

EQUITY IN UTILISATION OF HEALTH CARE SERVICES IN KENYA

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DECLARATION

This research project is my original work and has not been presented for a degree in any other University or any other award.

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DEDICATION

To

My Son.

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ACRONYMS

KHHEUS	Kenya Household Health Expenditure and Utilisation Survey Kenya
EQUINET	Equity in Health in East and Southern Africa
KHPF	Kenya Health Policy Framework
NHSSP	National Health Sector Strategic Plan
KEPH	Kenya Essential Package of Health
HSRS	Health Sector Reform Secretariat
MRC	Ministerial Reform Committee
SARAM	Service Availability & Readiness Assessment Mapping
HMIS	Health Management Information System
NCD	Non-Communicable Diseases
ETEN	Equal Treatment for Equal Need
SSA	Sub-Saharan Africa
OLS	Ordinary Least Squares

OPERATIONAL DEFINITION OF TERMS

Equity is the absence of avoidable or remediable differences among groups of people, whether those groups of people are defined socially, economically, demographically or geographically. Equity within the context of the research project was defined as the position in which an individual receives health services regardless of their social class.

Utilization is the measure of the population's use of the health care services available to them. Within the research project, utilization was used to show the act of an individual consuming health services both inpatient and outpatient.

Horizontal Equity refers to equity between people with the same health care needs. In the research project, horizontal equity was presented as a situation when individuals who had the same need were able to access the same health services, notwithstanding their social standing.

Health Care is the maintenance or improvement of health via the diagnosis, treatment and prevention of disease, illness, injury and other physical and mental impairments in human beings. The research project defined health care as the services provided within a hospital both inpatient and outpatient services.

ABSTRACT

Access to better health care services is a primary need to every individual in the world and rightfully Kenya. A healthy nation plays a significant position in strengthening growth and development. However, presence of horizontal inequity in utilization of healthcare services hinders these. The project's main purpose was to estimate the magnitude of horizontal inequity in Kenya and subsequently estimate the variables that affected utilization of health services and give appropriate recommendations. The reason for this is because, literature reviewed such as Bonfrier et al. (2012); Zhou et al. (2013) and Kien et al. (2014), looked at equity and different health outcomes but the magnitude factor was not explored, hence the need for the study. To do so, the project employed its model specification from similar work previously done by Ghosh, 2014 and a step by step analysis of the calculation of the Concentration Index (CI) from Doorslear et al. (2008), by use of STATA analytical tool. Data used was obtained from the Kenya Household Health Expenditure and Utilisation Survey (KHHEUS), 2013. The Concentration Index (CI) method was used to analyze the magnitude of horizontal health inequity in utilization of healthcare services while determinants of inequity in healthcare utilization were determined using a probit regression analysis. From the analysis, the results showed that inequity was existent to both areas of service delivery that is outpatient and inpatient services with CI's of and 0.0004 and 0.0171 respectively. Determinants to health utilization were, sex, one's health status, education level and insurance status. To eliminate the minimal level of inequity the government has to come up with workable policies to improve the socio-economic factors. For example the government should empower its citizens to have insurance covers which will act as a financial buffer while seeking for services. Another way is for the government to improve the literacy levels, there has been some effort to this due to the free education, and hopefully this will have an impact on individuals since education impacts on health literacy which in turn affects health decisions. Ultimately the government should strive to have health care services affordable to its citizens.

CHAPTER ONE

INTRODUCTION

1.1 Background

Equity as defined by Whitehead, is the creation of equal opportunities for health, and bringing health differentials down to the lowest level possible (Whitehead, 1990). Braveman and Gruskin (2003), stated that the pursuance of equity in health has to do with removing health differences that are brought about by social prejudices.

The regional network on Equity in Health in East and Southern Africa (EQUINET) states that ‘Equity in health implies addressing differences in health status that are unnecessary, avoidable and unfair. Equity seeks to allocate resources favourably to those with the least health status. This means understanding and influencing the re-distribution of social and economic resources for equity – oriented interventions, and understanding and informing the power and ability people (and social groups) have to make choices over health inputs and to use these choices towards health.’ (EQUINET Steering Committee, 1998).

Widely, Africa still lags with regards to development, health and socioeconomic inequities are still extensively present. Consequently respective governments have directed their efforts toward equitable access of health services to their citizens. Some of the measures that have been employed are such as reduction in user fees, implementation of social insurance schemes and building of structures that enable better thriving of the health sector be it in terms of infrastructure or personnel. Recently, ways on how to reduce the user fees in facilities has been one of the areas that Sub-Saharan countries have looked at (Ekman, 2004), this is because the use of user fees and out-

pocket payments have continue to have negative effects on individuals especially on poor household and persons (Yates, 2009).

1.1.1 Health Policy Environment

In Kenya, different policies have been formulated within the health environment in a bid to achieve health equity. Many steps have been taken in line with this in order to provide health services that are easily accessible and match the basic needs of the citizens. For the achievement of this, the Kenyan government has come up with the following: first, the introduction of the Kenya Health Policy Framework (KHPF 1994-2010), launch of Vision 2030 and the proclamation of a new constitution in 2010 (Muga et al., 2005).

The government in 1994 published the KHPF paper which visualised health care that was of quality and in turn acceptable, affordable and accessible to Kenyans by 2010. The framework was carried in two 5-year plans, the National Health Sector Strategic Plans (NHSSP) of 1994-2004 and that of 2005-2010 (Muga et al., 2005). The plans were to establish points and mechanisms that would drive the development of the health sector and also in turn drive the delivery of health care services. The main aim of the Health Policy Framework of 1994 was to initiate amendments to healthcare services in terms of how the services are organised, financed, delivered and evaluated (Muga et al., 2005).

In order to achieve this, the government came up with important measures; equitable allocation of resources, cost effective and efficient resource allocation and an increased regulatory role by the government to provision of health care services. An evaluation of NHSSP I was done in September of 2004, the authors concluded that NHSSP I did not meet its target of initiating the laid down amendments, in their opinion they thought

the reasons for this was the lack of a well laid and costed strategic plan, lack of monitoring and management of the implementation plans, low morale of the personnel, funding that was not adequate and minimal accountability of allocated resources (Muga et al, 2005).

For NHSSP II of 2005-2010, the government introduced key approaches and innovations. Key was the introduction of the Kenya Essential Package of Health (KEPH), which envisaged the provision of wholesome, unified curative and preventive services accessible to all in need and available at first contact .Under KEPH, the government introduced the Community Strategy as a channel in which the population would strengthen their capacity in relation to their role in health and its development. KEPH is the all-inclusive service package for the country .From the SARAM report, the mapping for KEPH, revealed the following, 41% of KEPH services are available across the country with 54% going to eradication of communicable diseases. But even with this only 7% of the total facilities offer all the services stipulated under KEPH (SARAM, 2013). Indicating that more has to be done with regards to the roll out of KEPH which translates to the population accessing quality health care. An evaluation of NHSSP II was done in June of 2010 by the ministry of health, from the report, NHSSP II had made major achievements. Of this were, an increase in number of facilities, resources and quality of health commodities that were procured and supplied to facilities.

Additionally there had been a positive trend in the flow of funds from treasury to health ministries (MOH, 2010). Unfortunately even with the achievements, the report showed that were failures too, firstly being the flow of funds from the ministry to facilities, which was poor, secondly was the low numbers of personnel in the public sector and lastly the presence of inequity in the distribution of resources that were available to the

different provinces. Hence the report advised a need for a development of a criteria of resource distribution that addressed the issue (MOH, 2010).

In terms of data management, the Health Management Information System (HMIS) was developed to enhance information gathering. The government through the ministry of health formulated a policy in 2014 that would guide the workings of HMIS. The policy came due to the weaknesses of HMIS, the authors of the policy observed weaknesses in the coordination and sustenance of a system that was uniform for both public and private sectors in the implementation of health care services. Consequently, the justification of the formulation of the policy (MOH, 2014).

All the above measures have had an impact on Kenya's health system and consequently the health status of Kenyans. The introduction of decentralised government into counties in 2013, each given the mandate to provide and deliver health care services to its citizens, has also been a major step to the realisation of services being of equal access to those in need and the possibility of making the right to health a reality to all Kenyans (Government of Kenya, 2010).

1.1.2 Health Differentials

The Kenya Household Health Expenditure and Utilisation Survey done in 2013 gave a picture of the health situation in Kenya. Data from the survey revealed that of the 19.0 percent of individuals who were sick during the four weeks before the survey, 87.3 percent had consulted a healthcare service provider, this translated to 27 visits per 100 people. Taking into account the three surveys done, a steady increase is observed in outpatient utilization with percentages of 77.2, 83.3 and 87.3 for the years 2003, 2007 and 2013 respectively. The survey also captured the different utilization in terms of one's wealth index, it revealed that individuals in the richest wealth quintile accessed

services by 89 percent compared to those in the poor quintile whose access to services was at 86 percent. The number of visits to a health provider averagely increased by 35 percent, from 2.6 visits per capita per year in 2007 to 3.1 visits in 2013. The survey also revealed that females access healthcare services compared to males with females making four visits per capita per year compared to males who make three visits. Similarly in terms of the wealth index, individuals in the richest quintile have an average of 3.7 visits compared to those on the poorest quintile who have an average of 3.2 visits per year. This was all in relation to outpatient care showing that access to outpatient care was still a concern for the country. The survey also revealed that the public sector remained the main provider for outpatient services with 58 percent of all visit compared to private and pharmacies accounting for approximately 23 percent, (KHHEUS, 2013)

In terms of inpatient utilization, the number of people who were admitted in the year before the survey had increased from 1.5 percent 2003 to 2.5 percent in 2013. Additionally this represented an increase in admissions from 15 in 2003 to 38 in 2013 per 1000 population. All this indicated a boost in access to health services between 2003 and 2013 .In terms of groups that utilise inpatient care, the survey revealed that the elderly and individuals in the richest wealth quintile accessed more of the services., with 83 and 56 admissions per 1000 populations respectively. This was in comparison with the young and poorest who have 45 and 28 admissions per 1000 population respectively. The results from the survey also brought out the difference in admission between the genders, it revealed that females utilised services more than the males with 48 admissions to 27 admissions per 1000 population. Alike to outpatient care, public facilities provided more of the services at approximately 56 percent. The survey also revealed that persons who resided in non-urban areas had a higher chance of accessing

services from public providers compared to persons in urban areas by 59.8 percent of admissions to 50.7 percent. The results also revealed that persons in the poorest quintile accessed services from public providers compared to those on the richest quintile by 66.5 percent to 43.3 percent respectively (KHHEUS, 2013).

The results of the survey also brought out the contrast in healthcare utilization when it came to spending. With the trend being wavy in that in 2003 the spending in nominal terms was 61.5 billion then declined to 43.9 billion in 2007 and then increased to 62.1 billion in 2013. Out of this, in 2013, outpatient care accounted for an estimated 78 percent while inpatient care accounted for an estimated 22 percent. This translated to Kshs 1,254 for outpatient care and Kshs 355 for inpatient care per capita (KHHEUS, 2013). Results from the survey also revealed the difference between those with insurance and those without. Looking at trends in relation to insurance, it revealed that individuals who were insured utilised services more than the uninsured. With individuals who had insurance spending on average Kshs 1197 while the uninsured spending Kshs 387.50 in 2003. Looking at the insured, their annual spending increased to Kshs 3690 per capita then decreased to Kshs 2785 per capita in 2013 (KHHEUS,2013).

1.2 Problem Statement

According to WHO, "the social determinants of health are mostly responsible for health inequities—the unfair and avoidable differences in health status seen within and between countries." Available data from KHHEUS, 2013 reveals that there are major inequities in terms of utilisation in Kenya. The survey captured the different utilization in terms of one's wealth index, it revealed that individuals in the richest wealth quintile accessed services by 89 percent compared to those in the poor quintile whose access to services was at 86 percent. Similarly in terms of the wealth index, individuals in the

richest quintile have an average of 3.7 visits compared to those on the poorest quintile who have an average of 3.2 visits per year (KHHEUS, 2013).

A summary of the data from KHHEUS clearly show the utilisation profile of the country and from it we can see that services are skewed towards the rich population but there is no data on the magnitude of this inequity. Several studies have been done with regards to equity and health outcomes for example, Bonfrier et al. (2012); Zhou et al. (2013); Kien et al. (2014) and Ghosh, (2014). However, some of these studies did not focus on the utilisation profile in their settings, and a majority of them have centred on the Asian Continent hence the inadequacy of literature for the African continent in general and Kenya in particular. Hence the need for this project, the study sought to estimate the magnitude of horizontal inequity and consequently the factors of horizontal inequity in utilisation of health care services.

1.3 Research Questions

- i. What is the magnitude of horizontal inequity in healthcare utilisation in Kenya?
- ii. What are the determinants of horizontal inequity in utilisation of healthcare services in Kenya?

1.4 Objectives of the Study

The general objective of the study was to examine horizontal equity in utilization of health care services in Kenya.

The specific objectives were:

- i. To measure the magnitude of horizontal inequity in healthcare utilisation in Kenya.
- ii. To establish the determinants of horizontal inequity in the utilisation of health care services in Kenya.

1.5 Significance of the Study

The International Covenant on Social and Economic Rights defines the right to health care as the right to accessibility and the ability to make use of standard physical and mental health, regardless of class hierarchies or bias (CESCR, 2000). However, according to a recent report, over two billion people internationally lack access to primary health care and essential medication (Eleftheriadis, 2012). Evidenced from the data from KHHEUS, 2013, Kenya still has presence of inequity in provision of health care services. This paper addressed the question why horizontal inequity in utilisation is still persistent even with the measures placed to curb it and how equity in utilisation could be achieved. Consequently the results obtained from this study would guide policy makers on formulation or improvement of policies that would lead to the eradication of the inequity. Additionally since the variables used were socio-economic, health stakeholders would have additional information on the factors that affected utilization of health services and hence be able to improve on the specific areas.

1.6 Scope of the Study

The study used secondary data obtained from the KHHEUS, a survey done on health utilization by household in Kenya in 2013. It covered samples from the whole country. With this data, the study aimed to estimate the magnitude of inequity in health service utilization in Kenya.

1.7 Limitations of the Study

There may be some limitations in the study, firstly is due to the use of secondary data, the study did not have control on the data collected and its quality. Secondly a lack of sufficient theoretical literature on horizontal inequity.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter entailed a review of literature both empirical and theoretical and an overview of literature.

2.2 Theoretical Literature

2.2.1 Parson's Sick Role Theory

Parson (1951) sick role theory stated that when a person is sick, they take up the part of being ill. The part of being ill has four segments: that the individual is not accountable for their state and that to be healed they need assistance; that the individual is pardoned from doing day to day activities; that the state of being ill is unsavoury and finally that for the individual to recover, they need to seek for medical services and follow on the prescribed treatment. The only disadvantage to the sick role theory is that it did not take into consideration the different illness behaviour.

2.2.2 Mechanic's General Theory

Mechanic's general theory explained that an individual need to seek for services and hence utilize is based on a psychological approach. The theory encompasses ten decision points that will influence once decision to seek for services: the onset of different signs and symptoms; the individuals approach towards the harshness of the symptoms; interruption to one's day to day activities due to being sick; the recurrence of the symptoms and their rate of occurrence; one's capacity to tolerate the symptoms; one's understanding and cultural beliefs of the illness; the individual denying that they are sick so as to continue seeking for basic needs; if the individual's decision to either respond or not to the illness will lead to disruption of needs; a different interpretation

of the symptoms; finally the type of treatment that are available taking into consideration location of the health provider, the economic and psychological implication to the individual and treatment resources. Away from the ten points, Mechanic's theory gave the option that an individual's behaviour to illness was either due to the decision made by the individual or a guardian (Wolinsky, 1988b).

2.2.3 Suchman's Stages of Illness and Medical Care Theory

Suchman's theory looks at five stages that will influence a person's choice to either pursue for services and hence utilise them or not: the individual's experience regarding the symptoms presenting, this will also include pain and their understanding that the symptoms are a reflection of illness; secondly the individual will take on the role of being sick. Thirdly, the individual seeks for services to validate their sick role meaning that at this point they look at the different options in terms of treatment. However entry into this stage is determined if the individual is worldly-wise or restricted in terms of their social network. If the individual is restricted, they will lean to delaying having to seek for health care services and hence continue with the two stages longer than an individual who is more flexible. This stage can be disrupted if there are differing opinions from the individual and that of the health provider. The next stage is that the individual recovers and therefore no longer takes on the role of being a patient. Lastly, if the individual does not recover, they take on the role of being terminally ill (Wolinsky, 1988b).

2.2.4 The Health Belief Model

Rosenstock et al. (1994) came up with the health belief model which looks at utilization in two dimensions either treating or preventing disease, and as so it takes into consideration four variables. Firstly is if the individual is prone to disease, therefore leading to the individual seeking preventive services. How the individual perceives the

severity of the illness, this informs the need to seek for treatment or prevention services. How the individual approaches the concept of benefits to costs, a person will seek and utilise for services if the benefits outweigh the costs. Lastly is what drives the individual to act, this can be in form of media, family or friends, this will make one seek for services. The absence of any drivers will reduce one's likelihood to seek services. Therefore, a person's decision to obtain health care services is circumstantially dependent (Wolinsky, 1988b).

2.2.5 Andersen's Health Behaviour Model

Andersen (1968) model looked at utilization of health care in terms of its determinants. He categorised the determinants as follows: Predisposing characteristics, which composes of factors that will lead to an individual utilising health care services. In line with Andersen's model, an individual will seek for services based on demographics, one's situation with regards to the social structure and one's opinion with regards to benefits of a health service. Enabling characteristics are the assets that are found in an individual's family and community. Family resources is defined in terms of economic status and also where they reside. Community resources comprises of access to healthcare facilities and personnel within the facilities and need based characteristics which looks at the factors that influences an individual's perception towards the need for health services. This can either be individual clinically evaluated or social perceptions (Wolinsky, 1988b).

In the 70's, Andersen added the health care system to his model. Where health policies, organization and resources made up the health care system, he looked at these factors and their changes over time. Resources encompasses what is available in the facilities in terms of labour, capital, available equipment and also the capacity of the personnel. Organization is the handling of resources of the health care system which has an effect

on the organization of services and their access. How an organization manages their resources in terms of their distribution will have an opinion on an individual's decision to utilise services. The revised model also included the level of satisfaction a client gets from the specific health facility, making the assumption that consumer satisfaction reflected utilization of health services. Also added was the notion that there are different health and also different levels of facilities which also weighed upon an individuals' decision to access services. Consequently, the revised model implied that an individual's decision to utilise services and the frequency would be influenced by factors that are depended on the attributes of the population and the health services (Andersen, 1995; Andersen et al., 2005).

Between the 1980's -1990's, Andersen revised his model again to include three factors whose relationship is linear, these were: primary determinants; health behaviours; and health outcomes. Primary determinants describe factors that are direct explanations of health behaviours, these include demographics, health care system and the external environment (Andersen, 1995). Additionally the revised model links health behaviours to health outcomes, health behaviours are like a person's health choices and utilization of health services. Andersen categorised health outcomes in terms of one's health status and consumer satisfaction, where one's health status could be perceived or evaluated (Andersen, 1995).

2.2.6 Young's Choice-Making Model

Young (1981) suggested a model that was based on his studies that he had carried out in Mexico which looked at utilization of healthcare services. In his model, he defined factors that were crucial in influencing an individual decision to the choice of a health service. The first is the individual's attitude towards the severity of the illness. The second is the individual's knowledge of an alternative treatment especially a home one,

if the individual has knowledge of this remedy and thirdly if the individual trusts its effectiveness, he or she has a higher chance of utilising these services before seeking professional help. Fourth is accessibility of treatment, accessibility here looks at the person's assessment of the cost of health services and the availability of those services. In conclusion, the main determinant to utilization to health services is access.

2.3 Empirical Literature

Grytten et al. (1995) did a study that aimed to assess if the Norwegian public health system would achieve equity in delivery of services. They looked at inequity in relation to services provided by primary health care doctors. They noted that patient fees were low and the distribution of health care workers varied geographically and did not meet demand hence concluded that these two factors brought forth inequalities in utilization (Grytten et al., 1995). They estimated a demand model by using comprehensive micro data plus aggregate data on municipal supply. Their results revealed that there was minimal relation between indicators of access and healthcare utilization. The results revealed that the estimated income elasticity which was approximately zero, supported the achievement of equality in utilization in Norway. In conclusion, they had a concern on whether the achievement of equality came at the expense of reducing supply of services to individuals who had the ability to use and pay for services that were of a higher quality (Grytten et al., 1995).

Doorslaer et al. (2007) study aimed at comparing the healthcare utilization in Hong Kong, South Korea and Taiwan specifically for horizontal equity. Similar to Bonfrer (2012), they analysed the extent to which the need factor was managed within the health care delivery system of these three countries. The results showed that physicians and services by dentists in Hong Kong did not follow the need principle while inequity existed for services offered by a general practitioner but not by a specialist. Comparing

with South Korea, the results revealed that the need principle had been majorly maintained but they observed that the rich had higher access to out-patient services (Doorslaer et al., 2007). In Taiwan's case, the results revealed that outpatient services were more utilised by the rich but services offered by western doctors and those of dentists were uniformly distributed among the wealth quintiles. Lastly For the case of Taiwan, emergency rooms visits and inpatient utilization in terms of admissions in were either proportional or slightly pro-poor (Doorslaer et al., 2007).

Prinja et al. (2010) carried out a study to assess the effect of user charges on health care utilization in North India. They used secondary data. They made comparison with the two since Yamuna Nagar district had introduced user charges unlike Rohtak (Prinja et al., 2010). Factoring in the utilization aspect, they used secondary data to analyse health utilization in public health facilities in terms hospitalization, cost of hospitalization, and predominance of out-of-pocket (OOP) expenditure (Prinja et al., 2010). From their analysis, the results showed during that period, inpatient utilization in terms of admissions had decreased by 23.8 percent in Yamuna Nagar district compared to Rohtak district (Prinja et al., 2010). For utilization, inpatient utilization in public facilities was pro-rich with a CI of 0.144 in the 3 districts that had user charges and was pro-poor with a CI of -0.047 in districts that did not have user charges and were 17 in number (Prinja et al., 2010). For OOP expenditure, the results revealed that, public facilities with user charges had a higher level of OOP contribution at 48% compared to those without with a 35.4 %.In conclusion, the authors were of the opinion that user-charges had a negative effect on those that were less privileged hence they recommended that user charges should be avoided (Prinja et al., 2010).

Bonfrer et al. (2012) did a study to find if individuals in Africa utilised health care services due to need or their ability to pay. For analysis, they used DHS data for care given to mothers and children and WHS data for general adult use for both outpatient and inpatient utilization (Bonfrer et al., 2012). The results showed that in 18 countries, women of higher socio-economic status were the ones who mainly used antenatal care and the services of a skilled birth attendant. Additionally, the results showed the presence of pro-rich socio-economic inequalities in all countries. They further did a decomposition analysis which revealed that a large percentage of inequality was due to factors that were of need hence labelled as inequities (Bonfrer et al., 2012). The results also revealed that socio-economic inequities were related to wealth and therefore one's utilization of services was majorly affected by ability-to-pay rather than need. When they made cross-country comparisons, the results revealed that countries whose individuals' utilised health care services due to need were those that were of higher incomes, literacy levels, better governance and efficient institutions. In conclusion, their study revealed that health care utilization did not go hand in hand with SSA countries' needs but rather by one's ability-to-pay and their education (Bonfrer et al., 2012).

Mahaptra (2013) study aimed to look at determinants of utilization of health services by pregnant women in south Odisha .He carried out a qualitative study (Mahaptra, 2013). From analysis, he observed that the key factors that deterred the women to utilise services were transportation and financial challenges. Additionally, he observed that inconsistent medical theories and the low perception with regards to hospital benefits affecting both women and community were uniformly key factors (Mahaptra, 2013). The community's varying believes and interpretation of danger signs also had an influence on the health care seeking behaviour. In conclusion, from his results, he

recommended for increase in health care service utilization, capacity building had to be done on the primary health workers so as to inform them on the various perceptions, risks and preferences, additionally, he also suggested that more weight should be placed on the transport system and its feasibility in terms of operation (Mahaptra, 2013).

Zhou et al. (2013) study aimed at assessing if inequity existed in rural China in terms of health care utilization. They used secondary data from surveys carried out by the government. They presented their data via a probit model with the probabilities of outpatient and inpatient visits being the explained variables. Furthermore, they used indirect standardization method to standardise their model for need variables. The authors estimated the concentration index to give a picture of the inequity as a result of income in relation to health care utilization. From their analysis, the concentration index for outpatient utilization that was need-standardised was 0.0486, 0.0310, 0.0167 and -0.0108 in 1993, 1998, 2003 and 2008, respectively. For inpatient service, the concentration index was 0.0529, 0.1543, 0.2325 and 0.1313 in 1993, 1998, 2003 and 2008, respectively (Zhou et al., 2013).

In conclusion, the authors observed presence of pro-rich inequity for services offered under outpatient and inpatient care in rural China for the years under study except in 2008. They also observed the downward trend in outpatient utilization from 1993 to 2008 and the upward trend in inpatient utilization from 1993 to 2003 followed by a downward trend from 2003 to 2008 (Zhou et al., 2013). They recommended that to address the inequities, the efforts made by the Chinese government with regards to increased insurance coverage and primary healthcare was of a positive impact, but they also added that better benefit packages and delivery strategies still needed to be tested and scaled up to reduce future inequity in inpatient utilization in rural China (Zhou et al., 2013).

Ghosh in 2014 carried out a study that aimed to assess the presence of equity in India specifically in line with utilization of health services. His data was secondary based on a survey, which looked at morbidity and health care that had been carried out in 2004 by the government. His proxy for outpatient utilization was the probability of use of the services by the individual 15 days prior to the survey, for inpatient care, he used the probability of hospital admission and length of stay in hospital over a 12-month period (Ghosh, 2014). He standardised all measures of health care utilization for need differences and regulated for socio-economic factors. Results from the study revealed the presence of inequalities in the states ranging from 4.42% to 21.72%, in relation to visits to a provider of outpatient care and a range of 1% to 10% in relation to inpatient care (Ghosh, 2014). Results from the study also showed the presence of pro-rich inequity in relation to both outpatient and inpatient care. His analysis showed the relationship between low inequities in reference to inpatient utilization and high per capita government spending. In conclusion Ghosh gave the recommendation that in order to address prevailing inequalities, the Indian government should increase public health spending and achieve effective universal coverage (Ghosh, 2014).

Odiwuor and Macharia (2014) did a study that aimed to identify the determinants of utilization of healthcare services in Homa Bay County. Their study employed survey design and focused on both consumers and suppliers of health care services and used both quantitative and qualitative data (Odiwuor et al., 2014). They collected both quantitative and qualitative data from interviewing 384 respondents and 16 key informants respectively (Odiwuor et al., 2014). From their study, they concluded that the determinants of utilization of services in Homa Bay County were health financing, service delivery, quality, accessibility and equity. The study recommended adequate

allocation of resources to health services in terms of well trained personnel, improved infrastructure ,drugs and supplies (Odiwuor et al., 2014).

Kien et al. (2014) study, looked at horizontal inequity in urban Vietnam's public health services specifically in line with utilization for non-communicable diseases. For data, the authors carried out a cross-sectional survey in four urban districts of Hanoi city, they selected random households that were both in slum and non-slum areas and a sample size of 1211 (Kien et al., 2014). From the 1211 households there were 3736 respondents, these respondents were aged 15 years and above and were asked questions on health care use, general demographics and self-reported non-communicable diseases (NCDs) (Kien et al., 2014).

From the data, they aimed to analyse the presence of inequity and to what degree, to do so, they constructed concentration indices via a probit regression and decomposed the CIs to determine factors that contributed to the inequity. Results from their study revealed that utilization of health services in slum areas was at 21.4% compared to that of non-slum areas which was at 26.9% (Kien et al., 2014). They observed the presence of pro-rich horizontal inequity in the slum areas and the existence of horizontal equity in the non-slum areas. Their results suggested that for the achievement of horizontal equity, policies were to be made to target preventive measures for NCDs especially for the poor in slum areas (Kien et al., 2014).

2.4 Overview of Literature

From the theoretical literature it was evident that most of the theories and models had tried to explain the rationale behind one's decision to utilise health services and the reasons had come out quite clearly. The study borrowed on Andersen's model (1968) to guide on the determinants that would be estimated.

From the empirical literature, most studies focussed on the utilisation aspect of health either in factors influencing utilisation or achievement of equity in utilisation of health services. Most studies were on the Asian Continent especially India. The results of the studies gave different views with some countries having achieved equity in utilisation of health services (Grytten et al., 1995) while other countries, the majority, having not yet achieved equity in utilisation of health care services (Doorslaer et al., 2006; Bonfrer et al., 2012; Odiwour et al., 2014). The main factors from the studies found to hinder equity in utilisation in various countries were such as health financing, service delivery, quality, accessibility, income level, user charges and education level. From the various studies, it was clear that most authors concentrated on the utilization aspect but not the magnitude factor. It was also evident that equity in utilisation was yet to be achieved in most countries. Given these mixed findings concerning the state of health utilization inequity, it was seen from their studies that, their outcomes depended on the methodology used and also the economic development status of the countries where the studies were carried out. The study borrowed methodology used by Ghosh (2014) in estimation of concentration index.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter entailed a look at the research methodology that was used in the study. It presented the research design that was employed, the theoretical framework that the analysis was anchored on showing the relationship between the dependent and explanatory variables. Additionally the chapter looked at an overview of the description of the variables, data type and sources and how analysis was to be done.

3.2 Research Design

The study used non-experimental cross-sectional research design based on data obtained from the Kenya Household Health Expenditure and Utilisation Survey (KHHEUS, 2013). Concentration index was used to measure the magnitude of horizontal inequity in healthcare utilization while a regression analysis was carried out on the concentration indices to establish the determinants of horizontal inequity in healthcare utilization.

3.3 Theoretical Framework

The theoretical framework borrowed from Andersen's health behaviour model. Andersen (1968), developed a model of health care utilisation which looked at three categories of determinants, represented by equation 3.0 below:

$$\gamma_i = \beta_0 + \beta_1 \gamma_1 + \beta_2 \gamma_2 + \beta_3 \gamma_3 + \varepsilon_1 \quad \dots\dots\dots 3.0$$

Where;

γ_i Was utilise health services

γ_1 Represented pre-disposing characteristics

γ_2 Represented enabling characteristics

γ_3 Represented need-based characteristics

$\beta_1, \beta_2, \beta_3$ are parameters

ε_1 Represented the error term

The model later included the health care system, this is represented in equation 3.1 below:

$$y_2 = \beta_0 + \beta_1 \gamma_1 + \beta_2 \gamma_2 + \beta_3 \gamma_3 + \beta_4 \gamma_4 + \varepsilon_2 \dots\dots\dots 3.1$$

Where;

γ_4 Represented the health care system encompassing policy, resources and organisation.

ε_2 Represented the error term

During the 1980's -1990's, Andersen's model was again revised to form three components with a linear relationship: primary determinants; health behaviours; and health outcomes. The model is represented by figure 3.2 below:

$$Z_1 = f(y_2) \dots\dots\dots 3.2$$

$$Z_1 = f(\beta_0 + \beta_1 \gamma_1 + \beta_2 \gamma_2 + \beta_3 \gamma_3 + \beta_4 \gamma_4 + \varepsilon_2) \dots\dots\dots 3.3$$

Where: Z_1 is consumer satisfaction

Concentration index was used to measure the magnitude of inequity in healthcare utilization. This was well demonstrated in the model specification.

3.4 Model Specification

To measure the magnitude of horizontal inequity in health care utilization, the study used standardized health care utilisation rate. An estimate of Health Inequity (HI) was computed by estimating the concentration index presented below as: sourced from (Ghosh, 2014).

$$2\sigma_r^2 \left(\frac{y_i}{\mu} \right) = \alpha + \beta r_i + \varepsilon_i \dots\dots\dots 3.4$$

Where

y_i Was the standardised healthcare utilization rate

μ was the standardised healthcare utilisation rate mean

$r_{i=i/N}$ Was the fractional rank of the individual (household)

i was the distribution of monthly per capita household consumption expenditure, with $i=1$ for the poorest and $i=N$ for the richest

σ_r^2 Was the variance of the fractional rank

The OLS estimate of β was an estimate of the concentration index.

A regression analysis was carried out to establish the determinants of inequity in utilisation of healthcare services. The linear equation to be regressed was as follows:

$$CI = \alpha + \beta_1 Sex + \beta_2 Age + \beta_3 HS + \beta MS + \beta Edu + \beta Empl + \beta ins \varepsilon \dots\dots 3.6$$

Where:

α and β are parameter vectors

ε is the error term

CI- Concentration Index

Sex –Sex

Age-Age

HS- Health Status

MS- Marital Status

Edu- Education Level

Empl- Employment Status

Ins-Insurance Status

3.5 Data Types and Sources

Cross-sectional data was used and extracted from secondary sources. The model required data on health care expenditure and utilisation per county. The source of the data was the Kenya Household Health Expenditure and Utilisation Survey, 2013.

3.6 Data Analysis

Non-linear specification of the functional relationship in equation (3.4) was estimated using STATA from cross-sectional data obtained from the Kenya Household Health Expenditure and Utilization Survey, (KHHEUS, 2013). A regression analysis was employed to determine the factors that brought about horizontal health inequity on both outpatient and inpatient utilization.

3.7 Diagnostic Tests

A statistical test for individual predictors was done on the variables using the Wald chi-square statistic while that of the goodness of fit of the model was done using the Hosmer-Lemeshow. Additionally a test on presence of correlation between the independent variables was done.

3.8 Definition and Measurement of Variables

Table 1: Definition and Measurement of Variables

Variable	Definition	Measurement	Source
Sex	It refers to a set of biological attributes in humans usually categorised as female or male.	Categorical variable (Male = 1, Female = 0)	Kenya Household Health Expenditure and Utilisation Survey (KHHEUS, 2013).
Age	The length of time that an individual has lived.	Number of years an individual has lived.	Kenya Household Health Expenditure and Utilisation Survey (KHHEUS, 2013).
Health Status	A description and / or measurement of the health of an individual or population at a particular point in time against identifiable standards, usually by reference to health indicators.	Categorical variable (V.Good = 1, Good = 2, Satisfactory = 3, Poor = 4)	Kenya Household Health Expenditure and Utilisation Survey (KHHEUS, 2013).
Marital Status	One's situation with regard to whether one is single, married, separated, divorced or widowed.	Categorical variable (Single = 1, Married = 2, Divorced / Separated = 3, Widowed = 4)	Kenya Household Health Expenditure and Utilisation Survey (KHHEUS, 2013).
Education Level	The highest level of education that a person has successfully completed.	Categorical variable (Nursery = 1, Primary = 2, Post-Primary = 3, Secondary = 4, College = 5, University = 6, Informal Education = 7, Don't Know = 8)	Kenya Household Health Expenditure and Utilisation Survey (KHHEUS, 2013).
Employment	The state of having paid work.	Categorical variable (Working = 1, Not working = 0)	Kenya Household Health Expenditure and Utilisation Survey (KHHEUS, 2013).
Insurance	Insurance is a contract, represented by a policy, in which an individual or entity receives financial protection or reimbursement against losses from an insurance company.	Categorical variable (Insured = 1, Not Insured = 0)	Kenya Household Health Expenditure and Utilisation Survey (KHHEUS, 2013).

(Source: Author)

CHAPTER FOUR

EMPIRICAL FINDINGS

4.1 Introduction

This chapter presented the results of all econometric tests conducted by the study as well as regression results. The estimation of the models and other diagnostic tests were done using STATA econometric software. The Concentration Index was calculated using a guide by Wagstaff et al (2008).

4.2 Descriptive Statistics

Table 2 summarized and gave a description of the variables used in this analysis.

Table 2: Descriptive Statistics

		n	%
Health Status	Very good	40148	27.03%
	Good	83725	56.37%
	Satisfactory	18237	12.28%
	Poor	6382	4.30%
	Don't know	45	0.03%
	Total	148537	100.00%
Marital Status	Not stated	4029	2.64%
	Single	96254	63.09%
	Married	44360	29.08%
	Divorced/separated	2879	1.89%
	Widowed	5044	3.31%
	Total	152566	100.00%
Highest level of education	Nursery	12712	8.33%
	Primary	88357	57.91%
	Post primary/ vocational	683	0.45%
	Secondary	23998	15.73%
	College (middle level)	4996	3.27%
	University	2256	1.48%
	Informal (e.g. Madrassa	537	0.35%
	Don't Know	19027	12.47%
	Total	152566	100.00%
Health Insurance status	No	119470	80.54%
	Yes	28859	19.46%
	Total	148329	100.00%
Sex	Female	76473	51.48%
	Male	72064	48.52%
	Total	148537	100.00%
Employment Status	Working (formal/ informal employment)	45950	30.12%

	Not employed	106616	69.88%
	Total	152566	100.00%
Services sought	sought inpatient services	12936	8.48%
	Didn't seek inpatient services	139630	91.52%
	Total	152566	100.00%
	sought outpatient services	43004	28.19%
	Didn't seek outpatient services	109562	71.81%
	Total	152566	100.00%

(Source: Author)

From the 148537 individuals interviewed, 27.03% reported to have had a very good health status, 56.37% reported to have had a good health status, 12.28% a satisfactory health status, 4.30% reported a poor health status and the remaining 0.03% reported to have not known their health status.

Further to marital status, of the 152566 respondents, 63.09% reported to be single, 29.08% were married, 1.89% were divorced, 3.31 % were widowed and 2.64% did not state their marital status.

When it came to the highest level of education achieved, of the 152566 respondents interviewed, 8.33% reported to have reached nursery, 57.91% primary, 0.45% post-primary i.e. vocational training, 15.73% secondary, 3.27% college, 1.48% to university level. 0.35% reported to have had an informal education such as madrassa and the remaining 12.47% reported to not know their level of education.

In relation to insurance status, out of the 148329 individuals who responded, approximately 19% reported to have a health insurance cover compared to 81% who did not have one.

As for the distribution of the sampled population in terms of sex, approximately 51% were female compared to approximately 49% who were male.

On the status on employment, of the 152566 respondents, 30.12% reported to have employment, either working formally or informally. 69.88% reported to not be working, this constituted individuals who were either seeking work, staying at home or were students.

When it came to if services were utilised, the data reported the following; for inpatient services, out of the 152566 respondents, 8.48% reported to have utilised inpatient services compared to 91.52% who did not. For outpatient utilisation, of the 152566 respondents, 28.19% reported to have utilised the services compared to 71.81% who reported to have not.

4.3 Diagnostic Tests

4.3.1 Correlation Test

Table 3: Correlation Matrix

	Age	sex	Health Status	Marital Status	Education Level	Employment status	Insurance status
Age	1						
sex	-0.0441	1					
Health status	0.1989	-0.039	1				
Marital Status	0.7369	-0.1447	0.1612	1			
Education level	-0.1843	0.0232	-0.0633	-0.104	1		
Employment status	0.6413	0.0441	0.0625	0.5606	-0.0546	1	
Insurance status	0.027	-0.0073	-0.0748	-0.0056	0.1302	0.0616	1

(Source: Author)

Table 3 shows a correlation matrix, from the table, there is presence of collinearity between age and marital status with a value of 0.7369 and between age and employment status which has a value 0.6413, both values were above 0.5. The rest of the variable are not correlated since their values are below an absolute 0.5. Hence to correct the collinearity, the study dropped age and the matrix was as below.

Table 4: Revised Correlation Matrix

	Sex	Health Status	Marital Status	Education level	Employment status	Insurance status
Sex	1					
Health status	-0.039	1				
Marital Status	-0.1447	0.1612	1			
Education level	0.0232	-0.0633	-0.104	1		
Employment Status	0.0441	0.0625	0.5606	-0.0546	1	
Insurances Status	-0.0073	-0.0748	-0.0056	0.1302	0.0616	1

(Source: Author)

From the matrix in table 4, most variable show no presence of correlation except between marital status and employment status, but the study maintained the two variable since their correlation was not that high (Dohoo et al., 1997).

4.3.2 Statistical Test of Individual Predictors

4.3.2.1 Statistical test of individual predictors outpatient utilization

Table 5: Statistical Test of Individual Predictors of Outpatient Utilization

Adjusted Wald test (1) [outpatientvst]sex = 0 (2) [outpatientvst]Verygoodhealth = 0 (3) [outpatientvst]Goodhealth = 0 (4) [outpatientvst]Poorhealth = 0 (5) [outpatientvst]Dontknowhealth = 0 (6) [outpatientvst]Single = 0 (7) [outpatientvst]Divsep = 0 (8) [outpatientvst]Widowed = 0 (9) [outpatientvst]Nursery = 0 (10) [outpatientvst]Primary = 0 (11) [outpatientvst]Postprimary = 0 (12) [outpatientvst]College = 0 (13) [outpatientvst]University = 0 (14) [outpatientvst]Informal = 0 (15) [outpatientvst]Dontknoweduc = 0 (16) [outpatientvst]Employmentstatus = 0 (17) [outpatientvst]Insurancestatus = 0 F(16, 27758) = 200.23 Prob > F = 0.0000
--

(Source: Author)

A test on the significance of the independent variables to the dependent variable was done using the Wald test. Based on the p-value, we were able to reject the null hypothesis, indicating that the coefficients for the dependent variables are not

simultaneously equal to zero, meaning that including these variables creates a statistically significant improvement in the fit of the model.

4.3.2.1 Statistical test of individual predictors' inpatient utilization

Table 6: Statistical Test of Individual Predictors of Inpatient Utilization

Adjusted Wald test
(1) [inpatient]sex = 0
(2) [inpatient]Verygoodhealth = 0
(3) [inpatient]Goodhealth = 0
(4) [inpatient]Poorhealth = 0
(5) [inpatient]Dontknowhealth = 0
(6) [inpatient]Single = 0
(7) [inpatient]Divsep = 0
(8) [inpatient]Widowed = 0
(9) [inpatient]Nursery = 0
(10) [inpatient]Primary = 0
(11) [inpatient]Postprimary = 0
(12) [inpatient]College = 0
(13) [inpatient]University = 0
(14) [inpatient]Informal = 0
(15) [inpatient]Dontknoweduc = 0
(16) [inpatient]Employmentstatus = 0
(17) [inpatient]Insurancestatus = 0
F(16, 27758) = 104.14
Prob > F = 0.0000

(Source: Author)

A test on the significance of the independent variables to the dependent variable was done using the Wald test. Based on the p-value, we were able to reject the null hypothesis, indicating that the coefficients for the dependent variables are not simultaneously equal to zero, meaning that including these variables create a statistically significant improvement in the fit of the model.

4.3.3 Goodness of Fit Statistic

4.3.3.1 Goodness of fit statistic_ outpatient utilization

Table 7: Goodness of Fit Statistic for the Probit Model on Outpatient Utilization

Probit model for outpatientvst, goodness-of-fit test
F(9,27765) = 21.28
Prob > F = 0.0000

(Source: Author)

The test for goodness-of-fit was done using the Hosmer-Lemeshow test. The P-value to the F-statistic was 0.000 hence rejection of the null hypothesis hence revealing that the model was fit to the data well.

4.3.3.2 Goodness of fit statistic_ outpatient utilization

Table 8: Goodness of Fit Statistic of the Probit Model on Inpatient Utilization

Probit model for inpatient, goodness-of-fit test	
F(9,27765) =	16.63
Prob > F =	0.0000

(Source: Author)

The test for goodness-of-fit was done using the Hosmer-Lemeshow test. The P-value to the F-statistic was 0.000 hence rejection of the null hypothesis hence revealing that the model was fit to the data well.

4.4 Outpatient Utilization

In this section the study looked at computing the concentration index (CI) for outpatient utilization. It followed a step by step guide by Doorslear et al. (2008), on how to compute CI when one has micro-data. From the computation in STATA, the study obtained the following results:

Table 9: Confidence Index for Outpatient Utilization

```

. cor outpatientvst_st rank [fw=new_weight], c
(obs=44,421,852)

      |      outp~_st      rank
-----|-----
outpatie~_st |      .202938
      rank |      .000059      .083338

. sca c=(2/mean)*r(cov_12)

. sca list c
      c =      .00039114

```

(Source: Author)

Table 9 revealed that the CI is 0.00039114. This implied that outpatient utilization was pro-rich meaning the rich utilized outpatient services more than the poor. This also showed that the magnitude of inequity in outpatient utilization was 0.039%.

Table 10: Probit Regression on Outpatient Utilization

Survey: Probit regression					
Number of strata = 1,343		Number of obs = 148,272			
Number of PSUs = 29,116		Population size = 44,450,643			
		Design df = 27,773			
		F(16, 27758) = 200.23			
		Prob > F = 0.0000			
		Linearized			
outpatientvst	Coef.	Std. Err.	t	P>t	[95% Conf. Interval]
sex	-0.2331098	0.0148495	-15.70	0.000	-.2622155 -.204004
Verygoodhealth	-0.4140777	0.0239707	-17.27	0.000	-.4610616 -.3670939
Goodhealth	-0.3259148	0.0212332	-15.35	0.000	-.3675329 -.2842966
Poorhealth	0.5387574	0.0343791	15.67	0.000	.4713726 .6061422
Single	-0.1577412	0.0207946	-7.59	0.000	-.1984996 -.1169827
Divsep	0.0683695	0.0449721	1.52	0.128	-.0197781 .156517
Widowed	0.0607374	0.0312993	1.94	0.052	-.0006108 .1220855
Nursery	0.5039722	0.0330523	15.25	0.000	.4391881 .5687564
Primary	0.0582397	0.0243396	2.39	0.017	.0105328 .1059466
Postprimary	-0.0970269	0.0877214	-1.11	0.269	-.2689652 .0749114
College	-0.0496105	0.0427546	-1.16	0.246	-.1334118 .0341907
University	-0.1803433	0.0617059	-2.92	0.003	-.3012899 -.0593967
Informal	0.112399	0.1149794	0.98	0.328	-.1129662 .3377643
Dontknoweduc	1.056539	0.0311221	33.95	0.000	.9955381 1.11754
Employmentstatus	-0.0109029	0.0212479	-0.51	0.608	-.0525498 .030744
Insurancestatus	0.0829373	0.0216701	3.83	0.000	.040463 .1254117
_cons	-0.2584661	0.0344929	-7.49	0.000	-.326074 -.1908583

(Source: Author)

From the table 10, one's sex was statistically significant with a P value of 0.000. Very good health was statistically significant with a P value of 0.000, Good health was also significant with a P value of 0.000 and Poor health was also statistically significant with a P value of 0.000.

In addition being single was statistically significant with a P value of 0.000. Being divorced or separated was statistically insignificant with a P value of 0.119. Being widowed was not statistically significant with a P value of 0.052.

A nursery education was statistically significant with P value of 0.000. Having a primary education was also significant with a P value of 0.017. Having a Post primary education was statistically insignificant with a P value of 0.269, similarly college education was insignificant with a P value of 0.246, same case to an informal education which had a P value of 0.328. Having a University education was statistically significant with a P value of 0.003, same case to individuals who didn't know their education level, which had a P value of 0.000.

One's employment status was statistically insignificant to explain outpatient utilization with a P value of 0.608. Insurance status was statistically significant to explain outpatient utilization with a P value of 0.000.

Table 11: Table on Marginal Effects on Outpatient Utilization

Marginal effects after svy probit						
y=Pr(outpatientvst)(predict)						
0.29039059						
variable	dy/dx	Std. Err.	z	P>z	[95% C.I.]	X
sex*	-0.079551	0.00504	-15.77	0.000	-0.089436 -0.069666	0.483572
Verygo~h*	-0.1328779	0.00707	-18.8	0.000	-0.146732 -0.119024	0.255237
Goodhe~h*	-0.1129551	0.00737	-15.33	0.000	-0.127399 -0.098511	0.58541
Poorhe~h*	0.2029446	0.01362	14.91	0.000	.176259 .22963	0.040833
Single*	-0.0546354	0.00728	-7.51	0.000	-0.068895 -0.040376	0.639351
Divsep*	0.0238302	0.01593	1.5	0.135	-.0074 .055061	0.019666
Widowed*	0.0211212	0.01104	1.91	0.056	-.000508 .04275	0.033164
Nursery*	0.1878662	0.01287	14.6	0.000	.16265 .213083	0.08318
Primary*	0.0199061	0.00828	2.4	0.016	.003671 .036141	0.562539
Postpr~y*	-0.0323168	0.02837	-1.14	0.255	-.087928 .023294	0.004158
College*	-0.0167739	0.01427	-1.18	0.24	-.044748 .011201	0.039259
Univer~y*	-0.0586231	0.01893	-3.1	0.002	-0.095733 -0.021513	0.020402
Informal*	0.0396287	0.04163	0.95	0.341	-.041957 .121214	0.00245
Dontkn~c*	0.3995489	0.01122	35.6	0.000	.377551 .421547	0.101405
Employ~s*	-0.0037306	0.00726	-0.51	0.608	-.017966 .010505	0.327843
Insura~s*	0.0287578	0.00761	3.78	0.000	.01384 .043676	0.222242

(*) dy/dx is for discrete change of dummy variable from 0 to 1

(Source: Author)

The relationship between the variables and outpatient utilization was explained in table 11 using marginal effects.

One's sex was significant with a P-value of 0.000, explaining that males were less likely to seek for outpatient services compared to their female counterparts by 7.96%. This could be explained by females seeking more services due to their anatomy, also females who take their children to clinics could easily access services if they have any problem. This concurs with a study done by Muriithi (2013) in which his results showed that women were more likely to seek for services due to their sensitivity to their health status. Similarly, Mwabu et al. (1993), found that women were more likely to seek for all types of services compared to men, hence more utilization. Yang et al. (2018) in their study also found that women had more outpatient visits in the last two week compared to men.

An individual who perceived their health status as very good was statistically significant with a P-value of 0.000 and was less likely to utilise outpatient services by 13.29% compared to individuals who perceived their health status as satisfactory. This could be explained, since if one feels very good health wise, he or she would not have a reason to visit a hospital. Individuals who perceived their health status as good, with a significant P-value of 0.000, were less likely to seek for outpatient services by 11.3% compared to individuals who perceived their health status as satisfactory. This could be argued that since a "good health status" was better than a "satisfactory health status", there was minimal likelihood of the individual seeking for services. Individuals who perceived their health status as poor, with a significant P-value of 0.000, were more likely to utilise outpatient utilisation by 20.29% compared to individuals who perceived their health status as satisfactory. This was straight forward since if one regarded their health status as poor, felt the need to seek for services for a better health status. The

effect of one's health status on utilization was similar to the results by Grytten et al. (1995) in which he found that health status was a major indicator of utilization.

An individual who is single, with a statistically significant P-value of 0.000, was less likely to seek for outpatient services by 5.46% compared to their counterpart who is married. This was assumed by the single individual not having someone to push him or her to seek services since decision making is done by one individual.

As for education level, an individual who did not know their education level, with a significant P-value of 0.000, was more likely to seek for outpatient services by 39.95% compared to an individual with a secondary education. This could be argued that an individual who did not know their education level was less likely to self-diagnose hence self-medicate, therefore seeking outpatient services for any health problem. An individual with a primary education, with a statistically significant P-value of 0.016, was more likely to utilise outpatient services by 1.9% compared to one with secondary education. This could have the same argument as before that due to lack of knowledge, the individual would be lead to utilise services since he or she cannot self-diagnose hence use over the counter. Finally an individual with a university education, with a P-value of 0.002 hence statistically significant, was less likely to seek for outpatient services by 5.86 % compared to an individual with a secondary education. This could be argued that, given that an individual with university education would have been exposed to ways of preventing some illnesses and also this individual was more likely to self-diagnose first before the need to visit an out-patient site. The results were generally similar to that of Cisse (2006), who found that education positively affected the demand of health care services.

In regard to insurance status which had a P-value of 0.000 therefore statistically significant, the results showed that an individual with insurance was more likely to seek for outpatient services by 2.28% compared to an individual who was not insured. This was justified, since insurance acted as a financial buffer compared to an individual who had to use cash to access the same service Studies done in the US by Davis et al. (2014) and Squires et al. (2015), found that the uninsured faced a barrier in accessing services hence less utilization, coming to the same conclusion as the study.

4.5 Inpatient Utilization

Table 12: Concentration Index for Inpatient Utilization

```
. cor inpatient_st rank [fw=new_weight], c
(obs=44,421,852)
```

	inpat~st	rank
inpatient_st	.080375	
rank	.000773	.083338

```
. sca c=(2/mean)*r(cov_12)

. sca list c
      c = .01705421
```

(Source: Author)

From the above table, it showed that the CI is 0.01705421. This implied that inpatient utilization was pro-rich meaning the rich utilized inpatient services more than their poor counterparts. This also showed that the magnitude of inequity in outpatient utilization was 1.705%.

Table 13: Probit Regression on Inpatient Utilization

Survey: Probit regression					
Number of strata =1343			Number of obs = 148272		
Number of PSUs = 29116			Population size =44,450,643		
			Design df = 27,773		
			F(16, 27758) = 104.14		
			Prob > F = 0.0000		
inpatient	Coef.	Linearized Std. Err.	t	P>t	[95% Conf. Interval]
sex	-0.2842194	0.0248877	-11.42	0.000	-.3330006 -.2354383
Verygoodhealth	-0.1134587	0.0368421	-3.08	0.002	-.1856711 -.0412464
Goodhealth	-0.1455491	0.0345264	-4.22	0.000	-.2132224 -.0778757
Poorhealth	0.2266198	0.0616684	3.67	0.000	.1057467 .3474929
Single	-0.3064324	0.0336828	-9.10	0.000	-.3724523 -.2404126
Divsep	-0.0636257	0.072641	-0.88	0.381	-.2060056 .0787542
Widowed	-0.1977442	0.0507005	-3.90	0.000	-.2971197 -.0983687
Nursery	0.4913196	0.0525337	9.35	0.000	.388351 .5942881
Primary	-0.0565673	0.0445928	-1.27	0.205	-.1439714 .0308368
Postprimary	-0.1084281	0.1260194	-0.86	0.390	-.3554323 .1385762
College	0.0870816	0.0716324	1.22	0.224	-.0533214 .2274846
University	-0.0306481	0.0996052	-0.31	0.758	-.2258792 .1645829
Informal	0.3089699	0.1613833	1.91	0.056	-.0073494 .6252892
Dontknoweduc	1.240026	0.049131	25.24	0.000	1.143726 1.336325
Employmentstatus	-0.0121603	0.0357881	-0.34	0.734	-.0823067 .0579862
Insurancestatus	0.0383537	0.0345125	1.11	0.266	-.0292925 .1059999
_cons	-1.156414	0.0574356	-20.13	0.000	-1.268991 -1.043838

(Source: Author)

From the table 13, one's sex was statistically significant with a P value of 0.000. Very good health was statistically significant with a P value of 0.002, Good health was also significant with a P value of 0.000 and Poor health was also statistically significant with a P value of 0.000.

In addition being single was statistically significant with a P value of 0.000. Being divorced or separated was statistically insignificant with a P value of 0.381. Being widowed was statistically significant with a P value of 0.000.

A nursery education was statistically significant with P value of 0.000. Having a primary education was statistically insignificant with a P value of 0.205. Having a Post primary education was statistically insignificant with a P value of 0.390, similarly

college education was insignificant with a P value of 0.224, same case to an informal education which had a P value of 0.056. Having a University education was statistically insignificant with a P value of 0.758. Individuals who didn't know their education level was statistically significant with a P value of 0.000.

Both one's employment status and insurance status were not statistically significant with P value of 0.734 and 0.266 respectively.

Table 14: Table on Marginal Effects on Inpatient Utilization

Marginal effects after svy:probit						
y = Pr(inpatient) (predict)						
0.07213609						
variable	dy/dx	Std. Err.	z	P>z	[95% C.I.]	X
sex*	-0.0389358	0.00343	-11.34	0.000	-0.045664 -0.032208	0.483572
Verygo~h*	-0.0149741	0.00467	-3.21	0.001	-0.024118 -0.00583	0.255237
Goodhe~h*	-0.0203833	0.00487	-4.18	0.000	-0.029935 -0.010831	0.58541
Poorhe~h*	0.0361162	0.0113	3.2	0.001	.013963 .05827	0.040833
Single*	-0.0449484	0.00522	-8.6	0.000	-0.055188 -0.034709	0.639351
Divsep*	-0.0083587	0.00912	-0.92	0.360	-.026242 .009524	0.019666
Widowed*	-0.0236979	0.00531	-4.46	0.000	-0.034101 -0.013294	0.033164
Nursery*	0.0896538	0.01173	7.64	0.000	.06666 .112648	0.08318
Primary*	-0.0078139	0.00623	-1.25	0.210	-.020033 .004405	0.562539
Postpr~y*	-0.0137624	0.01476	-0.93	0.351	-.042689 .015164	0.004158
College*	0.012681	0.01099	1.15	0.249	-.008859 .034221	0.039259
Univer~y*	-0.0041215	0.01311	-0.31	0.753	-.029826 .021583	0.020402
Informal*	0.0526588	0.03307	1.59	0.111	-.012148 .117465	0.00245
Dontkn~c*	0.3083613	0.01611	19.14	0.000	.276782 .33994	0.101405
Employ~s*	-0.0016658	0.00489	-0.34	0.733	-.011245 .007913	0.327843
Insura~s*	0.0053526	0.00489	1.09	0.274	-.004235 .01494	0.222242

(*) dy/dx is for discrete change of dummy variable from 0 to 1

(Source: Author)

One's sex was significant with a P-value of 0.000, explaining that males were less likely to seek for inpatient services compared to their female counterparts by 3.89%. This was explained by females seeking more services due to their anatomy, also females who take their children to clinics can easily access services if they have any problem. The findings were similar to those of Muriithi (2013) and Mwabu et al. (1993).

An individual who perceived their health status as very good was statistically significant with a P-value of 0.000 and hence was less likely to utilise inpatient services by 1.50% compared to individuals who perceived their health status as satisfactory. This was true since if one feels very good health wise, he or she would not have a reason to visit a hospital. Individuals who perceived their health status as good was statistically significant with a P-value of 0.000 and were less likely to seek for inpatient services by 2.04% compared to individuals who perceived their health status as satisfactory. This was also true since a "good health status" was better than a "satisfactory health status", hence a minimal likelihood to seek for services. Individuals who perceived their health status as poor was statistically significant with a P-value of 0.000 and were more likely to utilise inpatient utilisation by 3.61% compared to individuals who perceived their health status as satisfactory. This could be explained, in that if one regarded their health status as poor, they felt the need to seek for services for a better health status. The findings concurred to those of Grytten et al. (1995).

An individual who is single with a P-value of 0.000 hence significant was less likely to seek for inpatient services by 4.49% to their counterpart who is married. This could be explained by the single individual not having someone to push him or her to seek services since decision making is done by an individual. Individual who was widowed or separated was less likely to utilise inpatient services by 2.37% compared to an

individual who was married. This could be explained by the individual making choices by themselves on if to utilise services or not.

As for education level, an individual who did not know their education level would utilise services by 30.84% compared to an individual with a secondary education. This could be argued that an individual who did not know their education level was less likely to self-diagnose hence self-medicate, therefore seeking inpatient services for any health problem. An individual who had a nursery education was significant with a P-value of 0.000 was more likely to seek for services by 8.97% compared to one with a secondary education. The findings were similar to those of Davies et al. (2014) and Squires et al. (2015).

CHAPTER FIVE

SUMMARY, CONCLUSION AND POLICY IMPLICATION

5.1 Introduction

This chapter looked into summary, conclusion and policy implications of the study.

5.2 Summary and Findings

Findings from KHHEUS (2013), gave a picture of the utilisation profile in Kenya. The results showed that the rich utilised services more than the poor be it outpatient or inpatient, this showed that there was some presence of inequity. Additionally, studies that had earlier been done did not have an estimation of the inequity magnitude in their objectives and most of them were done in the Asian continent. Therefore a gap was presented by the studies and the findings by KHHEUS (2013), hence the study.

The study sought to estimate the magnitude of the health inequity if existent and to which direction it faced. Consequently also the study sought to estimate the determinants that affected health care utilization.

To estimate the magnitude of health inequity, the study used non-experimental cross-sectional research design on data adopted from the Kenya Household Health Expenditure and Utilisation Survey (KHHEUS, 2013). The theoretical framework borrowed from Andersen (1968) model on health behaviour. The confidence index to measure the magnitude, was estimated using STATA econometric software following a guide by Wagstaff et al. (2008). Additionally, in order to estimate the factors that affected health utilization, marginal effects on the probit regression were ran.

Looking at outpatient utilization first, inequity existed as proven from the analysis. This was well shown by the concentration index (CI) of 0.00039114, which was greater than 0 hence depicting that inequity was pro-rich. This showed that the rich utilised outpatient services more than the poor. The CI's magnitude of 0.039% pointed out that the rich were utilising services more by that percentage.

Further to inpatient utilization. The results showed that inequity existed. A CI of 0.01705421, meant that the utilization for inpatient was pro-rich. This led to the conclusion that rich individuals utilised inpatient services more than the poor by 1.705%, this was also the magnitude of inpatient utilization inequity.

The study also aimed at analysing factors that affected both outpatient and inpatient utilization. For the outpatient, from analysis, one's sex was a determining factor to seeking utilization. One's perception of their health status was also significant in explaining utilization and this is specifically if one health status was either very good, good or poor. An individual's marital status also has an impact in one's decision to utilize services and this is specific to if one was single. The level of education also had an impact to whether one sought for services or not, the levels of education were if one did not know their education level, having a nursery, primary education and having a university education. Finally one's insurance status also played a role in ensuring if an individual sought for outpatient services or not.

Looking at inpatient utilization, similarly to outpatient utilization, one's gender was a determinant to seeking for services. One's perception to their level of health status influenced one to seek for services or not, this is specifically if one health status was very good, good or poor. From analysis also, one's marital status affected utilization of inpatient services and this was more so to the single and widowed individuals. Last but

not least the education level of an individual also has an impact. For inpatient utilization, one not knowing their education level and reaching nursery affected their decision to utilise services.

5.3 Conclusion

In conclusion, it is clear that the rich have an upper hand compared to the poor in regards to service utilization be it outpatient or inpatient. This is shown by the confidence index of outpatient utilization being 0.039%, and inpatient utilization at 1.705%, both reflected as pro-rich. With regard to factors affecting utilization, the variables that affected utilization of health care services were mainly socio-economic, this were sex ,health status, marital status, education level and insurance status.

5.4 Policy Implications

Health is one of the key components of the big four agenda, hence with this the introduction of the Universal Health Coverage (UHC). UHC was introduced with the main aim of making strategic investment to health that would ensure that Kenyans had access to essential services by 2022. For UHC to be effective, the interventions should go beyond addressing a specific health inequity but rather have a change within systems such as a change in economic or social relationships.

The study concentrated on socio-economic factors and the results showed that health status, education level and insurance status, factors that government can have an input on, were determinants to seeking of services. With this knowledge the government could improve more on the coverage of NHIF via sensitization of the public on its benefits and subsidies, this would lead to more Kenyans especially the poor having access to services, hence more utilization leading to a reduction the inequity levels.

Another area is to improve level of education, education has an effect on health literacy which in turn has an impact on the health behaviours of an individual.

5.5 Scope for Further Research

The study focused on equity in utilisation of health care services in Kenya. Several findings were drawn from the study. Nevertheless, there is need to further explore related areas in order to fully understand the equity situation in Kenya. These may include research on decomposing the CI on different regions, for example the counties. One can also research on equity to the health services but have non-communicable diseases as an additional need variable. Lastly but not the least, one can do a study to find out if vertical inequity with regards to healthcare utilisation is present in Kenya and to what degree.

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