

**FACTORS AFFECTING THE UTILIZATION OF CANCER HEALTH CARE
SERVICES: A CASE STUDY OF BREAST CANCER SCREENING AMONG WOMEN
IN KENYA**

BY

ERIC MUNENE WAWERU

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DECLARATION

This research project is my original work and has not been submitted for a degree award in any other university or institution of higher learning.

Signature..... Date.....

Eric Munene Waweru

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

Signature..... Date

Prof Germano Mwabu

Professor, School of Economics

University of Nairobi

DEDICATION

I dedicate this work to my family for their patience and support during my long absence from home in order to accomplish this work.

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ABSTRACT

The study sought to examine the factors affecting the utilization of cancer health care services: a case study of breast cancer screening among women in Kenya. Specifically, the study sought to estimate the demand function for breast cancer screening in Kenya as well as assess the household characteristics, social and economic factors that determine utilization of breast cancer healthcare services in Kenya. The study utilized secondary data mainly the Kenya Demographic and Health Survey data of 2014. For the empirical model estimation, the study employed the dummy variable models namely LPM, Logit and Probit models. The results of the study reveal that breast cancer screening by medical practitioner remain minimal at best with only 11.4 percent of woman having had breast cancer screening done by a medical practitioner. The regression model results for LPM, logit and probit model indicate the demand function for breast cancer screening is downward sloping. This is supported by the finding that distance to health facility proxied by time taken to get water has a negative effect on seeking for breast cancer screening. However, upon controlling for the household income, the effect of distance remains negative but not significant implying that the income well – off households can pay the cost of travel to seek for health services. This calls for the need to subsidize the cost of breast cancer screening. Woman education level and household head education level were found to have positive effect on demand for breast cancer screening. However, the household size was found to reduce the probability of a women seeking for breast cancer screening services. lastly, women from male – headed households were found to have a lower probability of seeking for breast cancer screening services. Based on these findings, the study recommends the need for sensitization and awareness creating among women on the need and importance for breast cancer services, expansion of the health infrastructure to trade – off the negative effect of distance to health facility and subsidizing women breast cancer screening for women in the low wealth quartiles.

CHAPTER ONE

INTRODUCTION

1.1 Background Information

The Centers for Disease Control and Prevention (2013) ranks the women breast cancer at the top malignancy that leads in terms of women death. Further, its evidence that breast cancer also leads in terms of expenditure globally whereby it is estimated to be \$16.5 billion in 2010 (Mariotto et al. 2011). In terms of diagnosis, it is still evident that breast cancer is leading in terms of total global diagnosis as well with 1.67 new cases reported in the year 2012.

Further is notable that both the developing and developed economies. However, a comparison of the two countries indicates that developing economies bear greater burden of the disease. According to Centers for Disease Control and Prevention (2013), it is estimated that in terms of diagnosis, women diagnosed in developing countries of more than 70 percent are usually in stage one and two. Further, only 20 – 60 percent of women in developing economies are diagnosed in early stages of infection. Based on this, studies reveal that mortality-to-incidence ratio arising from breast cancer for developing economies is lower than in developed economies. For this reason of delayed diagnosis, the disease has had negative effect the disease has had on the affected women.

A review of the Sub-Saharan Africa, breast cancer leads in terms of cancer-related morbidity and mortality. In the Kenyan context, It is estimated that breast cancer accounts for about 23 percent of all cancers affecting women (Kenya Stepwise Survey of Non-Communicable Disease Risk Factors Report, 2015). To avert the cancer-related morbidity and mortality the World Health

Organization has always recommended the need for early women screening for the disease. However, developing economies have not hid WHO's given their weak health care systems.

Further, in Kenya, a National Cancer Control Strategy has been developed by the national government. The policy as articulated aims at promoting interventions aimed at enhancing uptake of breast cancer screening for early disease detection. In addition, the strategy seeks to improve access for treatment and medicine for women found to be positive. Hover, despite this case, the breast cancer incidences, morbidity and mortality in the country remains significantly high.

1.2 Problem Statement

According to Yabroff, Warren and Brown (2012) it is estimated that cancer incidences, morbidity and mortality in both developed and developing economies is expected to rise attributed to higher prevalence and advancing medical technology. Globally, breast cancer has received considerable attention across different countries. According to Korea National Statistical (2015), cancer was classified as the leading death cause in Korea recording a high of 270,809 cases in year 2015 thus implying a rising social burden with potential of rising rapidly. It is evident that cancer care cost widely varies depending on the disease stage. Chastek et al. (2012) states that on average, cancer patients spend approximately US \$74,212 in their last 6 months of their life. This cost is substantially higher than the average healthcare cot for US patients estimated at \$35,156 in the last year of their life (Hogan et al, 2001).

In Kenya, though the national-level program calls for sensitization and awareness on massive breast cancer screening at community level, the uptake has been considerably low (Anders and Broadwater, 2008). Further, Anders and Broadwater (2008), a regional review of Kenyan context asserts that in Western region, 86 percent of women failed to undertake breast cancer screening. A countrywide review further paints a grimy picture in that in year 2012, national screening rate in Kenya stood at 5 percent. This impedes early disease detection among the women hence prompting the need for examination on what determines the uptake of the services.

1.3 Research Objectives

1.3.1 General objective

The general objective was to assess the factors affecting the utilization of breast cancer healthcare services in Kenya.

1.3.2 Specific objectives

- i. To estimate the demand function for breast cancer screening in Kenya.
- ii. To assess the household characteristics, social and economic factors that determine utilization of breast cancer healthcare services in Kenya.

1.4 Study Justification

KDHS (2014) reported that on top of all the cancers affecting women, breast cancer is the leading cancer in terms of death among women of reproductive age. First is the significance to the policy makers. The study findings was of importance to the agencies concerned in health policies formulation at national government, county government, Non – Governmental

Organizations among other in informing policy pronouncement with regard to sensitization, awareness creation, health incentives toward promoting breast cancer screening. This will be crucial in promoting early detection hence easing treatment thereof.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter has three parts; part one provides the theoretical literature for this study and part two is the review of empirical literature, which captures the various variables determining the utilization of cancer healthcare services, which will be used in this study. Finally, part three summarizes the empirical literature and provides the gap that this study aims at filling.

2.2 Theoretical Literature Review

This part discusses the health belief model in terms of its application in the demand for a health care service.

2.2.1 Health Belief Model

This model was developed by Rosenstock in 1950s. The model is derived from the principle of cognitive theories of behaviour, who argued that the perceived value of the desired outcome greatly influences, with a belief that if behaviour is well performed, the desired outcome will be achieved. As explained by Rosenstock (1950s), the conceptualization of this model was founded on the realization that certain individual beliefs and perceptions about disease and possible preventive measures have a direct significant impact on health behaviour. According to the concepts in this model, four main constructs are believed to influence behaviour as in: perceived seriousness/severity, individual is perceived vulnerability/susceptibility as well perceived potential barriers as well as the perceived resulting benefits. In addition, proponents of this model appreciate that there exists modifying factors to the four constructs:

Perceived susceptibility: Among many other factors, this is one of the most influential on individual health seeking behaviour. As stated by Maiman & Becker (1974), the more an individual perceives risk, the more likely that person is to adopt actions that will reduce the risk. Similarly, when people are in a situation where they do not perceive any imminent risk, they are less likely to adopt preventive behaviour patterns. Relating to this study, a woman residing in a resource-deprived area with long walking distances to the nearest health facility might feel more vulnerable to succumbing to breast cancer related complications. This might then compel such a woman to be more vigilant in attending seeking breast cancer screening services as advised by the healthcare professionals. However, according to Courtenay (2007), this is not always the trend because some individuals in as much as some individuals are clearly aware of the existing susceptibility, they still go ahead to expose themselves to the risks. As a result, this concept only explains behaviour in some instances but not all.

Perceived seriousness/severity: This construct speaks to the acknowledgement of the individual is awareness of how severe/serious a disease can be. Although this largely believed to be informed by possession of medical knowledge, it can also be influenced by the conviction that an individual has of the potential debilitating effects that a disease can cause in one's life. For instance, in this study, a woman residing in a remote rural area might experience cases of neighbours/relatives failure to adhere to annual screening leading to disease detection at late stages leading to fatality. This may cause other women be keen and consistent on medical attention with regard to breast cancer screening, otherwise one might end up facing undesirable consequences in cases of late detection.

Perceived benefits: This construct elaborates individual awareness of the resulting gains that they are likely to achieve by embracing risk-reducing actions. Perceived benefits tend to act as a motivation for the relevant behaviour thought to result in expected benefits. According to Maiman & Becker (1974), this theory has been found to greatly influence the embracement of secondary preventive health behaviours such as going for early disease screening. (Simkhada et al., 2008) however notes that a final decision is arrived at after the potential benefits outweigh the expected obstacles. Aligning this theory to the concepts of this study, women might, through their own experiences or those of their fellow women discover that adhering to frequent breast cancer screening as recommended by their healthcare providers and health campaigns and sensitization forums such as World Health Organization breast cancer awareness month.

Perceived barriers: As it is always the case, most behaviour changes are not easy to achieve and hence the formulation of this theory. A study conducted by Janz & Becker (1984) showed that barriers are one of the notable determinants of behaviour because, before adopting a certain behaviour, one has to assess the possible obstacles and the chances of overcoming them. A person will successfully embrace a new behaviour if they are convinced that the resulting benefits are paramount as compared to the barriers to behaviour change (Centres for Disease Control and Prevention, 2004). Despite the effort possible barriers such as having to sacrifice their own time, covering long distances to the nearest health facilities, stigma arising from being cancer positive and fear for losing breast in case of treatment if found positive and at advanced stages. It is only when they are successfully able to overcome the barriers that they can successfully adhering to frequent screening for early detection.

Modifying factors: These are distinct characteristics in an individual believed to modify the four main theories of perception. Such characteristics may include literacy levels, cultural background and self-motivation among others. For instance, women sensitization on the budding risks for non-compliance but still fail to adhere to frequent screening for early disease detection.

2.2 Empirical Literature

A vast study on the demand for healthcare services does exist both locally and globally at large. Hwang (2009) investigated cancer medical costs in the last year of life of cancer patients in Korea. The study modelled the effect of cancer care cost on cancer treatment utilization based of a sample of 70,558 patients. Using the multiple regression analysis, patient's age adversely affects cancer costs while income level affects cancer costs.

Birgitta, Johansson, Holmberg, Berglund, Bengt, and Glimelius, G. (2009) examined the determinants of cancer patients' utilization of hospital care within two years after diagnosis. Using Hierarchical regression on data from 393 newly diagnosed patients. The findings of the study were that rural dwellers and low – income patients sought for healthcare more often.

Okafor, Stobaugh, and Talwalkar (2015) explored gastrointestinal tract cancers using a national database and found that gender and racial differences among patients determined the utilization of inpatient palliative. Teame, Gebremariam, Kahsay, Berhe, Gebreheat, and Gebrehiwot (2019) examined cervical cancer screening services among women in Ethiopia. They applied a multivariate logistic regression model for empirical estimation. The study found out that 30–39 and 40–49 aged women utilized cancer screening services more than 21–29 aged women.

Further, employed women were found to seek cancer screening services more than housewives. Similar findings were reported by Sylvia, Carolyn and Timothy (2011) in Zimbabwe.

Maseko, Chirwa and Muula (2015) conducted a study on the utilization of cervical cancer prevention services in low and middle income countries. They found that knowledge barrier hindered utilization of cervical cancer prevention services. Further, women age, marital status, economic status, cultural and religious belief determined the utilization of cervical cancer prevention services.

Geographical accessibility of the health facility has been cited by a number of studs as a core determinant of utilization of cancer screening services by women worldwide. Bingham et al (2003), reviewed effect of health facility access in Peru, Bolivia, South Africa, Kenya and Mexico and found that the location of the service facility determines cervical cancer screening and treatment programs.

Alamro (2020) examined the factors that influence cervical cancer screening uptake in Jordan. Women aged 21 to 65 years were incorporated in the study. A multivariate logistic regression was applied for empirical analysis. The study found that uptake of cervical cancer screening was largely determined by years a woman has been married and encouragement from the healthcare provider. Further, Lee, Lim and Park (2010) analysed breast cancer screening services in Korea. The study found that education level, possession of private health insurance cover and individual exposure behavior such as smoking are significant in determining the rate of breast cancer screening among Korean women.

Patelet *et al* (2014) investigated the factors influencing breast cancer screening in low-income African Americans in Tennessee cities. The study found that women marital status, health insurance policy and accessibility of health facility determined uptake of breast cancer screening. In Hong Kong, Chang, Suzzane and Cheng (2002) found that older women, education, and having chronic diseases adversely affected affecting uptake of cervical and breast cancer screening among women.

2.3 Overview of the Literature

Nearly all studies done from across the globe reports that cancer health care use among women is subject to many determinants. These determinants include individual woman is characteristics like her marital status, age and her level of education, in addition to external determinants, as in the case demographic influences such as the place where the she resides and the distance that she covers to the healthcare facility.

However, many of the studies seem to have heavily focused on the cervical cancer as opposed to breast cancer (Bingham *et al*, 2003; Carr and Sellors, 2004; Alamro, 2020; Teame *et al*, 2019 and Sylvia *et al*, 2011). Further, a review of the empirical studies reveal that majority of the studies either focus on economic factors or social factor. This study will deviate from these studies by investigating the effect of social, economic and household characteristic on the breast cancer health seeking behavior simultaneously. In addition, its notable that published local empirical studies in this area are limited hence this study will seek to contribute towards the additional literature at Kenyan context.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

The chapter entails a discussion of the conceptual framework, empirical model and estimation, definition and measurement of model variable, source of that study data and finally data analysis.

3.2 Conceptual Framework

This framework is based on the author's conceptualization, where the dependent variable was depend on the independent variables. This is consistent with the theoretical literature discussed on the health belief model. This is shown in figure.3.1

Independent variables

Dependent variable

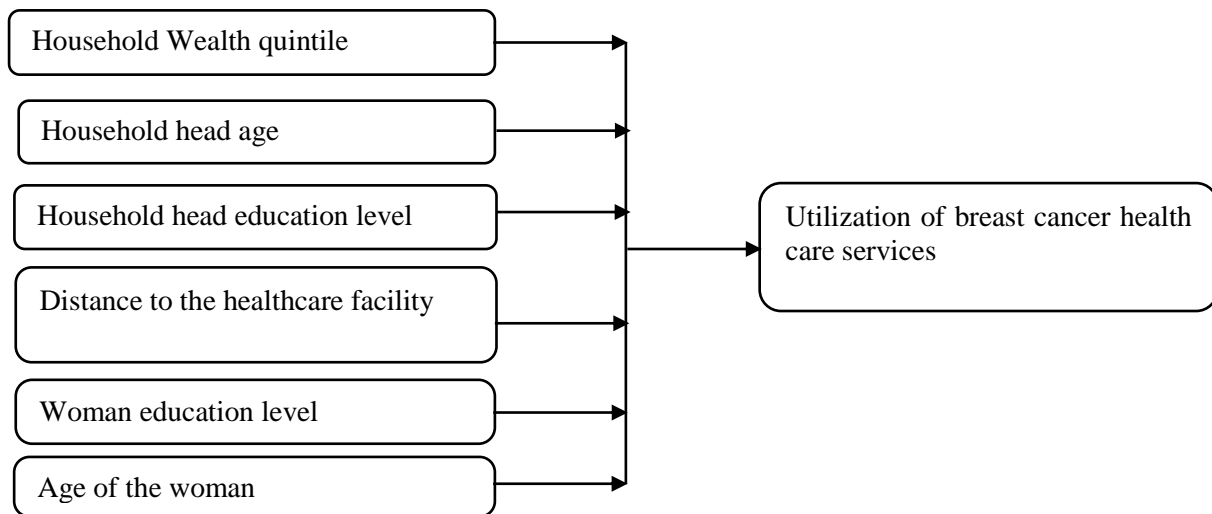


Figure 3.1: Conceptual framework

3.3 Estimation and Specification

In estimating the breast cancer health services utilization, the study employed the dummy variable models (LPM, Logit and Probit). The choice of the model is informed by the expected data outcome whereby the dependent variable is a binary variable since the woman has either sought for breast cancer health services or not. Probit model was the preferred model for the study. Further, the choice of the model was informed by other local studies in health care utilization based on the models they have adopted in their analysis. Studies by Muriithi (2013), Orayo (2014), Kamau (2016) and Machio (2008). Have adopted the probit model hence informing this study's model choice. From the econometric point of view, the choice of the Probit model as opposed to the other binary variable models is informed by the assumption of the model that the error term of the model is normally distributed

The conceptualization of the Probit model assumes that a linear relationship exists between unobservable variable m^* (because of our inability to observe and measure the latent variable y^*) and explanatory variables (X_i), usually expressed as:

$$y_i^* = \alpha + \beta X_i + \varepsilon_i \dots \dots \dots (3.1)$$

Where y^* is unobserved/ latent variable.

x' is vector of independent variables such as social and demographic factors.

α is the constant coefficient

Probit model assumes y^* to be a normally distributed random variable. From equation 3.1 above, we link unobservable variable y^* to the observed binary variable m as expressed as follow:

$$y = \begin{cases} y = 1 & \text{if } y^{\wedge*} > 0 \\ y = 0 & \text{if } y^{\wedge*} = 0 \end{cases} \dots\dots\dots(3.2)$$

Based on the equation 3.2, it can be deduced that the probability of seeking breast cancer from the health facility is such that it is equal to 1 if the woman has sought it otherwise its equal to 0. The cumulative distribution function (cdf) for the Probit model based on the equation 3.2 is given as follows:

$$Pr(y = 1 / X) = \phi(X' \beta) \dots\dots\dots(3.3)$$

Where Pr is the probability of dependent variable taking value 1. Based on the model 3.3 it can be deduced that the Probit model estimates the probability that dependent variable (y) take value 1 given the value taken by independent variables (x).

The cumulative normal probability function is derived as follows:

$$P_i = f(y) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{-z} e^{s^2/2} ds \dots\dots\dots(3.4)$$

The inverse of equation 3.4 is presented in equation 3.5 that gives the estimates of the dependent variable.

$$P_i = f^{-1}(P_i) = \alpha + \beta X + \varepsilon \dots\dots\dots(3.5)$$

In equation 3.5 above, Pi is an estimate for the probability that a woman will seek for breast cancer healthcare. When applying Probit model, interpretations are based on the estimating the probability of observing the independent variable since the coefficients are not identifiable

without the assumptions made about the mean and variance of the random error term. Upon estimating the model coefficient of the model, the Marginal Effects were computed. The marginal effects are interpreted as the change in the probability of utilizing breast cancer health, for a unit change of any of the independent variable other factors held constant.

The general multiple binary regression analysis, the actual empirical model for the study was specified as follow:

$$y = \alpha + \beta \sum_{i=1}^n x + \varepsilon_i \dots \dots \dots (3.6)$$

Since y is binary, α is the constant coefficients, β' are the estimated coefficients of the respective variables, $\sum_{i=1}^n x'$'s are all study variables namely, social, economic and household characteristics factors, ε_i is the model error term given that the model is assumed to be stochastic in nature.

3.4 Definition, measurement, and the expected sign of the variables

Table 3.1 Definition, measurement and expected sign of the variables

Variables	Definition	Measurement	Sign
Breast cancer screening	Utilization breast cancer health screening by women from medical practitioner	Women sought for breast cancer health care services =1 Otherwise = 0	
Distance to healthcare provider	Time taken to the nearest health facility	Time taken to get water	Negative
Woman age	The age of the woman	Age in years	Positive
Household head age	The age of the household head	Age in years	Positive
Marital status	Whether the woman has ever been in any union	Ever been in a union =1 Otherwise = 0	Positive
Wealth quintile	The wealth status of the household computed by dividing the population in proportions of 20%, depending on the asset value owned.	Lowest = 1 Second = 2 Middle = 3 Fourth = 4 Highest = 5	Positive

3.5 Data source

The study utilized secondary data. The study used the Kenya Demographic and Health Survey (KDHS) data of 2014. This was sourced from the Kenya National Bureau of Statistics. The data is cross sectional data collected from Kenya households. From the dataset, specific information

regarding the household wealth quartile, distance to get water, household head age, household years of education, woman education and woman marital status.

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATION AND DISCUSSION OF RESULTS

4.1 Introduction

This chapter details the descriptive statistics of the household characteristics, socio and economic determinants breast cancer screening in Kenya. In addition, analyses of the probit model result for among the surveyed households are presented and discussed accordingly.

4.2 Descriptive Summary Statistics

The results for descriptive statistics are presented in table 4.1. The results reveal that breast cancer screening by medical practitioner remain minimal at best. From the results only 11.4 percent of woman had breast cancer screening done by a medical practitioner. Regarding distance to the health facility proxy by log of time to get water, the mean log time to get water is 3.253. The household characteristics reveal that 61.4 percent of households were male – headed with the mean log age of household head being 3.704 and the mean log age of the woman being 3.536. For the household size, the mean of log household size is 1.715. The marital status of the women indicate that 96.5 percent of women have ever been in a union.

Education wise, the mean log of years spent by household in education is 1.993. However, for the women, 21.6 percent have no education, 56.6 percent have primary education, 17.4 percent had secondary education with 4.4 percent having tertiary education. Economic wise proxy by the household wealth quartiles, 31.0 percent of households were categorized as poorest, 21.6 percent

as poorer, 19.2 percent as middle with 16.2 and 12.0 percent categorized as richer and richest, respectively.

Table 4.1: Descriptive Statistics

Variable	Observations	Mean	Std.Dev.	Min	Max
Screening	39723	0.114	0.318	0	1
Log water time	28708	3.253	0.98	0	6.579
hh head gender	39742	0.614	0.486	0	1
Log hh head age	39742	3.704	0.265	2.708	4.554
Log age woman	39742	3.536	0.235	2.708	3.892
Log education years	31111	1.993	0.433	0	2.996
Log hh size	39742	1.715	0.443	0	2.944
Marital status	39742	0.965	0.184	0	1
No education	39742	0.216	0.411	0	1
Primary education	39742	0.566	0.496	0	1
Secondary education	39742	0.174	0.379	0	1
Tertiary education	39742	0.044	0.206	0	1
Poorest wealth quartile	39742	0.310	0.462	0	1
Poor wealth quartile	39742	0.216	0.412	0	1
Middle wealth quartile	39742	0.192	0.394	0	1
Richer wealth quartile	39742	0.162	0.368	0	1
Richest wealth quartile	39742	0.120	0.325	0	1

4.2 Regression Results

Prior to estimating the regression model, the benchmark dummies were set accordingly for the Logit and Probit model for all the binary variables. To this effect, never being in a union was defined as the benchmark dummy for marital status, for household head gender, female – headed household was defined as the benchmark dummy for household head gender variable. For

education, no education was defined as the benchmark dummy for education attainment for women with the poorest being defined as the benchmark dummy for the wealth quartile variable. First, the LPM, Logit and Probit model for women breast cancer screening were estimated without controlling for the effect of the household income. The regression results are presented in table 4.2 as follows:

Table 4.2 Regression results without controlling for wealth

Screening	LPM		Logit Model				Probit Model			
	Coef.	t-value	Coef.	t-value	mfx	t-value	Coef.	t-value	mfx	t-value
Log water time	-0.006**	-2.54	-0.063**	-2.56	-0.006	-2.560	-0.035***	-2.74	-0.006	-2.740
hh head gender	-0.013***	-2.77	-0.145***	-2.83	-0.013	-2.830	-0.072***	-2.75	-0.013	-2.750
Log hh head age	0.015	1.36	0.159	1.34	0.015	1.340	0.084	1.37	0.015	1.370
Log age woman	0.022*	1.88	0.234*	1.85	0.021	1.850	0.126*	1.93	0.022	1.930
Log education years	0.031***	5.12	0.419***	5.39	0.038	5.430	0.207***	5.48	0.037	5.500
Log hh size	-0.021***	-3.88	-0.214***	-3.88	-0.020	-3.890	-0.115***	-3.98	-0.021	-3.990
Marital status	0.021*	1.72	0.233*	1.70	0.020	1.860	0.112	1.61	0.019	1.730
Secondary education	0.026***	4.01	0.197***	2.92	0.019	2.790	0.109***	3.12	0.020	2.990
Tertiary education	0.150***	10.84	0.907***	7.85	0.116	6.000	0.523***	8.04	0.124	6.450
Constant	-0.042	-1.05	-3.919	-8.95			-2.154	-9.58		
Number of obs	21,302		Number of obs = 21,302				Number of obs = 21,302			
F(9, 21292)	35.48		LR chi2(9) = 272.74				LR chi2(9) = 273.45			
Prob > F	0.0000		Prob > chi2 = 0.0000				Prob > chi2 = 0.0000			
R-squared	0.0148		Pseudo R2 = 0.0189				Pseudo R2 = 0.0190			
Adj R-squared	0.0144									

From the results in table 4.2, the LPM model results indicate that distance proxied by the time to get water has a negative effect on the women going for breast cancer screening whereby an increase in time taken by 1 percent reduces the chance of women going for breast cancer screening by 0.6 percent. The respective t – vales is significant at 5 percent significance level. Similar results are reported for both the logit and probit model whereby the magnitude of effect is 0.6 percent as indicated by the respective marginal effects.

The effect of the household head gender indicates that women in male – headed households are less likely to seek for breast cancer screening services from medical practitioner by 1.3 percent in for all the models. The age of the household head was found to have a positive effect on the breast cancer screening services among women though insignificant.

The seeking of breast cancer screening services was found to increase with increase in the age of the women. Results indicate that older women are more likely to seek for breast cancer screening services among women. For the LPM model, when women age increases by 1 percent, the probability of women going for breast cancer screening increase by 2.2 percent holding other factors constant. The logit and probit model results indicate that chance of older women going for breast cancer screening are higher compare to you women by 2.1 and 2.2 percent, respectively.

Education wise, the number of years spent by the household head in acquiring education was found to have positive effect on women seeking for breast cancer screening services. The, LPM

models indicate that when the number of years the household head spend in acquiring education increases by 1 year, the probability of the woman in the household going for breast cancer screening increases by 0.031 units. The logit and probit model results indicate that for every additional year the household head spend in acquiring education, the probability of the woman in that household going for breast cancer screening increases by 3.8 and 3.7 percent for logit and probit model respectively. Further, women with secondary and tertiary education were found to have a higher probability of going for breast cancer screening.

The size of the household was found to have a negative effect on women seeking for breast cancer screening services. Women from large households have a lower probability of going for women seeking for breast cancer screening services. the LPM model results indicate that when household size increase by 1 member, the probability of women going for breast cancer screening services reduces by 2.1 percent. Further, the logit and probit model results indicate that women from large households have a lower probability of going for breast cancer screening services by 2.0 and 2.1 percent, respectively. Lastly, Women in marriage union were found to have a higher probability of going for screening compared to women who have never been in any union.

Upon controlling for the household income level effect on screening regression results indicate that the effect of distance proxy by time to get water is negative in all three model. However, the effect is not significant. This implies that income effect trades – off the negative impact the distance has on breast cancer screening. As a result, the income well – off households can pay the cost of travel to seek for health services. Results are presented in table 4.3.

After controlling for the effect of income, male – headed households are less likely to seek for breast cancer screening services from medical practitioner with the effect being significant. The age of the household head and age of woman have a positive but insignificant effect on screening.

Educations wise, education years for household head and women possession of secondary and tertiary education have a positive and significant influence of women going for breast cancer screening. The effect of household size on women going for breast cancer screening is negative and significant in all models.

Looking at income, the results indicate that income has positive effect on women going for breast cancer screening. The LPM model results indicate that the coefficient of wealth quartiles increases from lower wealth quartile to higher wealth quartile with all being significant at 5 percent significance level. Similar results are replicated for the logit and probit models where women from poorer, middle, richer and richest have probability of women going for breast cancer screening compared to women from poorest households by 7.6, 7.7 10.3 and 16.4 percent for logit and 7.2, 7.1, 9.5 and 15.0 percent for probit model respectively (Table 4.3).

Table 4.3: Regression results controlling for wealth quartiles

Screening	LPM		Logit Model				Probit Model			
	Coef.	t-value	Coef.	t-value	mfx	t-value	Coef.	t-value	mfx	t-value
Log water time	-0.002	-0.67	-0.018	-0.72	-0.002	-0.720	-0.013	-1.03	-0.002	-1.030
hh head gender	-0.010**	-2.06	-0.108**	-2.10	-0.010	-2.100	-0.050**	-1.89	-0.009	-1.890
Log hh head age	0.010	0.95	0.114	0.95	0.010	0.950	0.060	0.97	0.010	0.970
Log age woman	0.016	1.34	0.168	1.32	0.015	1.320	0.084	1.28	0.015	1.280
Log education years	0.015**	2.50	0.221***	2.84	0.019	2.850	0.106***	2.77	0.019	2.770
Log hh size	-0.014***	-2.72	-0.154***	-2.77	-0.014	-2.770	-0.082***	-2.80	-0.014	-2.800
Marital status	0.021*	1.72	0.231*	1.68	0.019	1.840	0.110	1.56	0.018	1.680
Secondary education	0.019***	2.97	0.152**	2.24	0.014	2.160	0.086**	2.45	0.016	2.370
Tertiary education	0.128***	9.05	0.766***	6.43	0.090	5.050	0.447***	6.66	0.100	5.430
Poorer	0.053***	9.25	0.763***	10.23	0.076	9.340	0.374***	10.44	0.072	9.720
Middle	0.051***	8.24	0.743***	9.48	0.077	8.370	0.361***	9.49	0.071	8.620
Richer	0.069***	9.38	0.901***	10.51	0.103	8.600	0.446***	10.45	0.095	8.950
Richest	0.117***	10.79	1.220***	11.51	0.164	8.530	0.623***	11.08	0.150	8.780
Constant	-0.045	-1.14	-4.074	-9.25			-2.190	-9.66		
Number of obs	21,302		Number of obs = 21,302				Number of obs = 21,302			
F (13, 21288)	37.94		LR chi2(13) = 457.66				LR chi2(13) = 456.60			
Prob > F	0.0000		Prob > chi2 = 0.0000				Prob > chi2 = 0.0000			
R-squared	0.0226		Pseudo R2 = 0.0317				Pseudo R2 = 0.0316			
Adj R-squared	0.0220									

4.3 Discussion of the Results

The results show that demand for breast cancer screening services is downward sloping because it is correlated with opportunity cost (time to water source) the women incur to seek breast cancer services. This is because the effect of distance to the health facility (proxied by time taken

to get water) is negative and significant. This implies that women are unwilling to pay for cost of travelling to the health facility for screening, but the higher that cost, the less they are likely to go for screening. Therefore, the longer the distance, the higher the cost of travelling to the health facility and the lower the demand for breast cancer screening among women. This finding agrees with other studies that have investigated the geographical accessibility of the health facility as a core determinant of utilization of cancer screening services by women worldwide. Bingham et al (2003), reviewed effect of health facility access in Peru, Bolivia, South Africa, Kenya and Mexico and found that the location of the service facility determines cervical cancer screening and treatment programs with long distance to the nearest health facility being reported as a hindrance towards seeking cancer screening services

Further income (proxied by wealth index) was found to have a positive effect on demand for breast cancer screening services. This is in line with the law of demand for normal goods whereby the demand increases with the increase in the level of income. Households which are endowed with assets can pay for the cost of going to the health facility, which is perhaps the reason the effect of the opportunity cost of fetching water not being statistically significant in a model in which wealth categories are included. In addition, such households are capable to pay for other costs that may be related to screening by a medical practitioner such as consultation fee. It is notable that in the study, controlling for the effect of income leads to the effect of distance being negative but insignificant. This speaks to the aspect of income trading – off the negative effect of distance on the demand for healthcare services. Therefore, women from households with incomes can pay for the cost of travelling to the health facilities. This finding agrees with Hwang (2009) who investigated cancer medical costs in the last year of life of cancer patients in

Korea. The study modelled the effect of cancer care cost on cancer treatment utilization based of a sample of 70,558 patients. Using the multiple regression analysis, patient's age adversely affects cancer costs while income level affects cancer costs. Further, Maseko, Chirwa and Muula (2015) who in analyzing the utilization of cervical cancer prevention services in low- and middle-income countries found that economic status significantly determined the utilization of cervical cancer prevention services.

The age of the household head and woman was found to positively affect demand for breast cancer among women. Older household head are more likely to be well informed of the health issues hence encourage their women go for screening. Further older women given their exposure in their reproductive life, breast feeding experience among others are more likely to go for screening compared to young women with limited reproductive health exposure. This finding agrees with finding by Teame, Gebremariam, Kahsay, Berhe, Gebreheat, and Gebrehiwot (2019) who examined cervical cancer screening services among women in Ethiopia using multivariate logistic regression model for empirical estimation. And found that women aged 30–39 and 40–49 aged utilized cancer screening services more than 21–29 aged women.

The size of the household head negative affects demand for cancer screening services among women. Women from large households are likely to have more household chores such as looking after young ones especially for housewives. This may deny then time to go for the screening. In addition, large households could have a negative effect on women going for screening from economic point of view. Large households are likely to have large expenditures on basic needs. As a result, this may diminish financial resources needed for screening such as payment for

examination and consultancy fee as well as cost of travel. This could explain the negative effect of household size on demand for breast cancer screening among women in Kenya.

Education attainment was found to positively influence on women going for screening. Educated women are more likely to be well informed and aware of breast cancer issues hence more likely to go for screening compared to uneducated women. Further household heads who have spent more years in education are more likely to sensitize their women on the need for screening. This finding agrees with Koç, Donnell and VanOurti (2018) in Netherlands who found that Women with low education were 11.5 percentage points less likely to be screened for breast cancer than their counterparts with higher education. The middle education group is 10.4 points less likely to get a screening mammogram than the most educated. There is no age-standardized education gradient in mammography use in the Netherlands. This suggests that lower educated women were less likely to be screened because they were poorer, had less comprehensive insurance cover and, perhaps because of that, were less likely to come into contact with a physician who recommended mammography and not because they perceived less benefit from screening.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND POLICY RECOMMENDATIONS

5.1 Introduction

The chapter entails conclusions and summary of findings based on the findings fitted in the LPM, Logit and Probit models, policy recommendations and areas for further study.

5.2 Summary of the Study

The study sought to examine the factors affecting the utilization of cancer healthcare services: a case of breast cancer among women in Kenya. Specifically, the study focused on the household demographics, socio and economics factors that determine utilization of breast cancer healthcare services with regard to breast cancer in Kenya. The choice of the study was informed by the fact the breast cancer is leading type of cancer on women in Kenya in terms infection as well as mortality. In addition, in terms of (KDHS, 2014), breast cancer is found to be leading in terms of screening uptake in relation to other types of cancers among women captured in the national survey. It is noted that despite the government efforts such as the introduction of free breast cancer screening services as well as increased awareness n breast cancer, the incidences of all cancer cases in the country has been on a rise. Among women breast cancer cases has been on a rise among other cancers affecting women. In addition, the uptake of breast cancer screening services has been minimal at best despite the efforts put by the national, county governments among other stakeholders such as NGOs involved in health issues.

Given this phenomenon, the study sought to establish the socioeconomic determinants of breast cancer screening services among women in Kenya. In the study women utilization of breast cancer screening services was deemed to be influenced by woman's age, place of residence, distance to health facility, household wealth quantile, woman's education level, marital status, woman's employment status, health insurance cover and information access.

Dummy variable models (LPM, Logit and Probit) models were applied in the empirical analysis. The choice of the model was informed by a number of facts. First, is the nature of the dependent variable which is a binary outcome with women uptake of breast cancer screening services 1, otherwise 0. The study relied on the 2014 Kenya Demographic and Health Survey. The dataset is a cross-sectional survey design where information about breast cancer healthcare components and timing of the visits was collected from individuals across all the selected households. A total of 39,937 households were sampled from across the 47 Kenyan counties, which were stratified into rural and urban strata. Specifically, information containing background characteristics such as maternal age, education level, place of residence, breast cancer screening services among other household factors such as wealth indices were captured, which was very crucial in this study.

5.3 Conclusions

From the results only 11.4 percent of woman had breast cancer screening done by a medical practitioner. The empirical model results indicate that the demand curve for the breast cancer screening services is downward sloping. Distance as proxied by time taken to get water had a negative effect on demand for breast cancer screening services. This is because the effect of

distance was found to be negative and significant. This implies that women are unwilling to pay for cost of travelling to the health facility for screening. Therefore, the longer the distance, the higher the cost of travelling to the health facility and the lower the demand for breast cancer screening among women.

Further, demand for breast cancer screening was found to increase with the increase in wealth of the household as measured by household wealth quartiles. This is in line with the law of demand for normal goods whereby the demand increases with the increase in the level of income. Households which are endowed with assets can pay for the cost of going to the health facility. In addition, such households are capable to pay for other costs that may be related to screening by a medical practitioner such as consultation fee. It is notable that in the study, controlling for the effect of income leads to the effect of distance being negative but insignificant. This speaks to the aspect of income trading – off the negative effect of distance on the demand for healthcare services.

The age of the household head and woman was found to positively affect demand for breast cancer among women. Older household head are more likely to be well informed of the health issues hence encourage their women go for screening. Further older women given their exposure in their reproductive life, breast feeding experience among others are more likely to go for screening compared to young women with limited reproductive health exposure.

The size of the household head negatively affects demand for cancer screening services among women. Women from large households are likely to have more household chores such as looking after young ones especially for housewives. This may deny them time to go for the screening. In

addition, large households could have a negative effect on women going for screening from economic point of view. Large households are likely to have large expenditures on basic needs hence reducing the financial resources that would be need for breast cancer screening.

Lastly, Education attainment was found to positively influence on women going for screening. Educated women are more likely to be well informed and aware of breast cancer issues hence more likely to go for screening compared to uneducated women. Further household heads who have spent more years in education are more likely to sensitize their women on the need for screening.

5.4 Policy Recommendations

Kenyan government has formulated policies towards curbing breast cancer services among then campaigns and awareness on early screenings. As envisaged in the big four agenda, universal health coverage is one of the four agenda that the government seeks to attain. In addition, health initiatives towards breast cancer awareness creation among women in reproductive age is crucial if universal health coverage is to be achieved in so far as women healthcare is concerned. To this effect, several policy implications regarding uptake of breast cancer health services among women in Kenya is concerned can be pronounced in line with the study's findings.

First is the policy about sensitization and awareness creating among women on the need and importance for breast cancer services .The study substantial high levels of women illiteracy in the county about formal education. Therefore, there is need for the National, County government and the relevant stakeholders to come up with the sensitization and awareness creation

Programmes to educate the majority of illiterate women on the importance of seeking breast cancer awareness in Kenya. In addition, the sensitization and awareness creation should be extended to more in the rural areas which seems to be lagging in uptake of breast cancer awareness in relation to their urban counterparts.

Second is the policy matters regarding the expansion of the health infrastructure. The findings of the study were the distance to the nearest health facility was a deterrent to seeking breast cancer healthcare. There is therefore the need for the County government to expand the existing health infrastructure to bring health services closer to the peoples especially in the rural areas. In addition is the need to refocus on empowering women to undertake effective self – screening. This would go a long way in obviating the negative effect of distance in seeking for breast cancer healthcare services.

Regarding the effect of income, the study findings were that the utilization of breast cancer health services rises with the rise in the household wealth status. This calls for subsidizing the screening for women in the low wealth quartiles. Further, there is the need for the national and county government to empower the rural household through investing in the community livelihood empowerment Programmes at large. This will empower rural households economically an enable women seek for breast cancer healthcare services.

5.5 Limitations of the Study

From empirical analysis adopted a national wide analysis. The study therefore neglected county – level analysis. Therefore, given the fact of healthcare function devolution upon the implementation of Kenya Constitution, 2010, a county – level analysis would be ideal. Thus, is because it would inform county disparities in so far as the uptake of breast cancer health care is concerned. However, this study falls in limitation of doing so given that the dataset used for analysis was the KDHS 2014 for the survey conducted less than four years after the implementation of devolved health care function hence adoption of county – level analysis would give misleading results. Therefore, for a better county – level analysis, a study using more current dataset would be more ideal.

5.6 Areas for further Research

The study explored the factors affecting the utilization of cancer healthcare services: a case of breast cancer among women in Kenya. A national level analysis was adopted. Given that in the current administration dispensation, health functions have been devolved, this study would recommend similar analysis at counties level given the heterogeneity across different counties regarding factors considered in the analysis. This would be crucial in informing policies regarding the current debate on universal health coverage.

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