



EQUITY IN UTILISATION OF HEALTH CARE SERVICES IN KENYA

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Abstract

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. 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. Data used was obtained from the Kenya Household Health Expenditure and Utilisation Survey (KHHEUS), 2013. 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, one's sex, one's health status, education level and insurance status. In conclusion, the government has to come up with workable policies to improve the socio-economic factors. Firstly, the government should empower its citizens to have insurance covers which will act as a financial buffer while seeking for services, secondly, the government should improve the literacy levels 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.

Keywords: Equity, Concentration Index, Utilization, Horizontal Inequity, Health Services



INTRODUCTION

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).

Health Policy Environment in Kenya

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 was formulated 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).

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).

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, Bonfire 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.

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?

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.

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

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.

Limitations of the Study

Limitation of the study, due to the use of secondary data, is that the study did not have control on the data collected and its quality.

RESEARCH METHODOLOGY

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.

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:

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

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.

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

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.

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.

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.

EMPIRICAL FINDINGS

Descriptive Statistics

Table 1 summarized and gave a description of the variables used in this analysis.

Table 1: 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%

Table 1...

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 utilization of services, 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.

Diagnostic Tests Results

Correlation Test

Table 2: 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

From the matrix in table 2, 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 (Boohoo et al., 1997).

Statistical Test of Individual Predictors

Statistical test of individual predictors outpatient utilization

Table 3: 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	Table 2...
(16) [outpatientvst]Employmentstatus = 0	
(17) [outpatientvst]Insurancestatus = 0	
F(16, 27758) = 200.23	
Prob > F = 0.0000	

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.

Statistical test of individual predictors' inpatient utilization

Table 4: 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	

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.

Goodness of Fit Statistic***Goodness of fit statistic_ outpatient utilization***

Table 5: 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

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.

Goodness of fit statistic_ outpatient utilization

Table 6: 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

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.

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. The STATA output is presented in table 7.

Table 7: Confidence Index for Outpatient Utilization

Cor inpatient_st rank [fw=new_weight], c		
(obs=44,421,852)		
	inpatient_st	rank
inpatient_st	0.202938	
rank	0.000059	0.08334
sca c=(2/mean)*r(cov_12)		
sca list c		
c=.00039114		

Table 7 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 8: 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

From the table 8, 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 9: 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

The relationship between the variables and outpatient utilization was explained in table 9 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.

Inpatient Utilization

Table 10: Concentration Index for Inpatient Utilization

Cor inpatient_st rank [fw=new_weight], c		
(obs=44,421,852)		
	inpatient_st	rank
inpatient_st	0.080375	
rank	0.000773	0.08334
sca c=(2/mean)*r(cov_12)		
sca list c		
c=.01725421		

Table 10 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 11: 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	-0.3330006	-0.2354383
Verygoodhealth	-0.1134587	0.0368421	-3.08	0.002	-0.1856711	-0.0412464
Goodhealth	-0.1455491	0.0345264	-4.22	0.000	-0.2132224	-0.0778757

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

Table 11....

From the table 11, 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 12: Table on Marginal Effects on Inpatient Utilization

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

Marginal effects after svy:probit
 $y = \text{Pr}(\text{inpatient})$ (predict)
 0.07213609

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

Table 12....

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

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).

SUMMARY OF 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 where 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 performed.

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.

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.

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.

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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