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Health Insurance Deepening and Its Impact on Maternal Healthcare Demand in Private Hospitals in Kenya

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Abstract

Promotion of maternal healthcare services through the expansion of health insurance coverage has been a core strategy that has been adopted in the reduction of maternal and child mortalities in Kenya. In this study, we seek to establish how health insurance coverage and benefits influence the demand for maternal health utilization in private hospitals in Kenya. The study utilized the latest Kenya Demographic Household Survey 2014 data to estimate the relationship. The binary probit regression model was employed in estimation. From the findings, only 15 percent of mothers were enrolled in a health insurance plan, whereas 14 percent of the women reported to have attended antenatal clinics in private health facilities, and 13 percent benefited from skilled delivery in private healthcare facilities. Results further revealed that health insurance ownership led to a significant increase in the likelihood of utilizing maternal health care services in private hospitals in Kenya. Similarly, age of the mother, marital status, birth order, higher education level, all wealth index categories, and employment status were cofactors associated significantly with use of healthcare services. It was concluded that the advent and increase of health insurance coverage is associated with a significant rise in demand of maternal healthcare services in private hospitals. This study argues that the current health subsidies would be more effective if they were channeled through health insurance with wider coverage of private hospitals. The study recommends reforms in policies and guidelines governing insurance coverage, which we argue would significantly bring down the cost of insurance coverage, thus become more accessible to more Kenyans.

Keywords: Health Insurance, Maternal Healthcare Demand, Private Hospitals

Introduction

A good health is not only needed for individual well-being but is also an important ingredient for a nation's economic and social development (WHO, 2000). Reduction of maternal and child mortalities is one of the identified global priorities under "Goal 3: Ensure healthy lives and promote well-being for all at all ages" in the Sustainable Development Goals (SDGs) agenda through 2030. The key to the attainment of this goal is through elimination of inequities that lead to disparities in access, quality and outcomes of health care (Orayo, 2020). Kenya like many developing countries, did not manage to attain almost all set health MDG targets by 2015 (Rono, 2017). This is despite the country spending approximately 5.4% of GDP on health that accounts for 4.6% of government expenditure (MOH, 2017), yet it remain among the 10 countries that comprised 58 percent of the global maternal deaths (Mbugua & MacQuarrie, 2018).

Studies have shown that the focus on health service utilization has been mainly on financial barriers but strategies and policies on access are limited (Michael et. al., 2013; Kasina, 2016; Orayo, 2020). How accessible and effective free maternity services utilization to women still remains a paradox. There is little evidence on cause and barriers to access from side of provider (Kasina, 2016). Evidence and causes of underutilization of free maternity service is said to be missing in most studies. The Kenya National Health Accounts Report shows that the Kenyan health care system leans mainly on out of pocket (OOP) payments as the primary means of health care financing as many do not have medical insurance (MOH, 2017). Health insurance is a way of protecting families against the unforeseen risk and high costs of illness while seeking for quality care. This is via regular contributions in order to share risks of future costs among the population both ill



and healthy. The most significant happenings has been witnessed over decades with the government's concern in social health insurance to guarantee access for all Kenyans to health care services in particular both in and outpatient and to meaningfully ease the out-of-pocket health care financing of families, particularly the poorest (Suchman, 2018). However, to date this never guaranteed the ultimate exploitation of health services across health facilities in the country.

Healthcare financing is regarded as a way of enhancing the accessibility and affordability of healthcare, quality of life and supporting economic growth in a country (Abekah-Nkrumah et al, 2011; Chepkorir, 2014; Orayo, 2014). Since independence, Kenya principally has had a tax-funded health system, but then slowly introduced a series of health financing policy changes. Today, health insurance in Kenya can be profoundly categorised into private health insurance (self-insurance, and commercial insurance, among others), public health insurance (National Hospital Insurance Fund), Community-based health insurance, and Health Insurance Fund. The measure in which the health insurance is used is mainly inpatients and outpatients services.

Timely access to quality healthcare for pregnant mothers is highly important in the prevention of maternal and new-born deaths in an effort to improve the overall health outcomes of the people (MOH, 2016). Lack of access, high cost and low standards of care are responsible for high maternal deaths Davis et al (2017). Financing households to improve their healthcare seeking behavior can also improve health outcomes of the communities (Chepkorir, 2014; Orayo, 2014). However, for years, a lot of women have suffered lengthy periods of illness due to extrinsic economic societal, political and cultural attributes (Chuma & Maina, 2014).

Despite the fact that Kenya is characterised by huge internal differences coupled with positive government policies (for example introduction of free maternity services for pregnant women), still some of the pregnant mothers associate the policy with low standards of care in public hospitals and thus prefer private hospitals that are characterised by high cost but associated with provision of quality care (Nicole, 2013). For example in Nairobi and Karen hospitals, normal delivery costs Kshs 98,000 and Kshs 100,000 respectively whereas caesarean section costs Kshs 220,000 and Kshs 180,000 respectively. While these facilities charge these amounts, public hospitals in Kenya offers same services at almost zero cost. Regardless of the costs, these facilities have continued to experience huge queues of women seeking for maternal health care services. However, it is not clear whether this upsurge is triggered by ownership of health insurance cover given that health insurance is highly associated with decision to use more health care services.

Unfortunately, improved health care is low particularly in government-run facilities and this has led to huge influx in private hospitals (Wanyoike, 2016). According to Mwabu, (2008) availing health insurance and refining the quality of care has a positive effect of improving consumption of health care services. This gives private hospitals an upper hand as they are perceived to offer quality health care services thus likely to be preferred to the public hospitals. In the same regard, this study empirically explores the effect of health insurance ownership on maternal health service use in private hospitals in Kenya while controlling for other covariates. While establishing the same, the study is mainly anchored in the theoretical expeditions of Anderson (1968; 1995) and Grossman (1999; 2000) on behaviour of health service utilization and health production respectively. The study was conducted to answer the following research questions: what are the social and demographic profiles of women with antenatal visits and assisted skilled deliveries in Kenya? What is the effect of health insurance coverage on the demand for maternal health services utilization in private hospitals in Kenya?

LITERATURE REVIEW

The demand for quality health care vary widely, especially when health care is disaggregated by types of services (Ringel *et al.*, 2002). According to Grossman model of health production, the demand for healthcare and other health services is said to be resulting from the basic demand for health (Grossman, 2000). Actually, individuals demand for healthcare as a consumption commodity because it directly satisfies their utility especially during the days of illness which are a source of disutility. Consumption of health services is reliant on on three chief underlying forces: predisposing, enabling and need dynamics (Andersen, 1995). Predisposing explanations are quoted to comprise features such as age, race and health beliefs, while

enabling factors comprise family support, health insurance possession and one's community. The need factors characterize both the actual and perceived necessity for health care services.

Pathways theories on healthcare utilization on the other hand try to find numerous measures engaged by persons in light of their health and dynamics that effect these paths and predispose to real use of healthcare services. Pathways theories include both psychological and explanatory theories (Mackian *et al.*, 2004). In this respect, the explanatory theory is allied on the cataloguing of specific signs as well as signs of an illness and the explanation of these in a decision-making process founded upon familiarity. Thus, consumption of paid or unpaid maternal health care services are connected to family conducts. Conversely the psychological theory deliberates motivating forces by concentrating on the notion of decision-making in looking for health or consuming of a specific maternal health care service for example prenatal care or hospital delivery through opinions. Also they appraise the cost-benefit of activities relative to these services (Pillai *et al.*, 2003 and Mackian *et al.*, 2004).

Some researchers suggest the need to ensure availability and accessibility of affordable quality services through health financing that is support for the supply side (Kasina, 2017). The socio-economic position of a family, woman's education, financial access, proximity to services and the overall health-related beliefs of the household were all found to be associated to medical decisions (Smith & Christakis 2008). Other studies including McNamee, Ternent and Hussein (2009) and Ochako et al (2011) as cited in Chepkorir (2014) found out that income has a positive relationship with utilization of these services. These implies that women from well off households demand more maternal services than those from poor households since they can afford the charges.

Manishimwe (2011) evaluated determinants of health care demand in Rwanda. The research employed the multinomial logit model in estimation and referred to the Rwanda demographic and health study dataset of 2005. The study used prenatal service, time of the initial visit, and prenatal care follow up as the dependent variables with several independent variables. Further, the study adapted binary probit model to explore utilization of postnatal care. The study results indicated that education, income, age of the mother, health insurance and living in urban areas had significant and positive effects to consumption of maternal health care services. However, results revealed that being employed and birth order negatively influenced utilization of maternal health care services.

A research by Craigwell et al (2012) on the efficacy of government disbursement on health services in the Caribbean exposed that health spending had a substantial affirmative outcome on health standing and it was described to decrease maternal mortality rates. In a related study, Abekah-Nkrumah et al (2011) explored the effect of increasing maternal healthcare consumption in Africa Sub Sahara via micro-finance. The study proved that enhanced access to micro-finance by womenfolk, joint with schooling may augment maternal health service endorsement and hence decrease instances of maternal and infant deaths. The start of social health insurance in Vietnam through the 1990s reduced out of pockets (OOP) and ruinous health expenditure as demonstrated by Wagstaff and Pradhan (2006). Utilization increased and improved health status. Sparrow, *et al.*, (2010) concluded that health insurance can be operative in rising usage of health care services and lowering OOP. Conversely, Wagstaff and Lindelow (2008) undertook a study in china where it was shown that in urban China, improved use and behavioral responses by healthcare providers. Moreover, Wagstaff *et al.*, (2009) for rural China, find positive and important contributions of a voluntary health insurance scheme on the usage of health care services amid 2003 and 2005, but find no consequence on Out of Pocket expenditures. Crystal et al (2000) demonstrates that the uninsured elude out-of-pocket expenses by using few health services apart from when they are extremely ill, when they turn to a charity safety net. On the other hand, Fronstin (2000) discovers stark financial penalties for those lacking insurance who fall very ill, and, disparate to the insured, often diminish their family possessions to cater for care.

In Kenya, Kamau (2016) based on evidence from Kenya Demographic and Household Survey (KNBS, 2014) employed binary probit regression models (antenatal care, hospital delivery and postnatal care) to determine maternal health service use. The study results revealed; age of the mother, age of the mother at first birth, higher education level, birth order, being a catholic, being a Muslim, all wealth indexes, mass

media and all regions except North Eastern and Nyanza regions had increased likelihood in the usage of antenatal care. Age of the mother at first birth, secondary education, higher education level, birth order, urban residence, poorer wealth quintile, middle wealth quintile, richer wealth quintile, richest wealth quintile, mass media and regions increased the probability of hospital delivery usage. For the Postnatal the key variables that increased the likelihood of it usage were; age of the mother, birth order, middle, richer and richest wealth quintiles, and central regions were statistically significant in determining usage of postnatal care services in Kenya. In a similar study using the KNBS (2008) Machio (2008) detected that womenfolk from town incline to seek out further healthcare services than their equivalents in the rural areas. This was credited to the extent of schooling, age, proximity to health facility, earnings, courteous maternal care, competent health staff, and approach of staff among other aspects that impact consumption of health facilities.

Chepkorir (2014) engaged probit regression model to examine dynamics manipulating consumption of maternal health care services amid the rural women in Kenya. The dependent variables used were prenatal care, hospital delivery and postpartum care. The study employed KDHS of 2008. The analytical results specified that age of the person, scope of the family members and birth order are noteworthy influences which predisposed consumption of hospital delivery. Sex of the head of the family also impacts usage of prenatal care and postpartum care positively and considerably. Conversely, place of residence considerably decrease consumption of both hospital delivery and postpartum care while womenfolk in advanced wealth index had lesser consumption of both prenatal care, hospital delivery and postpartum care.

Chepkoech (2003) used the binary logit model to carry out a study on the demand for prenatal and obstetric care services in the slums of Nairobi. The primary data obtained from a sample of 205 women to analyze the decision to or not to use the antenatal care as well as the decision to deliver in a health facility or not. It was further revealed that lack of money to meet delivery care costs was the reason why many women failed to deliver at a modern health facility. Birth order or the number of children a mother already has affects antenatal care utilization such that as the number rises, antenatal care utilization falls. Other factors which have positive effect on demand for antenatal and obstetric care services according to the study are marital status and age. Cost of the service however has a bad outcome.

A study on consumption of maternal health care amid young womenfolk in Kenya using KDHS (2003) revealed that socioeconomic status (wealth index) had a positive relationship with consumption of maternal health care services (Ochako *et al.*, 2011). The researchers concluded that, women from well off households demand more maternal services compared to their counterparts in the poor households as they can afford the charges. Wanyoike, (2016) undertook a study on determinants of demand for private hospital care in Kenya using the probit regression model and employing the Kenya Household Health Expenditure and Utilization Survey (2013). The dependent variable used was demand for private hospital care. From the results, the coefficients for age, educational attainment, distance to nearest health facility, ownership of health insurance, wealth index (through the four wealth quintiles against the first wealth quintile), place of current residence, religion and access to mass media were found to be statistically significant at different levels in determining demand for private hospital care in Kenya. Apart from distance to the health facility whose coefficient had a significant negative effect, the coefficients for other factors had a positive and statistical significance on demand for private hospital care in Kenya.

It is theoretically plausible therefore that people desire good health hence the demand for quality health care services (Grossman, 2000; Smith and Sulzbach, 2008). From the literature, both predisposing, enabling and need factors are shown to collectively influence usage of health services by individuals. With regard to health care utilization: Age of the mother had a negative relationship (Manishimwe, 2011; Kamau, 2016; Wanyoike, 2016); Age of the mother at first birth had a positive relationship (Kamau, 2016); Marital status had positive relationship (Chepkoech, 2003); Birth Order had a negative effect (Manishimwe, 2011); Number of living children had a negative relationship (Shariff and Singh 2002; Chepkorir, 2014); Maternal education had a positive relationship (Craigwell *et al.*, 2012; Kamau, 2016; Wanyoike, 2016); Socioeconomic status have positive effect (Ochako *et al.*, 2011; Kamau, 2016); Size of the household was associated with negative (Chepkorir, 2014); Place of current residence has a positive relationship (Manishimwe, 2011; Machio, 2008; Kamau, 2016); Employment status and religion were associated with positive relationships (Kamau, 2016;

Where y is latent / unobserved variable (i.e. the probability of using maternal health care services). x' is vector of independent variables e.g. demographic and socioeconomic factors. α is the constant coefficient, β' are other parameters to be estimated, μ is the disturbance term. The probit model assumes that y is a normally distributed random variable (Orayo, 2014). From equation 1, we relate unobservable variable y to the observed binary variable y as articulated below;

$$y = \begin{cases} 1 & \text{if } y^* > 0 \\ 0 & \text{if } y^* = 0 \end{cases} \dots\dots\dots 2$$

Where: y is the probability of consuming health care services by a mother, such that; 1 if one utilizes either of antenatal, or skilled assisted delivery care services and 0 if otherwise. The dependent variable (y) is binary, and can be regressed on a number of independent variables (Chepkorir, 2014). The probit model is estimated using the maximum likelihood method and an increase in one of the explanatory variables increases/decreases the likelihood that y is observed (Ani, 2013 and Chepkorir, 2014).

According to Chepkorir, (2014) the probability obtained from estimation of average marginal effect(s) can be interpreted as an estimate of the conditional probability that a mother will utilize maternal healthcare services in a private hospital given ownership of health insurance and certain identified factors. The Marginal Effects shall be *interpreted* as the change in the probability of consuming any of maternal health care services in Kenya, for a unit change of any of the independent variable other factors held constant. In regards to specifying the model, the study employed a general multiple binary regression analysis to find out the probability of utilization of maternal health care services in Kenya. The general model is as shown in equation 3;

$$y = \alpha + \beta' \sum_{i=1}^n x + \mu_i \dots\dots\dots 3$$

Since y is binary, equation 3 was estimated representing utilization of maternal health care services (if a mother attends at least 4 antenatal clinics or delivers at hospital) in private hospitals in Kenya. Where α is the constant coefficients and β' is the estimated coefficients of the respective variables. The $\sum_{i=1}^n x$'s includes all study variables that is health insurance coverage and other covariates representing demographic, socio economic and environmental factors such as; current age of the mother, age of the mother at first birth, educational levels, birth order, size of the household, socioeconomic status, place of residence, religion and access to information) and ε_i is the disturbance/error term implying that the model is stochastic in nature.

The study used the latest Kenya Demographic Household Survey 2014 which is a household-based cross sectional survey data containing general information on all major maternal health care services. Specifically, the survey asked questions on the visits made for antenatal care, and place of delivery. The survey was conducted after the pronouncement of free maternity policy in Kenya and thus was best placed to indicate the factors that specifically influence utilization of these services. The survey further collects information on the ownership of the health facility from which the client sort medical help. This enabled us to sample private hospitals only. Information pertaining to mothers across the country is made clear. On health financing, the survey explored whether the respondents were covered by any health insurance or not including the type of health cover they possess. Other information which can be obtained includes age of the mother, age of the mother at first birth, current residence, and maternal education levels among other factors related to this study

Results and Discussion

The study explored the levels of maternal healthcare service utilization in private health facilities in Kenya. From the findings in table 1, respondents who reported to have had at least four antenatal visit were 54.3 percent whereas those who delivered in healthcare facilities or received skilled assistance were 59.3 percent. Further, the study assessed those women who received maternal health care services from private and public health facilities in particular. It was established that approximately 13.5 percent of the respondents reported to have had antenatal visit in private health facilities whereas 12.6 percent delivered in private healthcare facilities.

Table 1: Maternal Healthcare Utilization

Variable	Observations	Mean	Std. Dev.	Min	Max
In All health facilities					
Antenatal Care	14,898	0.5432	0.4981	0	1
Assisted Skilled Delivery -ASD	14,761	0.5926	0.4914	0	1
Private health facilities					
Antenatal care	14,761	0.1255	0.3313	0	1
Assisted Skilled Delivery -ASD	6,755	0.1350	0.3418	0	1

Source: Computation from KDHS 2014

In realizing the study objectives, the social and demographic profiles of women under study were assessed. On the assessment of age distribution; both age of the mother and age of the mother at first birth, the study established that the former had most respondents being on average 29 years old and the latter had an average of 19 years old. Considering the minimum and the maximum, the youngest mother had 15 year and the oldest had 49 years whereas the youngest mother was reported to have had the first delivery at 10 years while the oldest was 44 years. Marital status were also assessed where married was compared to unmarried group. From the findings most of the respondents (that is approximately, 57.1 percent) were married. On educational attainment, majority of the respondents had primary education (50.2 percent) with 27.7 percent and 13.5 percent having secondary and no education respectively. Only 87 percent of the women were reported to have higher education. The details are as indicated in table 2.

Table 2: Mothers' Characteristics and Health Insurance Coverage Levels

Variable	Observations	Mean	Std. Dev.	Min	Max
Age of the Mother	31,079	28.94	9.3934	15	49
Age at First birth	23,244	19.42	3.65	10	44
Marital status	31,079	0.5712	0.4949	0	1
Birth Order	23,245	3.5961	2.2991	1	15
No education	31,079	0.1346	0.3413	0	1
Primary education	31,079	0.5024	0.5000	0	1
Secondary education	31,079	0.2766	0.4473	0	1
Higher education	31,079	0.0865	0.2811	0	1
Poorest	31,079	0.2337	0.4232	0	1
Poorer	31,079	0.1921	0.3940	0	1
Middle	31,079	0.1913	0.3933	0	1
Rich	31,079	0.1917	0.3936	0	1
Richest	31,079	0.1912	0.3933	0	1
Household size	31,079	5.47	2.56	1	23
Residence	31,079	0.3737	0.4838	0	1
Employment	9,034	0.1515	0.3586	0	1
No Religion	31,079	0.0163	0.1266	0	1
Christians (roman catholic and Protestant)	31,079	0.8463	0.3607	0	1
Muslim	31,079	0.1339	0.3405	0	1
Exposure to Mass media	31,079	0.8267	0.3785	0	1
Health Insurance Coverage	14,733	0.1520	0.3591	0	1

Source: Computation from KDHS (2014)

Considering the socioeconomic status, it can be observed that there was no much difference across different categories. However, poorest group was high at 23.4 percent whereas the rest of the categories that is poorer, middle, rich and richest was 19.2, 19.1, 19.2 and 19.1 percent respectively. Household size was assessed discretely where most households reported to be approximately five (5) members with the least household reported to have one member while the largest had 23 members. Majority of the households (37.4 percent) resided in urban areas with the data indicating showing those employed as being 15.2 percent. The religion was also assessed as either having no religion (1.62 percent), Christians (84.6 percent) and Muslim (13.39 percent). About 82.67 percent of respondents had exposure to mass media. On insurance coverage, respondents were asked to indicate whether they were covered by any health insurance. Only 15.2 percent of the respondents were insured on average, implying that over 84 percent were not insurance or covered under any health insurance coverage.

On econometric estimation of maternal health service utilization models, the study estimated the extent to which health insurance coverage level affects maternal health utilization in private hospitals in Kenya. In examining the findings in table 3, it was revealed that health insurance ownership had a significant influence or effect on maternal health service utilization in private hospitals in Kenya given the t statistics of 6.00 and

8.83 in models one and two respectively. To proceed, the study considered significant covariates in the respective models for further discussions.

Table 3: Marginal Effects for Probit Regression Results: (Antenatal and Hospital Delivery)

		Number of obs. = 4,505	Number of obs. = 4,633
		LR chi2(19) = 268.81	LR chi2(19) = 578.86
		Prob > chi2 = 0.0000	Prob > chi2 = 0.0000
		Log likelihood = -1731.7555	Log likelihood = -1621.612
		Pseudo R2 = 0.0720	Pseudo R2 = 0.1515
Dependent Variable (s)	Antenatal Care (Model 1)	Hospital Delivery (Model 2)	
	Marginal Effects (t- statistics)	P values	Marginal Effects (t- statistics) P values
<i>Health Insurance Coverage</i>	0.0799*** (6.00)	0.000	0.1038*** (8.83) 0.000
Age of the Mother	0.0021 (1.43)	0.152	0.0057*** (4.12) 0.000
Age at First birth	0.0015 (0.71)	0.476	-0.002 (-1.01) 0.311
Marital status	-0.0018 (-0.14)	0.886	0.0333*** (2.81) 0.005
Birth Order	-0.0051 (-1.03)	0.302	-0.0248*** (-4.99) 0.000
Maternal Education (No Education)			
Primary Education	-0.0493* (-1.93)	0.053	0.0074 (0.30) 0.764
Secondary Education	-0.0323 (-1.14)	0.254	0.0054 (0.20) 0.838
Higher Education	0.0186 (0.51)	0.611	0.0978*** (2.77) 0.006
Socioeconomic Status (Poorest)			
Poorer	-0.0021 (-0.14)	0.892	0.0246* (1.76) 0.078
Middle	0.0173 (1.01)	0.313	0.0630*** (4.07) 0.000
Richer	0.0349* (1.86)	0.063	0.1032*** (5.92) 0.000

		Number of obs. = 4,505		Number of obs. = 4,633	
		LR chi2(19) = 268.81		LR chi2(19) = 578.86	
		Prob > chi2 = 0.0000		Prob > chi2 = 0.0000	
		Log likelihood = -1731.7555		Log likelihood = -1621.612	
		Pseudo R2 = 0.0720		Pseudo R2 = 0.1515	
Dependent Variable (s)		Antenatal Care (Model 1)		Hospital Delivery (Model 2)	
		Marginal Effects	P values	Marginal Effects	P values
		(t- statistics)		(t- statistics)	
<i>Health Insurance Coverage</i>		0.0799*** (6.00)	0.000	0.1038*** (8.83)	0.000
Richest		0.1057*** (4.26)	0.000	0.1295*** (5.96)	0.000
Household size		-0.0030 (-1.13)	0.257	0.0018 (0.73)	0.466
Residence		0.0026 (0.21)	0.835	0.006 (0.53)	0.597
Employment		-0.0124 (-0.76)	0.445	-0.0416*** (-2.66)	0.008
Religion (No Religion)					
Roman catholic		0.0020 (0.05)	0.958	0.0237 (0.62)	0.533
Protestant and other Christian		-0.0065 (-0.17)	0.862	0.0277 (0.75)	0.455
Muslim		-0.0310 (-0.76)	0.448	-0.0260 (-0.64)	0.521
Mass Media		0.0146 (0.82)	0.412	0.0250 (1.35)	0.177

Source: Authors' Calculation based on KDHS 2014: (***) (***) and (*) Significant at 1% 5% and 10% levels respectively.

Probit regression findings established that in both cases, health insurance coverage increased usage of antenatal and postnatal healthcare services by women at 7.99 percent and 10.38 percent respectively. From the estimated models, some of the covariates were found to be statistically significant in determining maternal health service use whereas others were statistically insignificant at all levels. To begin with, in the antenatal model, age of the mother, age at first birth, marital status, birth order, secondary education level, higher education levels, poorer and middle socioeconomic status, household size, residence, employment, religion², and mass media were found to be statistically not significant. On the other hand, age at first birth,

² Religion was categorized into the three main categories: Roman Catholic, Protestant or other Christian and Muslim

primary education level, secondary education level, household size, residence, religion, and mass media were discovered to have a non-significant effect on usage of skilled delivery in private hospitals in Kenya.

Considering the significant covariates in both models, demographic dynamics e.g. age of the mother, marital status and birth order were associated with increased use of maternal healthcare services. This findings were supported by Kamau, (2016) who estimated three binary models, that is a model for antenatal care, hospital delivery and postnatal care respectively. The study results confirmed our findings as: age of the mother, age of the mother at first birth, higher education level, birth order, and all wealth indexes had increased likelihood in the usage of maternal health care. Studies suggested that education levels led to increased use of health services.

It is thus argued that educated women are successful in reducing prevalence of childhood diseases. They are also likely have their children attended at health facility as well as utilize prenatal and postnatal care factors which eventually ensure child survival (Hobcraft, 1993). Geale (2010) agrees with this finding by stating that maternal post primary education plays a significant role in influencing health service use. The result also agrees with the findings of the study by Orayo (2020) who found a significant connection between maternal education and infant health outcomes. These results also concurs with the study results obtained by Medrano, Rodríguez and Villa (2008) a notable positive influence of maternal health knowledge on the health of the child. These findings are further in line with several other studies such as Caldwell (1979), Hobcraft (1993), Medrano, Rodríguez and Villa (2008) Burchi (2009), Geale (2010), who all found a significant inverse relationship between maternal schooling and childhood deaths.

On socioeconomic levels and employment status, the study results also showed that the wealth level of the woman significantly raised the probability of using either antenatal or hospital delivery in private hospitals in Kenya. Households in higher socioeconomic groups or employed in some sector raises significantly the probability of experiencing better health outcomes. Socioeconomic status was assessed in five categories that is poorest, poorer, middle, rich and richest. From the findings, it could be deduced that economic empowerment significantly increases the probability of utilizing maternal healthcare services. These findings concurs with other studies that suggest that apart from education empowering mother's socially, also an economic empowerment has a positive correlation on use of healthcare (Manishimwe (2011) Kabubo-Mariara, Mwabu and Ngeng'e (2012). 2012). Further, the result supports the findings by Iram and Butt (2008) who found a significant relationship between household income and child outcomes.

In the estimated models, health insurance was found to be significantly linked to both antenatal care and hospital delivery in private hospitals. The findings showed that, mothers who were covered with any form of health insurance were more likely to use prenatal care in private hospitals at 1 percent level of significance by 7.99 percent holding other factors constant. In the second model, the study established that mothers who owned any form of health insurance had an increased probability of significantly utilizing skilled health delivery at 1 percent level by 10.38 percent in private hospitals in Kenya holding other factors constant. Health insurance coverage is highly associated with protection from catastrophic health expenditures and thus positively associated with healthcare use. In particular, the introduction of social health insurance lowers out of pockets (OOP) and catastrophic health spending as established by Wagstaff and Pradhan (2006), while utilization increase and improving health outcomes. Our findings were supported with the findings obtained by Manishimwe (2011) who evaluated determinants of health care demand in Rwanda and concluded that health insurance had significant and positive effects to utilization of maternal health care services. Also Sparrow, *et al.*, (2010) concurred that health insurance can be effective in increasing utilization of health care services and lowering OOP. Other studies that concur with our findings include; Wagstaff *et al.*, (2009); and Wanyaoike (2016). The study findings differ with the results obtained by Wagstaff and Lindelow (2008) who established that health insurance in urban China has in element amplified OOP and catastrophic expenditures which they point to an amalgamation of improved consumption and behavioral responses by healthcare providers.

Conclusions

It is necessary to recognize that healthcare financing is a means of improving the accessibility and affordability of healthcare, quality of life and sustaining economic growth in a country. As a result, households improve their healthcare seeking behaviour which can as well improve health outcomes of individuals and their communities. With the advent and increased campaigns of health insurance coverage in Kenya, the results have demonstrated that maternal healthcare services in the private sector (private hospitals) has been on the rise. This is due to the fact that health insurance ownership was positively and significantly associated with both antenatal care and assisted skilled delivery in private hospitals in Kenya. Based on the finding where health insurance ownership was significantly associated with increased or more uptake of maternal healthcare services, the study contributes to the theory where demand for healthcare as a consumption commodity is justified because it directly satisfies their utility of an individual that is a health seeker in this case the mother.

The study recommends to the national and county governments to develop a framework that could see to it that private healthcare providers are involved in the debate of healthcare service use with a view of reducing inequities in health provision. This is because the empirical findings established that health insurance coverage facilitated usage of maternal healthcare services in private hospitals in Kenya. In place of health subsidies, the government could also review the rules governing private insurances to bring the cost of cover within the reach of every Kenyan to ensure ease of access to affordable healthcare as the country strives to achieve Universal Health Coverage (UHC).

Further, there is a need for the government to introduce programs that close gaps in educational outcomes between low-income among populations so as to promote health equity. Empowerment of communities is likely to trigger more uptake of healthcare services in Kenya. This is because, wealth quintiles were associated with increased use of health care services (delivery). This is supported by employment status where those employed had a positive relationship with uptake of maternal healthcare services. Lastly, the study recommends to the national government to provide other health subsidies to the private health practitioners. By doing so, a great milestone is achieved towards realization of one of the big four agenda fronted by the government of Kenya.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper

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