**	.027**	.009**	-.057**	.000	1	-.012
Distance to the health facility	.099**	-.005	.091**	.052**	-.006	-.088**	.019	.039**	.020**	-.157**	-.012	1