

**DEMAND FOR REPRODUCTIVE HEALTH VOUCHERS AND UTILIZATION: A
CASE STUDY OF OUTPUT BASED APPROACH IN KILIFI KENYA**

BY:

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DECLARATION

This is my original work and has not been submitted in any form for an award of a degree at any other university. Any reference made to the work of others has been acknowledged in the text and a list of references provided.

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This research paper has been submitted for examination with our approval as university supervisors.

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ABSTRACT

Demand side financing initiatives are different forms of financing health services that aim to minimize financial obstacles to accessing health care and also decrease inequities by ensuring that services are made affordable to poor and underserved populations through provision of subsidies. . The voucher system is based on the basic demand theory of economics and seeks to aid in improving health outcomes. Voucher programs are designed to provide patients with the economic power to demand for health care of high quality, to enable high-risk or low-income individuals be able to access acute services, to amplify the rates of consumption of the general population, and to manage unit costs.

The voucher program has been implemented in Kenya since the year 2006 and was launched in Kilifi in the year 2011. Despite the fact that many vouchers are purchased, a number of women fail to use them to access services in these accredited facilities. This study seeks to establish why this trend has been observed particularly in the county of Kilifi and the factors that contribute to low utilization of the vouchers. The objective of the research was to come up with a detailed analysis of how demand and utilization of RH-OBA vouchers is shaped by individual characteristics and those of the household.

The study used both secondary and primary data. Analysis of the data was done using logistic regression to measure the relationship between the dependent variable and the predictor variables. The statistical test of significance for the regression coefficients (β 's) was done using the Wald chi-square test. The variables used were age, education, occupation, marital status and number of births.

Key findings indicate that no education, primary education and unemployment were found to have a relationship with demand for RH-OBA health vouchers. The findings from the utilization model suggested that only age, age squared, single and married were found to be statistically significant. Further studies and analysis may be needed to establish other factors that affect the decision to utilize health services other than the variables analysed.

Having a voucher or insurance card may not guarantee improved utilization of health care and therefore other efforts such as investing in infrastructure, human resources, commodities and medical supplies, need to be put in place to ensure that people are able to access and utilize services of high quality. This will encourage service utilization at the facility level.

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List of abbreviations

ANC	Antenatal Care
CHEW	Community Health Extension Worker
CHW	Community Health Worker
DSF	Demand side financing
FP	Family Planning
GoK	Government of Kenya
HMIS	Health Management Information System
IMR	Infant Mortality rate
KDHS	Kenya Demographic and Health Survey
KHSSP	Kenya Health Sector Strategic plan
KNBS	Kenya National Bureau of Statistics
MDGs	Millennium Development Goals
MMR	Maternal Mortality Ratio
OBA	Output Based Approach
PHO	Public Health Officer
PMU	Programme Management Unit
RH	Reproductive Health
SBA	Skilled Birth Attendant
SHI	Social Health Insurance
SMH	Safe Motherhood
TBA	Traditional Birth Attendant
VD	Voucher Distributors
VMA	Voucher Management Agency
WHO	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Background

Financial limitation remains one of the key obstacles to accessing healthcare for many segments of society that are marginalized within majority of countries (Wagstaff & Doorslaer, 2003). A high number of about 1.3 billion people in the world who are poor are estimated to have poor or no access to health services due to the fact that they can't afford to pay for these services at the time of need (Preker *et al.*, 2002). Further, those who are able to access services endure financial adversity, yet still remain indigent, due to the fact that they have to pay to get services (Chisholm & Evans, 2010).

Lack of access to healthcare as a result of financial barriers has led to poor health indicators such as maternal mortality which remains a major challenge globally, with as much as 800 women dying daily as a result of complications associated with pregnancy and child birth such as infections, hypertension, severe bleeding and unsafe abortions which can be handled by trained personnel thus preventing severe consequences (Chisholm & Evans, 2010). Sub-Saharan Africa accounts for 440 of the 800 deaths. In the year 2013 for instance, 289 000 women died during and after gravidity and delivery. Majority of these life losses were observed in settings that are portrayed as having minimal financial resources, and most of these deaths could have been avoided. This high mortality poses a great challenge for Africa and therefore the health targets, both local and international, set by many African countries will not be achieved.

Vouchers have been used as one of the many ways to deliver assistance in health particularly in many developing countries across the world. Vouchers used for accessing health care are a demand side financing mechanism that has been adopted by many developing countries as a way to enhance utilization and service access (Gupta, Joe & Rudra, 2010). The vouchers are usually distributed to targeted groups of the population and are made available free of charge or at a fee that is greatly subsidized. Vouchers have been expected to improve health outcomes by improving how service quality is delivered, improving efficiency in addition to increasing utilization of health services. The voucher system is based on the basic demand and supply theories of economics and seeks to aid in improving the efficiency and health outcomes.

The voucher system is known to give the targeted population groups purchasing control/power and they are therefore able to access services that they would otherwise not afford to pay for (Brody *et al.*, 2013). Vouchers remove barriers to access to services and therefore their demand is usually high since more of the targeted individuals are able to afford. Voucher programs are also known to incentivize health care workers in order to increase their motivation and improve on service delivery in general (Njuki *et al.*, 2015).

Vouchers have been implemented in several countries such as Nicaragua, Bangladesh, Tanzania and Kenya, others especially in reproductive, maternal plus child health as a way to improve the poor indicators in these areas. Mushi *et al.*, (2003) suggested that implementation of the voucher programme in Tanzania which targets to supply insecticide treated mosquito bed nets to expectant women as well as children has seen an upsurge in use of insecticide treated mosquito bed nets in the country. Khatib *et al.* (2008) stated that for households, the possession of a net grew considerably from 44% in 2005 to 65% in 2007, and possession of a treated net grew from

18% to 36%. During the same time period, net usage among children less than 1 year of age improved from 33% to 56%, and use of treated nets grew from 16% to 34%. In the year 2005, it was reported by households that have a child below 1 year that merely 7% of their owned nets were obtained by the use of a voucher and this figure rose to 50% in the year 2007 (Hanson *et al.*, 2009). This voucher scheme in Tanzania has shown that stimulating demand for health services through a subsidized voucher can greatly increase the use of certain targeted services particularly for the poor who are financially constrained.

With support from the German government through KfW, Cambodia has been able to implement a voucher programme since the year 2009 targeting safe motherhood, family planning, screening and treatment of cervical cancer, safe abortion and treatment of malnutrition in children 2 years and below. This has seen an increase in utilization of these targeted services thus improving the health of the population targeted. In Managua, Nicaragua, vouchers have been used to realize the unmet need for health services of sexual and reproductive nature (WHO, 2009).

In Bangladesh, the voucher programme has been implemented as a means to raise the usage of quality services for maternal health especially for poor women and also providing a transport stipend to enable these women to travel to health facilities. More than half a million people have benefitted from this voucher program. In order to make demand side subsidies effective, there was need to execute some interventions aimed towards the supply side so as to enlarge the service delivery capacity of health facilities thus increasing the use of vouchers since quality would not be a concern. It has also been reported that the demand side voucher has led to an increase in use of services compared to areas that demand side vouchers initiatives are not being applied (Schmidt *et al.*, 2010).

Armstrong (2012) noted that there are fine facts that the voucher programme in Kenya has remained useful at improving how poor women are able to access services on reproductive health and that for providers of health services, the quality and capacity have improved considerably. However, she noted that as a result of minimal nationwide coverage, it may be challenging to gauge the exact effect the vouchers may have had on maternal deaths in the country in totality. Therefore studies require to be carried out to estimate the input of the vouchers towards maternal mortality in the country in order to inform policy making.

Bellows *et al.*, (2012) noted that in the Kenya voucher programme, there was a considerable increase in skilled deliveries after the voucher continued to be implemented thus increasing demand for services. The increase in facility deliveries has improved the health status of women in the targeted areas and improvement in quality of services provided by the accredited facilities.

1.1.1 Demand side financing for health care in Kenya

The health sector remains one of the main actors in addressing how equity and socio-economic issues are addressed in the Kenya Vision 2030 within the social pillar. According to this vision, equitable financing mechanisms are envisaged through development of innovative financing systems that will improve efficiency, quality and access to health services and promote equity as a means to achieve Universal health coverage. One of the important initiatives under this driving force is for the sector to look at different and unconventional means of financing health, including a national scheme on health insurance that provides health cover to all thus enabling cross subsidization among the rich and poor and also among the ill and healthy. Other initiative/ideas include implementation of targeted health programmes for those members of society in difficult circumstances such as Output Based Approach (OBA).

In the Kenya financing strategy currently being developed, protection of the poor and other groups that are vulnerable in terms of accessing health services is one of the key features. The government is currently implementing programmes that are aimed at protecting the poor and vulnerable groups in the country including, the free maternity services, free primary health care, health insurance subsidy programme for the economically deprived and vulnerable and health cover designed for elderly and persons with severe disability.

The need for OBA was crafted out of a recognition that the indicators in the Kenyan health system are poor particularly maternal and infant mortality, and therefore the need to implement mechanisms that stimulate demand for these services in order to address such poor indicators and inform policy makers how to implement long term measures to address health issues within the sector in order to achieve sector goals and Vision 2030 goals. Whereas the health sector has continued to receive increasing budgetary allocation for inputs on the supply side, the outcome and outputs have not registered any remarkable improvement to reflect the increasing funding. For instance, utilization of facilities for delivery services has generally been on average at about 61% (Kenya National Bureau of Statistics & ICF International, 2015).

High cost of healthcare remains a big challenge particularly for the poor groups of the population with very little income; hence OBA increases the access to these services by creating demand for the services through a subsidized voucher. Therefore, by financing services on the demand side, OBA is aimed at ensuring better access and service utilization, thus contributing towards a decline in neonatal and maternal death (Janisch *et al.*, 2010).

1.1.2 Output Based Approach vouchers for reproductive health in Kenya

The reproductive health Voucher programme has been applied in Kenya for the past 10 years, and superior level of accomplishment has been noted in terms of improved uptake and quality of services in the targeted areas of programme implementation. The introduction of a free or subsidized voucher for targeted population groups is aimed at ensuring that cost as a barrier to access is minimized particularly for those faced with challenges related to income (that is the poor). Increasing the demand for vouchers within the programme has been done by increasing awareness about the voucher and how it can improve the lives of those who are targeted. Vouchers have been seen to boost the utilization of services in order to meet health needs.

The OBA approach is known to introduce competition amongst facilities, providing an incentive for them to enhance quality of their services so as to attract consumers. Armstrong (2012) supported this view by stating that the voucher programme in Kenya's provides empowerment to women by providing freedom of choice of facility from the given number of qualified institutions, and if they do not like the service, they are able to change from one provider to another.

According to Sandiford *et al.*, (2005), vouchers tend to reduce the problems associated with provider-induced demand. The voucher system is also perceived to contribute towards reduction of poverty and socioeconomic variations in health outcomes.

According to the Reproductive Health Output Based Approach (RH-OBA) Medium term review report 2011, the demand for safe motherhood services was the highest compared to Family planning and Gender Based Violence recovery services. RH-OBA beneficiaries comprised 75%

of all the deliveries that took place in accredited facilities in the programme sites during that period. The voucher system generally increases demand for services particularly for the economically disadvantaged that are targeted. A poverty grading tool consisting of socio economic features of persons and households is applied for targeting in regions of relatively high population density and towns and cities. Awareness creation activities are done through advocacy through mass media, religious forums, provincial administration and village *barazas*, health sector community strategies, use of drama and role play groups, interpersonal communication by voucher distributors (VDs).

The principle of how the voucher is priced is productivity based, which consists of the services provided such as gender based recovery, antenatal care and delivery service, in addition to any other care that is related to that service. The pricing of the voucher is estimated according to the cost of services that is meant to reflect cost of resources that are used. The sum of vouchers that are utilized may be considered a reflection of the standard required quality of services nevertheless it is differentiated by quality, type of services, level of facility and type of facility.

Based on the data published at the end of all 3 phases, the number of women who have benefitted from the OBA voucher programme in Kenya stands at over 200,000(table 1). This number includes all services that are covered by the voucher.

Table 1: Demand and use of OBA vouchers

	Voucher Use	sales	Utilization rate
Phase I (2006-2008)	64,810	104,977	61.7%
Phase II (2008-2011)	94,445	128,212	73.6%
Phase III(2011-2014)	299,205	344,049	81.15%

According to the OBA end of phase 3 report, a total of over 200,000 women have benefitted from the services of SMH, FP and GBVR since the programme began. A general trend can be seen on the increase in utilization of services from phase 1 to phase3 of the programme. This trend is due to increased marketing and awareness of the programme, improved quality of services and increased demand for services. However, a gap still exists between the demand for vouchers and their utilization.

Reviews of the pilot voucher scheme in Kenya have shown that OBA has the potential of contributing considerably to a decline of new-born and maternal mortality. Therefore, utilization of services under the OBA needs to be promoted so as to move the country forward towards achieving the goal of reducing maternal and neonatal mortality. In order to ensure successful utilization of OBA services, a proper design of incentive arrangements must be put in place to guarantee that there is creation of demand for women who are pregnant including their babies and; provision of services is by qualified providers, and diverse methods of financing should be considered so that sustainability of the initiative is guaranteed (Kanya, 2014).

1.1.3 Output Based Approach in Kilifi County

Kilifi County is home to about 1.2 million people and women of reproductive age comprising about 23.2% of the population (Kilifi County Department of Health, 2016). Health indicators

performance has been poor with facility deliveries standing at only 52.6%, contraceptive prevalence of 34% (Kenya National Bureau of Statistics and ICF International, 2015). Maternal mortality remains high at 360/100,000 due to many factors such as lack of access to facilities, home deliveries as a result of cultural beliefs. The poverty rate in Kilifi is high at 71.4 % meaning that many people face financial constraints in accessing health services (Kenya County Fact Sheet, 2011). The OBA programme was introduced in Kilifi in the year 2011 so as to address the issue of access and remove financial barriers to mothers who would want to deliver at a health facility, particularly the poor.

Kilifi County has a high demand for vouchers which has been created as a result of a new distribution mechanism where voucher distributors are permitted to distribute vouchers in rural based health facilities and this has had a positive impact on voucher sales especially where facilities are situated far from the nearest chief's office. Aligning distribution days with the facility clinic days has also ensured that as many clients as possible are captured.

A lot of effort has also been put into identifying and searching out Public Health Officers (PHOs) and Community Health Extension Workers (CHEWs) to gain access to and attend Community Health Workers (CHW) meetings. This has served to generate an improved perception of OBA in the eyes of this influential group of opinion leaders and enlist their assistance in pushing for skilled birth attendance, attendance of all four ANC visits and acceptance of long term family planning in the communities within Kilifi. The trend in sales and use of vouchers shows a huge gap in the utilization of targeted services in the area of Kilifi over the four quarters in the year 2013 (OBA quarterly reports, 2013).

Table 2: Trend in voucher demand and utilization

	Jan to March	April to June	July to Sept	Oct to Dec	Total 2013
Voucher Sales:					
Safe motherhood	4115	4686	4085	4108	16994
Family planning	4329	5065	4688	4755	18837
Voucher use:					
Safe motherhood	1609	2466	2309	2140	8524
Family planning	290	487	713	833	2323

The huge gap in use of vouchers in Kilifi County for the year 2013 is shown in Figure 1 which raises the question of what factors may be contributing to this scenario:

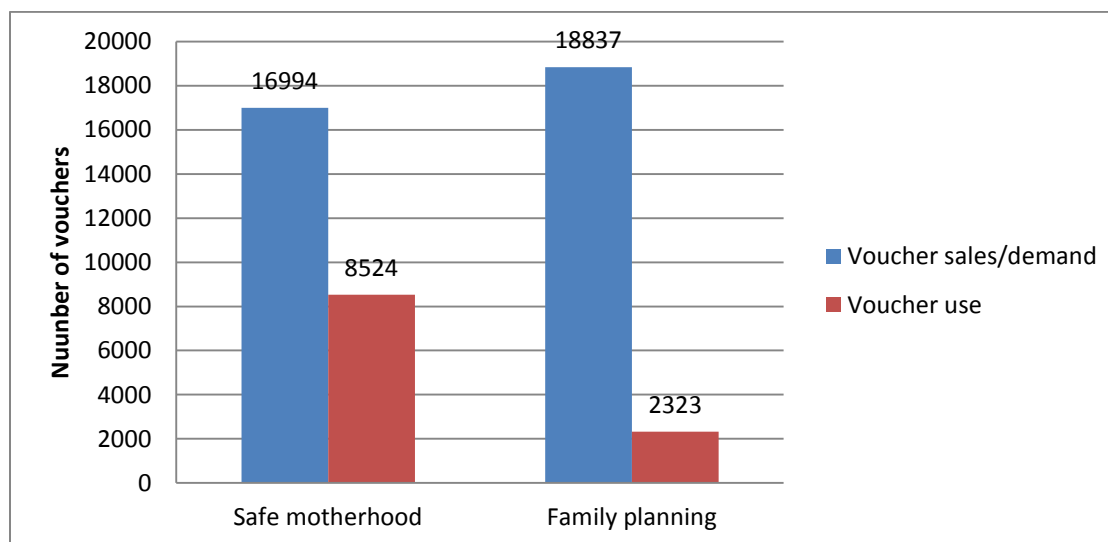


Figure 1: Demand and use of vouchers in Kilifi, 2013

1.2 The Statement of the Research Problem

The voucher programme has been implemented in Kilifi County since the year 2011. The concept of vouchers distributes vouchers at highly subsidized prices and the targeted groups are able to utilize safe delivery, antenatal care, family planning and gender based violence recovery services at accredited facilities in target zones. The programme has seen an increase in demand

for subsidized vouchers since inception of the programme as indicated by the high number of sales of vouchers in the region. However, use of the vouchers has been reactively low for the targeted services, that is safe motherhood and family planning services. Given the policy importance of the programme, there is need to understand the reasons for the relatively low utilization of the vouchers. The purpose of this study is to fill this gap by investigating factors which may be contributing to the low utilization of vouchers.

1.3 Research Questions

- a) How does individual characteristics affect the decision to buy the voucher?
- b) What is the relationship between household characteristics and the use of vouchers?

1.4 Objectives of the Study

The main objective of the study is to understand individual decisions on buying and use of vouchers in Kilifi County. The specific objectives are:

- a) To establish how individual characteristics affect the decision to buy the voucher
- b) To examine the relationship between household characteristics and the use of vouchers
- c) To propose policy recommendations based on the (a) and (b) above

1.5 Justification of Study

Kenya's maternal and infant mortality rates is currently at 362/100,000 and 39/1000 respectively which are not impressive, and suggest that if an intensive effort is not put in place to address them, the country will not achieve its sector priorities and international health obligations such as the sustainable development goals (SDGs). In addition maternal deaths account for 14% of deaths for the females in the reproductive age bracket (Kenya National Bureau of Statistics & ICF International, 2015).

The demand side subsidies aim to enhance accessibility to health services while removing one among the key barriers to access which is financial capability of individuals to pay for their health care. The sale of the OBA voucher has seen an increase in demand over the years the programme has been implemented in Kilifi County. However, the low use of demanded vouchers raises a serious concern for policy makers on the underlying reasons that lead individuals to purchase vouchers then end up not using them for the range of services covered. Due to the fact that poor indicators are mostly observed among the poor population, increasing demand for vouchers is expected to positively impact on the health of the population if the vouchers are used for the targeted services of safe delivery, antenatal care, family planning and gender based violence services in the area.

Kilifi County has poor maternal and child health indicators hence understanding reasons for low use of vouchers can help in addressing these issues hence improving the health of women and children in the area and the country in overall. These poor indicators are some of the reasons why the country may not achieve its international goals and the health sector priorities related to maternal and child health as outlined in the KHSSP III and Vision 2030 Medium Term Plan II. Most of the studies from the literature reviewed have focussed on demand and utilization of general services. Further some have had nationwide focus while others have been focussed in other areas other than area of study (Kilifi).

It is therefore important to study these underlying factors in low use of vouchers and how the policy recommendations can be implemented in Kilifi and can be adopted in other OBA sites and the country in general.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction to Literature

In this chapter, the variables and concepts introduced in the research questions are reviewed. The issue of demand and use of vouchers being implemented in other countries is discussed. The chapter then focuses on utilization of targeted services as a process to accomplish the aim of enhancing the health of underprivileged females and children in low income countries that are still developing.

2.2 Theoretical Literature

2.2.1 Demand Theory

Demand refers to the quantity of goods or services which consumers are prepared to purchase at a given price in a particular time in order to gain utility, given their income. Demand may be effective (willingness backed by ability to pay), latent (willingness without ability to pay) or derived (demand is created as a result of demand for another product). The law of demand is that as price falls then an increase in demand will be noted and vice versa assuming all other factors are held constant. According to the theory the price, income, price of related goods and tastes and preferences are factors that influence demand.

Demand for any economic commodity is derived from utility maximizing behaviour of individual consumers.

Given the income available to the individual (Y), plus the prices (P_a and P_b), the individual needs to select the affordable combination of goods/service that will maximise his/her utility.

$$Y \geq P_a + P_b$$

Max $U(a,b)$ given that $Y = P_a A + P_b B$

The first condition whereby the consumer maximizes utility is given by:

$$Y = P_a A + P_b B$$

Given that Y =Income, P_a is the price of the good/service a and P_b is the price of good/service b

The slope of the budget line is given by $\frac{P_a}{P_b}$ which is obtained from the formula $A = \frac{Y}{P_a} + \frac{P_b}{P_a} B$

Given that the preferences of the consumer are determined by the following utility function $U(A, B)$

the consumer's Marginal Rate of substitution (MRS_{ba}) is the indifference curve slope

which is determined by the ratio of the marginal utilities of the goods/services

$$MRS_{BA} = \frac{-\Delta A}{\Delta B} = \frac{U_b}{U_a} = \frac{\partial U(\cdot)/\partial B}{\partial U(\cdot)/\partial A}$$

$$MRS_{BA} = \frac{\partial A}{\partial B} = \frac{A}{B}$$

The second condition is therefore met by the following equation: $\frac{A}{B} = \frac{P_b}{P_a}$

The demand function is therefore derived by including the consumer's income constraint as follows:

$$A = \frac{B}{P_a} - \left(\frac{A}{B}\right) B$$

$$A = \frac{B}{2P_a}$$

2.2.2 The Grossman model

According to Grossman (1972) the demand for health is what originates the demand for health care. According to the model, an individual maximizes utility as a function of healthcare and other goods given the function of the health production and budget constraint. In the utility function education is a shift factor; it increases how efficient health care is delivered. The optimization in the Grossman model yields health care demand as a function of medical care inputs and education. It looks at how health status, age, education and income stimulate how health is produced through the demand for capital for health. It views health as a capital good, in addition to being both consumption and an investment good. The theory also shows that health

cannot be purchased from the market but rather produced by a combination of medical inputs and time. The output of healthy days is given by the stock of health capital whose inputs may include, diet, time, exercise and market inputs of health care. Individuals desire to maintain a level of equilibrium of health stock and thus make investments to maintain a certain level of health stock. However investments in health stock may change with age, education and income level.

The best possible health stock decreases with age and vice versa as a result of older people purchasing more medical care. The expected duration of life also affects how health investments decisions are made. If the outcome/returns are short-lived, an older individual may choose not to make that investment in health. Increases in wage tend to increase the stock of health capital however ambiguity arises when there is opportunity cost of time experienced as a result of generating investment in health. Education provides better knowledge for individuals to make better health investment decisions.

Being in an excellent state of health is highly desirable hence the demand for health is known to be high. Demand for health is composed of two aspects; consumption outcomes where utility is directly derived and investment outcomes whereby productivity of the individual is increased.

Given that the function of intertemporal utility for a normal consumer is as follows;

$$U = U(\phi_t K_t M_t), t = 0, 1, \dots, n$$

Where K_t is the health stock at a certain age or a period in time t , ϕ_t is the flow of service for each unit of health stock, $k_t = \phi_t K_t$ represents the full consumption of health services while M_t is the utilization of another product/service. The health stock at the starting stage is given as K_0 whereas the stock at a given age and the length of life are endogenous. Death happens when

$K_t \leq K_{\min}$. Hence the duration of life is established by the amount of capital of health that will produce maximum utility based on constraints related to resources and production.

The net investment in health stock at time period t is obtained by removing depreciation (δ_t) from the gross investment (I_t) as follows;

$$K_{t+1} - K_t = I_t - \delta_t K_t$$

The decline rates rely on age and are exogenous. Different sets of functions for household production generate the gross health investment and investment in other goods within the function of utility.

2.2.3 Limited Dependent Variables Models

Limited dependent variables are those whose range is highly restricted for example binary, multinomial, integer and censored. For binary dependent variables the main models used are logit and probit regression.

According to Maddala (1983) individuals make choices between two alternatives based on the output or outcome expected from each alternative. However he notes that a problem with the data produced may arise as a result of the self-selection process of individuals. He further points out that an individual will opt for the alternative that produces more output for him/her.

Selectivity bias may arise if the parameters are estimated using the Ordinary Least Squares (OLS) method only. However, Heckman (1975) suggested obtaining the reliable estimates of the parameters using the probit method that may be appropriate to use on the dichotomous variable then using the OLS method thereafter.

Maddala(1983) further stated that these models of self-selectivity may be used to evaluate the benefits of social programs with the commonly used model being;

$Y = X\beta + \alpha J + \mu$ Whereby Y denotes the outcome, X signifies a vector showing exogenous characteristics of an individual while J is a dummy variable. The estimate of α is what is used to

measure the effect of the program. However he states that in cases where an individual's decision is based on self-selection, the dummy variable J cannot be used as an exogenous variable.

2.3 Empirical Literature

A study by Sahn, Younger & Genicot (2003) sought to establish how demand for health care services is patterned in rural zones of Tanzania using a nested multinomial logit model. Data from a Human Resources Development Survey (HRDS) conducted in 1993 was used. Only samples from the rural areas were used including 2200 households which translate to about 14000 individuals. The sample estimates was limited to about 15% who reported to have been ill or injured four weeks prior to the study. The variables used included age, education, marital status, demographics of the household and period of illness in addition to option specific variables related to quality of care. Price parameters were also used to determine how price affects the way individuals respond to their choice of health care.

The impact of price on various groups with different incomes showed that responsiveness to changes in prices was highly noted among the poor than those who are not poor. The education dummy variable showed a trend of increase in demand for health care with increasing education. All the age categories were less probable to get care from any type of health provider. For the gender dummy variable, men were found to be less probable to get care, with more impact in lower level public facilities. Persons from bigger households were more probable to seek care, and less expected to seek non-hospital care. People with longer periods of illness were more probable to seek care, except in lower level public facilities. No change was reported in the coefficient of price and other factors after quality variables were included which points to likely bias brought about by non-availability of evidence on quality of additional available options for health care.

A study by Ellis & Mwabu in the year 1991 used the discrete choice demand model to study the outpatient healthcare demands in the rural zones of Kenya. The aim of the study was to establish how time cost, price and income affect the decision of consumers to seek healthcare/treatment and how they choose providers. The study sought to answer 3 key research questions: (i) the extent of the willingness of consumers to pay higher prices for better quality health services, (ii) whether studied relationships between demographic variables and utilization of health services are as a consequence of probability differences in the illnesses or differences in behaviour of how individuals seek treatment, (iii) possibility of meaningful biases as a result of previous studies failing to model the choice of the mode of transportation to health facilities. A four nested logit model was applied with various choices at two levels: whether or not to mention any sickness; the likelihood of going for treatment if a positive result of sickness is noted; how an individual chooses a provider which is modelled as dependent on the features of the individual and household including the features of particular health facilities where the decisions are made; and the mode of transport that is chosen to the health facility either by walking or by bus; which is given as endogenous that significantly touches on the over-all cost of looking for treatment. The data used was for a household survey conducted in South Nyanza district in Kenya in the year 1986. An overall of 552 households were involved in the study through cluster sampling method on a random basis at each stage. Household income was measured over the previous 30 days prior to the survey. The final sample that was used for estimation was 2720 observations/individuals.

The findings indicated that the likelihood of whether to report an illness is independent of the utility of looking for treatment. It was also reported that the availability of treatment does not

seem to influence the choice to report sickness. Similarly, it was reported that numerous individual and household characteristics influence the probability of reporting sickness. Being female and less educated had significantly higher probabilities of reporting an illness while being of a certain age was positively associated with the probability of reporting an illness. Higher illness probabilities were associated with smaller family sizes and lower household income. The environments in which households live also affect the probability of reporting illness. Households that require more time to seek water and those that live in village centres are both significantly more probable to report sickness. The source of water and whether the household reported experiencing hunger in the last four weeks were not statistically significant.

A study done by Gingrich, Hanson, Marchant, Mulligan and Mponda in the year 2011 on the Tanzania voucher scheme sought to establish how subsidies on the prices of insecticide treated nets(ITN) affect the decision by households to buy nets. A simulation model with partial equilibrium was used with data from a countrywide survey conducted in 2006 taking into account 4300 households within 21 districts. The outcomes demonstrate how the voucher impacts on the coverage for ITN in the population that is targeted particularly those with children. The results show that as a result of the subsidized voucher, the purchase of ITN increased from 18 to 62 percent. It was also found that subsidies on price have a positive effect on the coverage for mosquito nets in Tanzania. They also pointed out that implementing subsidies on price alone may not help in achieving targets to cover more people among the vulnerable populations.

A study by Muriithi (2013) sought to establish how health seeking behaviour is influenced by evidence on the quality of health care and by difference of quality that is based on the same

evidence. The broad aim of the research was to describe the underlying determinants of health seeking behaviour in the major slum in Kenya Kibera based on a survey focussing on households that was implemented in the year 2008. A multinomial logit model was used and assumed that the person is aware of all the provider-specific characteristics thus chooses the substitute that gives him/her maximum utility. The dependent variable used is demand for care categorized as self-treatment, private clinics, public clinics, public hospitals and private hospitals. The independent variables used included distance, user fees, quality, sex, age, household size, trust towards healthcare providers, education, acreage and occupation.

The coefficients found to be statistically significant were distance, quality of care, land acreage, education, size of the household, waiting time, gender and patient trust. The explanations for why waiting time reported a positive coefficient was found to be the marginal utility associated with quality derived as a result of interaction with those providing health services may perhaps be greater than the lack of utility emanating from the time a patient spends waiting to be treated.

As suggested by Obare *et al.* (2013), this programme remains connected with improved deliveries at health facilities and skilled care during delivery in particular amongst underprivileged women. In this study, the results showed that for deliveries that occurred after the beginning of vouchers, women originating from areas that had been involved in the programme from the year 2006 were considerably more probable to have had their deliveries at a health facility with skilled care in comparison with the ones from areas that had never been involved in the programme. It is however important to note that the programme had inadequate effect at the community level on the timing for first trimester antenatal care (ANC) use and four or more ANC visits, which continue to be a great obstacle (Warren *et al.*, 2011).

2.4 Overview of Literature

In this chapter, the literature related to the concepts and variables introduced in the research questions have been reviewed with key issues relating to the research questions being highlighted.

From the literature reviewed, it is evident that all the studies were trying to look at demand and utilization of health services from both the individual and household perspectives. In addition, the data that was used was secondary data that was obtained from previously done surveys. The variables that were mainly used are those related to individual and household features for example age, income, education, gender, size of the household among others. The model mainly used is the discrete choice model which is applied in estimating the demand for health care. It was also seen that these variables have different influences on how demand for health care is shaped in the different studies that have been conducted.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter specifies the research method, design, a discussion of the variables, the theoretical framework, population and sample. The variables have also been defined and their measurement determined.

3.2 Research Design

The study will incorporate a cross sectional study design and desk review. The cross sectional study will be used to analyse the characteristics and factors that affect the use of vouchers in Kilifi County from the perspectives of the women. In the design, data on the variables defined below, will be collected from the site selected, that is, Kilifi. Interviews will be conducted with the relevant selected informants particularly those who purchased the voucher and did not use it. The results of analysis of the quantitative data will be used to make generalization.

3.3 Theoretical framework

Discrete choice model

This model is applied to determine the elasticity of price on health care demand. This model portrays the kind of health services to be consumed and where they are to be consumed. The variable that is dependent is usually determined as the frequency of utilization for different health facilities types or in some instances the amount of health care consumed/utilized is used to determine the demand for health care. This model is obtained from the Random Utility Model (RUM) which conveys the rational theory of the utility of the customer (Shiva, 2011). The utility that is observed comes from the options that are equally exclusive, limited and comprehensive in the discrete model.

This model is used when there is a need to clarify or forecast choices among two or additional options for example, whether to seek care or not. These models are able to specify the options that people make if faced by a set of different alternatives. In discrete choice models, the individual is mainly the decision maker and these models are able to associate the decision made by an individual to the characteristics of the individual and also the characteristics of the alternatives/options accessible to the person. The main characteristics of the discrete choice model include: (i) there must be a set of choices available to an individual, (ii) the probabilities of choosing an option must be defined and (iii) utility theory may be used to derive discrete choice models.

The utility function is as follows:

$$U_i = N_i + \varepsilon_i \dots \dots \dots (i)$$

Whereby i represents the options, N_i is the systemic observable utility component and ε_i is the stochastic utility component. U_i is the true utility that is unobservable for option i

Given that the individual has two options to choose from, i and j , the probability that i will be chosen is given by

$$\pi_i = \text{prob}(U_i > U_j) = \text{prob}(N_i + \varepsilon_i > N_j + \varepsilon_j) = \text{prob}(N_i - N_j > \varepsilon_i - \varepsilon_j) \dots (ii)$$

$i \neq j$

Equation(ii) can be rewritten as:

$$P_i = \int \left(\prod e^{-e^{-(\varepsilon_i + N_i - N_j)}} \right) e^{-\varepsilon_i} e^{-e^{-\varepsilon_i}} d\varepsilon_i \dots \dots \dots (iii)$$

$$P_i = \frac{e^{N_i}}{\sum_j e^{N_j}} \dots \dots \dots (iv)$$

According to Kenneth (2007) when the systematic utility component is modelled as a linear function of parameters, $N_j = x_j \beta$ and as a result, the probability of the logit choice becomes:

$$P_i = \frac{e^{x_i\beta}}{\sum_j e^{x_j\beta}} \dots\dots\dots(v)$$

If the difference in probability for choosing the options is higher, then the observed utility will show a great amount of distinction. It is therefore important to note that the choice made is shaped by the variation in utility rather than the amount of utility as such. There is therefore need to normalize one option during the process of health care demand assessment (Shiva, 2011). This model is therefore useful in determining the choices that individuals make in terms of which type of care to consume and whether they need to consume or not.

3.4 Model Specification

Logistic regression model;

$$\begin{aligned} \log\left(\frac{useofvoucher}{1 - useofvoucher}\right) \\ = \beta_0 + \beta_1 Age + \beta_2 Education + \beta_3 Employment + \beta_4 Births \\ + \beta_5 Maritalstatus + \varepsilon \end{aligned}$$

$$\begin{aligned} \log\left(\frac{buyvoucher}{1 - buyvoucher}\right) \\ = \beta_0 + \beta_1 Age + \beta_2 Education + \beta_3 Employment + \beta_4 Maritalstatus \\ + \beta_5 births + \varepsilon \end{aligned}$$

3.5 Sampling

The sample included women who bought the voucher and either used or did not use.

A detailed sampling frame was constructed for those who bought the voucher and either used or did not use in Kilifi. Table 4 represents the frame:

Table 3: Study sample size

	Bought voucher and used	Bought voucher and did not use	Total
Number of individuals(SMH)	8,524	8,470	16,994
FP	2,323	16,514	18,837

Sample size for safe motherhood vouchers;

95% confidence interval

Z=1.96

P =0.5

C (confidence interval) = 0.05

$$n = \frac{z^2 * p * (1 - p)}{c^2}$$

$$\frac{1.96^2 * 0.5 * 0.5}{0.05^2}$$

$$n = 384.16$$

Correction for finite population for safe motherhood vouchers

$$n = \frac{n}{1 + \frac{n-1}{N}}$$

$$n = \frac{384.16}{1 + \frac{383.16}{16944}}$$

$$n = 375.7 = \mathbf{376}$$

Sample size for family planning vouchers;

95% confidence interval

Z=1.96

P = 0.5

C (confidence interval) = 0.05

$$n = \frac{z^2 * p * (1 - p)}{c^2}$$
$$\frac{1.96^2 * 0.5 * 0.5}{0.05^2}$$
$$n = 384.16$$

Correction for finite population for family planning vouchers

$$n = \frac{n}{1 + \frac{n-1}{N}}$$
$$n = \frac{384.16}{1 + \frac{383.16}{18837}}$$
$$n = 376.5 = \mathbf{376}$$

The minimum sample was 376 but the target was 450. The sample size was distributed proportionately amongst those who purchased the voucher and did not use and those who purchased and used in the Kilifi area for the period 2013. This data was analyzed to show the factors that affect the demand and use of vouchers in the area based on the variables indicated.

3.6 Data collection

The data was collected through administering the questionnaire and secondary data sources from existing records. Data on voucher sales from the OBA database was analysed together with data collected from individual responses in order to generalize findings.

3.6.1 Research Instruments

A review of existing literature was conducted. A questionnaire capturing the mentioned variables was administered to the selected sample in Kilifi site. The following tool was used:

- Questionnaire for OBA women who purchased the voucher and did not use and questionnaire for those who did not buy the voucher

3.6.2 Study Location & target population

The study was undertaken in one of the districts where OBA has been piloted in Kenya that is, Kilifi County. Secondary data from the programme was used and interviews with the targeted women were conducted. The population to be targeted was women who purchased, those who did not purchase the voucher, and those who either used or did not use it for the services provided.

3.7 Data Analysis

Logistic regression was applied to measure the how the dependent variable relates to the independent variables. The statistical test of significance of the regression coefficients (β 's) was tested using the Wald chi-square statistic. Afterwards, Holsmer-Lemeshow test was done to measure goodness of fit of the logistic regression model against the actual outcomes.

3.8 Measurement of Variables

Table 4: Measurement of variables

Variable	Measurement	Expected sign	
		Demand	Utilization
Age	Age in years	Uncertain	uncertain
Education	0= no education 1= primary education 2= secondary education	positive	positive
Births	Births in number	indeterminate	indeterminate
Marital status	0= single 1=Married 2=widowed	uncertain	uncertain
Employment status	0= unemployed 1= formal employment 2= informal employment	Positive	positive

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

In this chapter, the estimates of the parameters of the two models demand and utilization are analysed and presented. In addition to the empirical results, a summary of the descriptive statistics and frequencies of the two models is presented.

4.2 Summary of descriptive statistics and frequencies for demand of vouchers

A summary of descriptive statistics for the dependent variables (demand) and independent variable are presented in table 5

Table 5: summary of descriptive statistics for demand of OBA vouchers

Variable	Obs	Mean	Std. Dev.	Min	Max
AGE in years	450	25.70444	6.311105	16	44
AGE2	450	700.46	353.2321	256	1936
Births in number	450	3.164444	1.234103	1	7
No education	450	0.295556	0.4568	0	1
Primary education	450	0.5	0.500557	0	1
Secondary Education	450	0.204444	0.403744	0	1
Unemployed	450	0.142222	0.349667	0	1
Informal Employment	450	0.857778	0.349667	0	1
Marital status(married)	450	0.691111	0.462549	0	1

The mean age of the sample respondents was 25 years. The average number of births was found to be 3. For the education variable, those without any form of education were at 29.5%, those with primary education were at 50% while those with secondary education were 20%. For occupation, the percentage of unemployed was found to be 14% while those in some form of informal employment were found to be 85.78%. No formal employment was reported by the respondents. For marital status, those who were found to be single were 31%, those married were 69% .

Table 6 shows that all variables are correlated with each other

Table 6: correlation matrix for demand model

	AGE	AGE2	Births in no	no education	Primary education	Secondary Education	Unemployed	Informal Employment	marital status(married)
AGE	1								
AGE2	0.9921	1							
Births in no	0.5567	0.5398	1						
no education	0.0396	0.0287	0.1309	1					
Primary education	-0.1688	-0.1577	-0.0505	-0.6477	1				
Secondary Education	0.1645	0.1631	-0.0855	-0.3284	-0.5069	1			
Unemployed	0.0463	0.0336	0.1418	0.4474	-0.2672	-0.1749	1		
Informal Employment	-0.0463	-0.0336	-0.1418	-0.4474	0.2672	0.1749	-1	1	
marital status(married)	-0.1038	-0.1121	0.0814	0.0009	0.0337	-0.0427	0.2309	-0.2309	1

4.3 Determinants of demand for OBA health vouchers

Table 7 shows the relationship between the dependent and independent variables using the logit model with coefficients of the independent variables at 95% confidence level. The variables found to have an association with demand for vouchers were no education, primary education and unemployment. Age, age squared, births in number and marital status (married) did not have any association with the demand for vouchers.

Table 7: determinants of demand for OBA vouchers

Demand	Coef.	Robust std error	z	P>z	[95% Conf.	Interval]
AGE	-0.42525	0.246768	-1.72	0.085	-0.9089	0.058411
AGE2	0.005677	0.004193	1.35	0.176	-0.00254	0.013894
Births in no	-0.07842	0.142243	-0.55	0.581	-0.35721	0.200368
No education	-1.841	0.811536	-2.27	0.023	-3.43158	-0.25042
Primary education	-1.5893	0.729408	-2.18	0.029	-3.01892	-0.15969
Unemployed	-2.11403	0.520344	-4.06	0	-3.13389	-1.09417
Marital status(married)	-0.38546	0.466602	-0.83	0.409	-1.29998	0.529063
_cons	11.89231	3.542667	3.36	0.001	4.948805	18.8358

Log pseudolikelihood = -116.80963

Number of obs = 450

Wald chi2(7) = 74.1

Prob > chi2 = 0.0000

Pseudo R2 = 0.2559

R square was 0.2599 showing that the variables had 25 percent variation in the estimation of demand for vouchers. Wald chi² was 74; Prob> chi² was 0.0000. The variables that were omitted are secondary education and informal employment

4.4 Marginal effects in explaining the demand for OBA vouchers

Table 8 shows the estimated results from the logit model which was used to measure the impact a change in the independent variable has on the probability of having of having a voucher. The coefficient of the dummy variables for no education and primary education are negative implying that they are less likely to have a voucher than those with secondary education. The probability of an individual with no education having a voucher is 14 percent points lower than those with secondary education. The probability of an individual with primary education having a voucher is 9 percent points lower than that with secondary education. The results for the education variable are as expected.

The coefficient of the dummy variable for unemployed is negative meaning that those who are unemployed are less likely to have a voucher compared to those with some form of informal employment. The probability of an individual who is unemployed having a voucher is 23 percent points lower than the individuals with informal employment. The results for occupation are as expected. The coefficient of the dummy variable for married is negative implying that married women are less likely to have a voucher compared to those who are not married. The probability of a married individual having a voucher is 1.9 percent points lower than those who are not married. The variable age had a negative coefficient with age squared having a positive coefficient. This implies that the probability of having a voucher is lower at a younger age but increases as the age increases. The probability of a younger person having a voucher is 23 percent points lower than those who are older. The coefficient for number of births was negative meaning that those with less number of children are less likely to have a voucher compared with those with many children. The variables found to be statistically significant were primary education and unemployment.

Table 8: marginal effects in explaining the demand for OBA vouchers

variable	dy/dx	Std.error	z	P>z
AGE in years	-0.02331	0.01328	-1.76	0.079
AGE2	0.000311	0.00023	1.37	0.17
Births in number	-0.0043	0.00777	-0.55	0.58
No education	-0.14973	0.08833	-1.7	0.09
Primary education	-0.09317	0.04434	-2.1	0.036
Unemployed	-0.23101	0.09518	-2.43	0.015
Marital status(married)	-0.01987	0.02246	-0.88	0.376

Marginal effects after logit

y = Pr(Demand) (predict)

= .94180613

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

Mwabu& Ellis (1991) in their study found that age, education and occupation were statistically significant in demand for health care.

4.5 Descriptive statistics and frequencies for the utilization model

A summary of descriptive statistics and frequencies for the dependent variable (utilization) and independent variables are presented in table 9:

Table 9: summary of descriptive statistics for utilization of OBA vouchers

Variable	Obs	Mean	Std. Dev.	Min	Max
AGE	400	25.3425	6.289203	16	44
AGE2	400	681.6975	352.1413	256	1936
Births in number	400	3.0875	1.201438	1	7
single	400	0.13	0.336725	0	1
married	400	0.6725	0.469889	0	1
widowed	400	0.1975	0.398611	0	1
No education	400	0.2575	0.437805	0	1
Primary education	400	0.5175	0.500319	0	1
Secondary Education	400	0.225	0.418105	0	1
Unemployed	400	0.09	0.28654	0	1
Informal Employment	400	0.91	0.28654	0	1

The mean age of the sample respondents was 25 years. The average number of births was 3.

For the education variable, those without any form of education were at 25.75%, those with primary education were at 51% while those with secondary education were 22%.

For occupation, the percentage of unemployed was found to be 9% while those in some form of informal employment were found to be 91%. No formal employment was reported by the respondents. For marital status, those who were found to be single were 13%, those married were 67% while those widowed were at 19%.

Table 10: correlation matrix for utilization model

	AGE	AGE 2	Births in number	single	married	widowed	No education	Primary education	Secondary Education	Unemployed	Informal Employment
AGE	1										
AGE2	0.9918	1									
Births in no	0.5045	0.4862	1								
single	0.1375	0.1224	0.1886	1							
married	-0.1205	-0.1289	0.0731	-0.5539	1						
widowed	0.0259	0.0486	-0.2455	-0.1918	0.7109	1					
No education	0.0088	0.0006	0.1	-0.0066	0.0642	0.0812	1				
Primary education	-0.172	-0.1618	-0.0255	0.0013	0.0724	0.0865	-0.6099	1			
Secondary Education	0.1965	0.193	-0.0742	0.0053	0.0195	0.0184	-0.3173	-0.558	1		
Unemployed	0.0065	0.0026	0.1445	0.1216	0.2008	0.1341	0.4941	-0.3082	-0.1485	1	
Informal Employment	-0.0065	0.0026	-0.1445	0.1216	0.2008	0.1341	-0.4941	0.3082	0.1485	-1	1

4.6 Determinants of utilization of OBA health vouchers

Table 11 shows the relationship between the dependent (utilization) and independent variables using the logit model with coefficients of the independent variables at 95% confidence level.

The variables found to have a relationship with utilization of vouchers were age, age squared, single and married. Births in number, no education, primary education and unemployment did not have any association with the utilization of the vouchers.

Table 11: Determinants of utilization of OBA health vouchers

Utilization	Coef.	Std. Err.	z	P>z
AGE in years	0.370706	0.152868	2.43	0.015
AGE2	-0.00634	0.002667	-2.38	0.017
Births in number	0.091011	0.135162	0.67	0.501
single	-2.15676	0.46808	-4.61	0
married	-0.87262	0.38139	-2.29	0.022
No education	0.225983	0.407067	0.56	0.579
Primary education	0.305018	0.314833	0.97	0.333
Unemployed	-0.70474	0.494199	-1.43	0.154
_cons	-3.43034	2.009585	-1.71	0.088

Logistic regression

Number of obs = 400
Wald chi2(8) = 30.23
Prob > chi2 = 0.0002
Pseudo R2 = 0.0651

R² was 0.0651 showing that there was a 6% variation for the variables in estimation of the demand for OBA vouchers for health. Wald chi² was 30 and the prob> chi² was 0.0002. The variables that were omitted are widowed, secondary education and informal education.

4.7 Marginal effects in explaining the utilization of OBA vouchers

Table 12 shows the estimated results from the logit model which was used to measure the impact a change in the independent variable has on the probability of having a voucher. The coefficient on age is positive and that of age squared is negative thus implying that younger people are more likely to utilize the voucher compared to the older people and thus utilization increases then starts to drop at a certain age. The probability of older women using a voucher is 6.5 percent points lower than those who are younger. The coefficient for births in number is positive meaning that people who have had more births are more likely to use the voucher. The coefficient for the dummy no education and primary education are positive meaning that those

with no education and primary education are more likely to use the voucher compared to those with secondary education. The probability of uneducated using a voucher is 3.8 percent points higher than those with secondary education. The probability of those with primary education using a voucher 5.4 percent points higher than those with secondary education. The coefficients for the dummy variables single and married are negative implying that they are less likely to use the voucher compared to those who are widowed. The probability of the single using a voucher is 47 percent points lower than those widowed. The probability of married using a voucher is 14 percent points lower than those who are widowed. The coefficient for the dummy variable unemployed is negative meaning that those that are unemployed are less likely to use the voucher compared to those employed. The probability of the unemployed using a voucher is 14 percent points lower those with informal employment. The results for occupation are as expected. The variables found to be statistically significant were age, age squared, single and married.

Table 12: marginal effects in explaining the utilization of OBA vouchers

variable	dy/dx	Std. Err.	z	P>z
AGE in years	0.065662	0.02741	2.4	0.017
AGE2	-0.00112	0.00048	-2.34	0.019
Births in number	0.01612	0.0239	0.67	0.5
single	-0.47697	0.09851	-4.84	0
married	-0.14202	0.05605	-2.53	0.011
No education	0.038837	0.06758	0.57	0.565
Primary education	0.054168	0.05601	0.97	0.333
Unemployed	-0.14299	0.11075	-1.29	0.197

Muriithi (2013) in his study found distance, quality of care, land acreage, education, size of the household, waiting time, gender and patient trust to be statistically significant.

CHAPTER FIVE

SUMMARY, CONCLUSION AND POLICY RECOMMENDATIONS

5.1 Summary and conclusion

The OBA voucher programme in Kenya was designed to inform the development of a health financing system that reduces out of pocket payments and also ensure universal access to quality health services. Therefore the findings from this study are useful in contributing to the development of an effective health financing system in the country.

The purpose of conducting this research was to come up with a detailed analysis of how demand and utilization of OBA health vouchers is shaped by the individual characteristics and those of the household. Further analysis of these individual and household characteristics can provide an avenue for policy making on matters such as how to improve demand and utilization of health services in general. The demand for the OBA voucher has been used as a way of cushioning poor households from experiencing high out of pocket expenditure. High out of pocket expenditure has the tendency to push poor households further into poverty and deny them access to health care services when they need them (Jacobs *et al.*, 2012). Hence these findings may be useful in informing the development of health insurance by looking at how individuals choose to invest in the voucher as a means of preventing payment at the point of service.

The variables found to have an association with demand for vouchers were no education, primary education and unemployment. The coefficient of the dummy variables for no education and primary education are negative implying that they are less likely to have a voucher than those with secondary education thus implying that people with secondary education may have more information about the voucher and therefore choose to buy it. The coefficient of the dummy variable for unemployed was negative meaning that those who are unemployed are less likely to have a voucher compared to those with some form of informal employment due to the

fact that those unemployed may not have extra money at their disposal to buy the voucher.

Married women are less likely to have a voucher compared to those who are not married, this may be explained by the fact that their partners may afford to pay for their health care hence they do not see the need for buying the voucher. Younger women were less likely to have a voucher compared to older women. The variables found to be statistically significant were primary education and unemployment.

The variables found to have a relationship with utilization of vouchers were age, age squared, single and married. Births in number, no education, primary education and unemployment did not have any association with the utilization of the vouchers. Younger people are more likely to utilize the voucher compared to the older people and thus utilization increases then starts to drop at a certain age and this may be explained by the fact that younger women may have more information about the benefits of the voucher compared to the older women. The coefficient for births in number is positive meaning that people who have had more births are more likely to use the voucher which may be explained by the fact that people who have experienced more births understand the high cost of health care and also the importance of having a delivery at a health facility and therefore use the voucher more than those who have had less births. Those with no education and primary education are more likely to use the voucher compared to those with secondary education. The coefficient for the dummy variable unemployed is negative meaning that those that are unemployed are less likely to use the voucher compared to those employed due to the fact that unemployed may not even afford to buy the voucher. The variables found to be statistically significant were age, age squared, single and married.

Utilization may be based on the need to seek care/presence of an illness among other factors and not just demand side factors. According to Ahmed & Khan (2011) there is need to work on

supply side interventions by increasing the capacity of health facilities to improve service delivery and utilization of health care services.

Further studies and analysis may be needed to establish other factors that affect the decision to utilize health services other than the variables analysed.

The major study limitation was difficulty in reaching the respondents, however this study provides valuable information on what could be done to improve demand side financing initiatives and its contribution to health financing in general.

5.2 Recommendations

Use of OBA vouchers for health has in the past shown an improvement on how people utilize health services particularly the poor as evidenced by the data available from the programme records. This is due to the fact that a voucher acts as a form of insurance cover and therefore reduces the financial barrier to accessing health care. There is therefore need to create more awareness on the importance of having a form of prepaid mechanism for accessing health services that cushions people from incurring out of pocket expenditures, which should be implemented countrywide.

The results have shown that those who are unemployed are less likely to have and also use a voucher. This may be due to the fact that they may not have extra income to spend on health and therefore there is also need to improve on employment opportunities in the country in order to ensure majority are able to contribute to health insurance to prevent the issue of out of pocket expenditure at the point of service provision. This will ensure that families are not pushed into poverty when they need to seek health care.

Women should be encouraged to use the voucher as it helps in reducing the high cost of health care by ensuring there is a lot of sensitization on where to get the voucher and the benefits associated with it. In addition, birth control should be encouraged so that women are able to plan well on child spacing so that they can have time for economic activities.

The findings also show that younger people are the ones who utilize the vouchers the most, which may point to early pregnancies and dropping out of school. There is therefore the need to encourage education of girls to prevent early pregnancies and marriages so that they can also contribute to the growth of the economy by engaging in economic building activities.

Having a voucher may not guarantee improved utilization of health care and therefore other efforts are needed. Babalola & Fatusi (2009) state that effective interventions to improve utilization of health services need to focus on the various factors at the individual, community and at the level of policy.

5.3 Areas for further research

This paper has focused on how individual and household characteristics affect the demand and utilization of OBA vouchers for reproductive health. From the findings only age and marital status affect utilization of the vouchers and hence there is need for further research focusing on the supply side to determine whether the quality of care and presence of illness may have an effect on the decision to utilize services or not. Another possible area of research may include how occupation and income levels affect the decision to purchase a form of health insurance.

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