DEMAND FOR CANCER TREATMENT IN KENYA: THE ROLE OF HOUSEHOLD HEALTH EXPENDITURE

BY

SUSAN GATHONI MAINA

A PROJECT PAPER SUBMITTED TO THE SCHOOL OF ECONOMICS IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN HEALTH ECONOMICS AND POLICY

2014

DECLARATION BY THE CANDIDATE

This project is my original work. It has not been submitted for a degree in this or any other University.

Sign: _____ Date: _____

SUSAN GATHONI MAINA

REGISTRATION NO. X53/76851/2012

DECLARATION BY THE SUPERVISOR

This project paper has been submitted for examination with my approval as the University Supervisor.

Sign: _____ Date: _____

DR. MOSES MURIITHI

School of Economics

University of Nairobi Kenya

DEDICATION

To my loving father who triumphed over adversity in the fight against Prostrate Cancer. His unpublished book on, "How I survived the Disease of Men" and his level of resilience, taught me valuable lessons in life.

ACKNOWLEDGEMENT

TABLE OF CONTENTS

LIST OF TABLES

ABSTRACT

Poor health imposes a heavy burden on society and slows down economic growth. Illness in the family is one of the major causes of the reduction of incomes and assets of poor Kenyans. Cancer has had a demonstrated negative impact on households, their education, as well as in their workforce productivity.

The study was designed to investigate the factors that influence a cancer patient's choice of a health care facility in Kenya. The study used the Household Health Expenditure and Utilization Survey HHEUS (2013) published by the Ministry of Health (MoH) and facilitated by the Kenya National Bureau of Statistics (KNBS). The Kenya Household Health Expenditure Utilization Survey (KHHEUS) 2013 data had an original sample of 29,200. Only data for patients whose illnesses were cancer and terminal was retained for analysis. This procedure shrunk the sample size to a subsample of 3,896 respondents.
The data was analyzed using Stata statistical software using descriptive, causal and inferential statistics. A multinomial logistic (M-logit) regression model was estimated. A Log-Likelihood Chi-square statistic and a pseudo R-squared were established alongside marginal effects of predictors on the probability of choice of competing health facilities.

Among the study findings are that rural dwellers have higher uptake of cancer healthcare services from public, mission and traditional health facilities than those of private and NGO providers. Traditional facilities have the highest treatment cost whereas public facilities have the lowest. Extremely few insured respondents with cancer and terminal illnesses go for traditional healthcare. Individual social attributes found to be important in influencing choice of healthcare for cancer and terminal illnesses were religion and education. As a recommendation, the national and county governments, private investors, NGOs and development partners should increase the range of alternative providers of such services.

ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
ANC	Ante Natal Care
BL	Burkitt Lymphona
HHEU	Household Health Expenditure and Utilization Survey
HIV	Human Immunodeficiency Virus
HPV	Human Papilloma Virus
JTRH	Jaramogi Oginga Odinga Teaching and Referral Hospital
KDHS	Kenya Demographic Health Survey
KEMRI	Kenya Medical Research Institute
KNH	Kenyatta National Hospital
MHCS	Maternal Health Care Services
NCD	Non Communicable Diseases
NCI	National Cancer Institute
NHIF	National Health Insurance Fund
NGO	Non-Governmental Organizations
TB	Tuberculosis
UCT	Uganda Cancer Institute
WHO	World Health Organization

CHAPTER ONE
INTRODUCTION

1.1 Background of the Study

According to World Health Organization (WHO) Cancer Report 2014, Cancer is the uncontrolled growth and spread of cells. AFYA Kenya, 2012, defines cancer as a condition in which the regulation of cell growth is lost and cells grow uncontrollably. Unlike normal cells, the growth of cancer cells is no longer well-regulated. Instead of dying as they should, cancer cells outlive normal cells and continue to form new, abnormal cells.

Cancer can affect almost any part of the body. The growths often invade surrounding tissue and can metastasize to distant sites. Many cancers can be prevented by avoiding exposure to common risk factors, such as tobacco and smoke. In many developing countries the rapid rise in cancers and other non-communicable diseases has resulted from increased exposure to risk factors which include tobacco use, harmful use of alcohol and exposure to environmental carcinogens. Other risk factors for some cancers include infectious diseases such as HIV/AIDS (Kaposi's sarcoma and lymphomas), Human Papilloma Virus (HPV), Hepatitis B & C (Liver cancer), bacterial infections such as Helicobacter Pylori (cancer of stomach) and parasitic infestations such as schistosomiasis (cancer of bladder) (Republic of Kenya, 2011).

A significant proportion of cancers can be cured, by surgery, radiotherapy or chemotherapy, especially if they are detected early. Notable also is that 30% of cancers are curable if detected early; 30% of cancers are treatable with prolonged survival if detected early; 30% of cancer patients can be provided with adequate symptom management and palliative care (WHO, 2012).

Cancer is now recognized globally as one of the leading non communicable diseases. Second to cardiovascular diseases, cancer contributes to over 7.9 million deaths constituting close to 13% of total global mortality each year and this figure is projected to

rise to nearly 10 million unless the problem is addressed urgently Globally, Cancer causes more deaths than HIV, TB and Malaria combined.(WHO, 2012).

While communicable diseases still remain the leading killers in many developing countries, the incidence and mortality from non-communicable diseases is rising rapidly. This has resulted in a 'double burden' of diseases which is imposing strain on existing health systems (Republic of Kenya 2011). To corroborate this, The Global Burden of Disease (2010) study shows that leading causes of death globally are shifting from diarrhoea, maternal complications, malaria and malnutrition to lifestyle diseases such as cancer, diabetes, hypertension and lung complications. Further, Velazquez (2011) states that chronic conditions such as diabetes, heart disease, lung disease, and Alzheimer's disease take a heavy toll on health. Chronic conditions also cost vast amounts of money. The trends are going in the wrong direction in Kenya and Africa as a whole.

It is important to note that 70% of the global Cancer burden is in low and middle income countries, like Kenya. WHO, (2010) reports that in 2008, there were 618,000 new cancer cases, with 512,000 deaths in the African continent. The report further estimates that by 2030, there will be 1.27 million new cases in Africa, with 970,000 deaths. By 2030, the developing world is expected to bear 70% of the global cancer burden.

Most countries, Kenya included, are barely prepared to deal with the disease burden. For a long time, healthcare initiatives have focused on fighting HIV/Aids and malaria. Cancer, on the other hand, is shrouded in mystery and fear (Warau, 2012).

In Kenya, cancer ranks third as a cause of death after infectious diseases and cardiovascular diseases. It causes 7% of total national mortality every year. It is estimated that 28,000 new cases of Cancer occur each year in Kenya with more than 22,000 deaths per year. Over 60% of those affected are below the age of 70 years. The risk of getting cancer before the age of 75 years is 14% while the risk of dying of cancer is estimated at 12% (Republic of Kenya, 2011).

The leading cancers in women are breast, oesophagus and cervix.. In men, oesophagus, prostate and stomach are the most common cancers. Of all the cancers registered breast

cancer mortality accounted for 44.1%, cervical cancer 51% and oesophagus 91.5%. In men, the mortality is as follows; 81% for prostate cancer, Oesophagus had a 90.4% representation and Stomach had 92.2% (Kenya National Cancer Registry, 2012).

The leading Cancers in Kenya are illustrated below:

 Cancer Incidence and Mortality

Table 1: Female

SITE	CASES	DEATHS	MORTALITY
Oesophagus	1560	1428	91.5
Cervix	4802	2451	51.0
Breast	4465	1969	44.1

Source: Kenya: National Cancer Registry 2012

Table 2: Male

SITE	CASES	DEATHS	MORTALITY
Oesophagus	1872	1692	90.4
Prostate	2527	2048	81.0
Stomach	953	879	92.2

Source: Kenya: National Cancer Registry 2012

Childhood cancer accounted for 15% of cancer admissions at Kenyatta National Hospital (KNH) between 1998- 2008 (Githanga, 2013). She further points out that 1 in 10 children survive cancer in Kenya compared to 7 in 10 in the developed countries. Challenges in childhood cancer care include poor access to care for patients in remote/rural areas, limited specialist treatment centers, prohibitive cost of anti-cancer drugs, low levels of awareness in clinical and public settings (Githanga, 2013).

Cancer cannot be eradicated, but its effects can be significantly reduced if effective measures are put in place to control risk factors, detect cases early and offer good care to those with the disease. About 80% of reported cases of cancer are diagnosed at advanced stages, when very little can be achieved in terms of curative treatment. This has been attributed to several factors among them; due to lack of awareness, inadequate diagnostic facilities, poorly structured referral facilities, high cost of treatment and high poverty

Index. The country has few cancer specialists who are concentrated in a few health facilities in Nairobi. This makes it difficult for a great majority of the population to have timely access to cancer treatment services hence resulting in long waiting periods. Some cancer management options are not readily available in Kenya necessitating some Kenyans to seek cancer treatment abroad. Undoubtedly, some previously curable tumours progress to incurable stages (Republic of Kenya, 2011). Warau (2012) concurs that patients referred from other hospitals have to wait for months before they can access services at Kenyatta National Hospital and Moi Teaching Referral Hospitals leading to a majority of patients presenting themselves at a late stage.

There are four radiation machines in Nairobi, distributed as follows; Kenyatta National Hospital, MP Shah, Nairobi Hospital, and Aga Khan Hospital with Moi Referral hospital-Eldoret being the only health facility with the radiation machine outside Nairobi. The Human Capacity for cancer treatment in Kenya is distributed as follows; four radiation oncologists, six medical oncologists, four paediatric oncologists, five radiation therapy technologists, three oncology nurses and two medical physicists (Githanga, 2013)

There has been a sustained campaign by Cancer specialists and other medical professionals appealing to Kenyans to take routine check-ups to detect the presence of the disease early. The routine examinations would help stop new infections and further control rising cases of the deadly disease (KEMRI, 2012).

Health insurance in Kenya is very low and comprises both mandatory and voluntary insurance schemes. Only about 10% of Kenyans have health insurance. Health insurance coverage is higher among the urban population (19.7%), compared to the rural population (7.4%), and among the richest (26.4%) compared to the poorest population (1.9%). The National Hospital Insurance Fund (NHIF) is the main type of health insurance in Kenya and its membership to the NHIF is mandatory to those working in the formal sector (both public and private) and voluntary for those working in the informal sector. The Kenyan health sector relies heavily on out-of-pocket payments. The sector is largely underfunded and the poor contribute a larger proportion of their income to health care than the rich (Chuma and Okungu, 2011).

According to Munyi (2014), The Cancer Treatment Centre at Kenya National Hospital (KNH) Patients pay Sh300 per session, translating to KSh1, 500 a week. The entire six-week session costs Ksh 9, 000. By contrast the Private Hospital charges are Sh80, 000 per Week. For solid tumours, the tests may include but not limited to CT Scans or magnetic Resonance Imaging (MRI) and biopsy which costs between ksh10,000 to 30,000/- at KNH and more than 50,000/- in private hospitals. Although KNH and the private hospitals have an agreement to have poor patients access the radiation services at subsidised cost, the kSh35, 000-a-week bill is still too high. Other costs incurred in cancer treatment include Sh6, 000 – Sh10, 000 spent in preliminary investigation and Drugs that cost up to Sh30, 000 per course. At least six courses are required in the eight weeks.

1.2 Problem Statement

Poor health imposes a heavy burden on society and slows down economic growth. Illness in the family is one of the major causes of the reduction of incomes and assets of poor Kenyans. Cancer, for instance, has had a demonstrated negative impact on households, their education, as well as in their workforce productivity.

Within the Kenyan health care systems, cancer is treated through medical, surgical or radiation therapy (Republic of Kenya, 2012).The report further states that treatment is multidisciplinary and may involve surgery, radiation therapy, chemotherapy, hormonal therapy, watchful waiting or some combination of the interventions. It requires that all these modalities of treatment be available in the same setting to avoid distant referral and delays in treatment administration. The Kenyan essential drugs list does not include chemotherapy for cancer. Some of the very essential drugs for pain management are rare to find in most public hospitals. To concur with the above, Mulemi (2010) asserts that Cancer is still an under-emphasised public health concern in Kenya. He further argues that cancer is not a politically visible disease to attract African governments for adequate budgetary allocations hence resources for research and policy making. The Kenyan Government equally acknowledges that the need for health services has escalated beyond the financing capacity of the Ministry of Health (Republic of Kenya 2007). Warau (2012) points out that there has been little investment in healthcare infrastructure and

public health services making it impossible to adequately treat patients. Further, while information on cancer in the developed world abounds in scientific literature, the pool of studies on Kenya and Africa as a whole is limited on Lessons from Europe, Asia and North America which informs healthcare professionals and policymakers in Africa, though disease patterns vary among populations.

Cancer treatment is protracted and expensive, especially due to the intensive procedures required for the advanced cancer cases. Delayed and futile multiple referrals pave the way for the most intensive and expensive hospital treatment, which entails disruption of the livelihood. Given the uncertainty with which ill health affects a given individual in the population, risk sharing is both an equitable and an effective way of financing health care. Indeed, important policy outcomes of health insurance are to improve access to care and to reduce individual spending at the time of use, which is particularly important for those with limited ability to pay. By bringing the direct price of health care down, consumption of care will increase.

Whereas, seeking health care intervention is supposed to be a process that leads to positive health outcomes, this is not the case for cancer patients in Kenya today. Cancer compared to other non-communicable diseases is a burden to household expenditure and leads to impoverished individuals and families (Mulemi, 2013). Private health insurance often fails to cover people with chronic conditions like HIV/AIDS, Cancer and when they do, the premiums are unaffordable. Consequently, people suffering from long-term illnesses cannot buy a cover-even when they can afford one- and they are therefore left to rely on public care which is already under-resourced (Chuma and Okungu, 2011). Mulemi (2013) further argues that the quality of care is higher in a few Private health facilities and turnaround time meets the international standards but the services are inaccessible to poor cancer patients. Besides patients who live out of Nairobi cannot meet the transport cost. Government budgetary allocations for cancer treatment are equally insufficient. There is limited patient information on factors that determine demand for cancer treatment, as well as health care facility of choice.

The researcher therefore anticipated that the study will reveal the outpatient services that are provided to cancer patients, factors that influence the uptake of the services and how household health expenditure affects cancer treatment in Kenya. Household health expenditure in this study is captured by variables; health insurance, user fees/cost of treatment and the transport cost to and from the nearest health facility.

1.3 Objectives of the Study
Broad objective:

Determine the factors that influence a cancer patient's choice of a health care facility in Kenya

Specifically, the study sought to;

a) Describe the pattern of outpatient services provision for cancer patients among health care providers in Kenya.

b) Evaluate the influence of individual, household and health facility attributes on the choice of cancer treatment in Kenya.

c) Make appropriate policy recommendations

1.4 Significance of the Study
The study supplemented the existing literature concerning demand for cancer treatment in Kenya. It was also anticipated that the study would be essential for the policy makers in improving their understanding on the factors that influence demand for cancer treatment. The study results can serve as input in designing and improving existing intervention strategies aimed at improving access, utilization and ultimately health outcomes for cancer patients. Kenya like many other developing countries is faced with the challenge of limited resources which have competing uses. The study therefore analysed the outpatient services provided at each facility level, influence of household health expenditure, individual and facility attributes that influence demand of cancer services. The study also sought to advice policy makers on which determinants to prioritize on. Equally, other researchers would build on the findings of the study to carry out further researcher to confirm, expound, improve or enrich the study findings on demand for cancer treatment.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter gives an overview of theoretical literature that has been advanced to explain the demand for cancer treatment. It also provides the literature review on empirical studies on, health care systems, health care financing and health seeking behaviour for communicable and non- communicable diseases, finally giving an overview of the literature.

2.2 Theoretical Literature

From a health economics perspective, there are, two alternative views on the demand for health care. One suggestion is that the individual demands care as an input into her production of health. This view is referred to as the Grossman model. It suggests that the demand for health care is a derived demand in the process of investment in health capital. The Grossman model of the demand for health thus views health care as an input along with other health inputs such as nutrition and personal exercise. Specifically, the model views the individual as the sole decision maker as to, if and how much health care to use (Henderson, 2011).

Over the past decade, however, the Grossman model of the demand for health has been challenged by a complementary view that sees the demand for health care within a principal-agent framework. In this view, the individual decides if and when to seek health care while the provider of the services decides how much care to use once the first decision has been taken. Grossman (1972) motivates models of demand for health-related goods on the assumption that a household derives utility from consumption and leisure and disutility from the time spent being ill. In Grossman's argument, it is possible to allocate time between income and leisure, health and non-health activities.

Total utility for a household with i=1,…, n members then can be represented as $U = u(X_i, L_i, I_i, Z)$ Whereby: U is utility, X is consumption, L is leisure and I is

disutility from the time spent being ill. Since the utility variables depend on choices made by a particular household, it is also important to include preferences which inform the choices. Thus Z is a vector of preferences or taste variables that affect the importance a household attaches to consumption of health versus other goods.

One of the criticisms of the Grossman model is the fact that many of its predictions are not supported by the empirical analyses. Depending on the particular view of the demand for health care that one adopts, the methods for analyzing the effect of for instance health insurance on the demand for care will vary.

Expanding Grossman model, utilization of healthcare is a derived demand for "a service which is used to produce better health" (Wolfe &Behrman, 1984 in Kuunibe and Kojo, 2012) whereby consumers aim to achieve larger stocks of health capital. Henderson J (2005) concurs with Wolfe et al by saying that demand for medical care is derived from the demand for good health. He further asserts that demand for medical care is inversely related to its price. According to Kuunibe and Kojo (2012), individuals determine that they are sick and must resolve to seek treatment. The next step is to choose which type of health facility to visit. The categorical nature of healthcare demand decisions means that they are best modelled using discreet equations (Mwabu, Ainsworth & Nyamete, 1993; Adhikari, 2011).

2. 3 Empirical Literature
This section reviews available literature, identifies gaps and subsequently underscores the relevance of the proposed study.

2.3.1 Health Care Systems in Developing Countries
Inadequate access to health care is a complex, multi-dimensional problem (Mamdani and Bangser, 2004). On the supply-side, availability of appropriate interventions such as drugs or vaccines, quality of services, and affordability all affect the uptake of health interventions. Demand-side factors such as acceptability of interventions, health education, and treatment seeking behaviour can also affect access (Ensor and Cooper, 2004, Krause and Sauerborn, 2000).

Public facilities provide more than two-thirds of the medical care in Kenya, Guinea, Madagascar, and Tanzania. Private non-profit (mostly charitable) organizations provide the remaining one-third, (WHO, 2000). Mail et al, (2013) argued that health systems need to see traditional healing as a complementary system in order to ensure adequate access to health care on the Kenyan coast. Traditional healing systems coexist with the biomedical (over the counter) system and both complement each other. In their study, the biomedical system was the preferred treatment but traditional healers were consulted when biomedical system seemed to have failed, and for diseases perceived to have supernatural causes e.g. mental illness. Muriithi and Mwabu (2013) further argue that there is an uneven distribution of facilities in rural and undeserved urban areas like slums.

Mulemi (2010) carried out a study on Coping with cancer and adversity: Hospital ethnography in Kenya. The study noted that a bed capacity of thirty in the adult cancer ward in Kenyatta National Hospital (KNH) admitted more than the capacity. The study further observed that cancer clinic was often full, with long queues of desperate patients seeking admission and routine out-patient treatment. Some of the patients travelled up to 600 kilometres to the hospital that hosts most of the oncology expertise and technology in Kenya. It's only a few who got the admission or out-patient treatment, because they could either afford it or physically endure therapies.

A huge disparity exists in patient outcomes between low-income countries like Kenya and high-income countries like Canada. Jarvis and Matheka, (2014) argue that cervical cancer is rare in Canada and USA due to pap smear testing. This is a contrast to the Kenyan scenario where cervical cancer is a leading cause of cancer deaths. Prevention and screening is not available or accessible to most people in Kenya. Most cases are often undiagnosed or misdiagnosed, which is partly due to inadequate healthcare infrastructure.

In their study on the evolution of comprehensive cancer care in Western Kenya, Strother et al, (2013), indicated there is minimal infrastructure for cancer care in Kenya. The care is largely inaccessible due to geography, limited resources, or cost. Patients in need of radiation in Western Kenya frequently have earliest available appointments three to six months in the future at health facilities level four to six away in Nairobi. Moreover,

cancer drugs are frequently unavailable in government hospitals, and have limited availability on the open market, the cost of transport, chemotherapy, and radiation therapy often render these services unobtainable. However, Kamau and Muriithi (2006) emphasise that with the introduction of County Development Fund Act of 2003, many health centres have come up.

2.3.2 Health Care Financing

Access to basic health services of acceptable quality is still denied to many of the world's poorest people. Against a backdrop of severely underfunded health systems, governments are faced with a dilemma. Payments for health services, in the form of user charges, are likely to present a barrier to access. Yet, a shortage of resources at the facility level is a contributor to failure to deliver quality services, and this also presents a barrier to access (Lagarde and Palmer, 2008).

Despite growing evidence of epidemiological and economic impact, the global response to terminal illnesses remains inadequate. Lack of financial support retards capacity development for prevention, treatment and research in most developing countries. Some of the reasons attributed to this are up- to –date evidence related to the nature of the burden of chronic diseases is not the responsibility of decision makers as well as strong beliefs that chronic diseases afflict only the affluent and the elderly. Chronic diseases are said to arise solely from freely acquired risk and their control is ineffective and too expensive and should wait until infectious diseases are addressed (WHO 2004).

Ekman, (2007), stated that around 60 percent of the population in Jordan was covered by some type of insurance. However, the distribution varied across income groups, and the effect of insurance on the outcome indicators differed substantially across the various programs. Generally, insurance was found to increase the intensity of utilization and reduce out-of-pocket spending, while no general insurance effect on the probability of use was found. However, these effects were only found for some programs. The best performing programs were the ones where the somewhat better off groups have access.

The ability of households to pay for healthcare services depends partly on the level of household income (Hayward et al., 2000). Provision of adequate funding for health care either by the household or the government remains difficult in Sub Saharan countries. This has been attributed to the bad health outcomes in the region (Bichaka and Gutema, 2008, Kaseje, 2006).

Health care financing in Kenya is mainly through; taxation, development partner funding, NGOs finance, cost-sharing or system of user fees. The revenue generated from user fees and insurance claims are deposited into Facility Improvement Fund. This revenue is retained separately by the Ministry of Health, and is additional to budget allocations provided by Treasury. The revenue is used to improve the quality of health services in facilities and to support district-level preventive and primary health care services (Muriithi, 2013). Muriithi and Mwabu (2013) also argue that the major financier of health care services in Kenya is the Ministry of Health. They further state that the public sector accounts for 52% in the provision of health care services.

The challenges experienced by cancer patients in Kenya are exacerbated by a faulty national health insurance plan that doesn't allow patients to afford medical services (Jarvis and Matheka, 2014). The health system is inadequately designed and resourced, and particularly for people with cancer, with poorly equipped hospitals, a low doctor to patient ratio, and a lack of access to affordable drugs. They point out that these factors lead to late presentation, complications and meagre patient follow up. Chuma et al, (2013), concur with the above by stating that reducing user fees in primary health care in Kenya is a policy on paper that is yet to be implemented fully.

Chronic diseases affect households and individuals through the long-term out-of-pocket expenditures needed for the treatment of chronic disease. In developing countries, the health care costs for chronic disease can quickly drain household resources, driving families into poverty or deeper into poverty. The WHO estimates that the cost of chronic disease pushes over 100 million people into poverty yearly (WHO, 2010).

Mostert et al (2009) carried out a study on Influence of health-insurance access and hospital retention policies on childhood cancer treatment in Kenya. The study sought to

explore whether childhood cancer treatment outcomes in Kenya are influenced by health-insurance status and hospital retention policies. They observed that for children whose families had National Health Insurance Fund (NHIF) compared with those who did not, the relative risk for treatment abandonment relative to event-free survival was significantly low. It further noted difficulties Kenyan families might face when their child is diagnosed with cancer, has no NHIF, and is retained in hospital. The study concluded that Children with NHIF at diagnosis had significantly lower chance of abandoning treatment and higher chance of survival.

According to Russell, (2011) household members in response to illness make decisions about treatment and if the illness is serious they may have to reallocate tasks to cope with the loss of a worker or to care for a sick child, and borrow money to pay for treatment or replace lost earnings. These coping strategies aim at managing the costs of an event, process or illness that threaten the welfare of one or more members of the household. Ultimately, coping strategies are seeking to sustain the economic viability and sustainability of the household.

2.3.3 Health Seeking Behaviour

Physical accessibility plays an important role in utilization of health services (Bell et al., 2005, Rosero-Bixby, 2004, Gething et al., 2004, Noor et al., 2003, Mamdani and Bangser, 2004). In Kenya, it is estimated that 40% of the population must travel more than an hour to the nearest primary health care facility (Noor et al., 2006). Muriithi, (2013) in his study of the Determinants of health seeking behaviour in a Nairobi slum, Kenya, cited service quality, information about that quality, wealth, user fees and gender as the main determinants of patients' choice among alternative medical treatments. The decision making process on when and where to go for treatment is complex (Mail et al, 2013). According to Jarvis and Matheka, (2014), widespread lack of awareness and accurate information about cancer is a reason why screening is rare and many cancers are detected when it is too late to treat effectively. Several cultural myths exist regarding cancer, which are critical obstacles to expanded cancer control and care in Kenya, especially when it comes to early detection. One popular myth is that cancer is caused by

curses from ancestors and elders. In such cases, people even believe that you can 'catch' the disease from those who have it. Mail et al, (2013), concur that the process of seeking health care may involve various members of the family with fathers being the ultimate decision-makers.

Buckle et al (2013) undertook a cross-sectional survey on Factors influencing time to diagnosis and initiation of treatment of endemic Burkitt Lymphoma (BL) among children in Uganda and Western Kenya. Guardians of children diagnosed with BL were interviewed at the Jaramogi Oginga Odinga Teaching and Referral Hospital (JTRH) and Uganda Cancer Institute (UCI) from Jan-Dec 2010.). Among Kenyan guardians, source of income was the only independent predictor of delay, whereas in Uganda, guardian delay was influenced by guardians' beliefs on the curability of cancer, health system delay, by guardians' perceptions of cancer as a contagious disease, and total delay, by the number of children in the household and guardians' role as caretaker. Qualitative findings suggested financial costs, transportation, and other household responsibilities were major barriers to care.

A cross-sectional study by Sudenga et al (2013) on Knowledge, attitudes, practices, and perceived risk of cervical cancer and factors influencing cervical cancer screening uptake among Kenyan women, was carried out on women seeking reproductive health services in Kisumu, Kenya. Whereas 91% of the surveyed women had heard of cancer, only 29% of the 388 surveyed women had previously heard of cervical cancer. Most had received their information from health care workers. Few women (6%) had ever been screened for cervical cancer and cited barriers such as fear, time, and lack of knowledge about cervical cancer. Nearly all previously screened women (22/24 [92%]) believed that cervical cancer was curable if detected early and that screening should be conducted annually (86%). Most women (254/388 [65%]) felt they were at risk for cervical cancer. Women with perceived risk of cervical cancer were older and reported a history of marriage. Only 5% of the women reported that they would not be willing to undergo screening regardless of cost. The study concluded that cervical cancer is a major health burden for women in sub-Saharan Africa, yet only one third of the women had ever heard of cervical cancer in Kisumu, Kenya.

Chuma, Okungu and Molyneux (2010) explored the barriers to prompt and effective treatment among the poorest population in Kenya in four malaria endemic districts. Numerous factors that related to affordability, acceptability and availability were found to heavily influence prompt and effective treatment. Regarding affordability, the study found that 40% of individuals treated themselves with over the shop drugs and 42% who visited a formal health facility did not have adequate money, hence resulted to borrowing money or accessing care on credit. Other factors influencing affordability were seasonality of illness and income sources, transport costs, and unofficial payments. Regarding acceptability, the major interrelated factors identified were provider patient relationship, patient expectations, beliefs on illness causation, perceived effectiveness of treatment, distrust in the quality of care and poor adherence to treatment regimes. Availability barriers identified were related to facility opening hours, organization of health care services, drug and staff shortages.

Kitui, Lewis and Davey (2013) carried out a study on factors influencing place of delivery for women In Kenya by analyzing the 2008/2009 Kenya Demographic and Health Survey (KDHS) and linked them with a 2008 Kenyan Health Facility Database. Living in urban areas, being wealthy, more educated, using antenatal care services optimally and lower parity strongly predicted where women delivered, and so did region, ethnicity, and type of facilities used. Women most commonly cited distance and/or lack of transport as reasons for not delivering in a health facility but over 60% gave other reasons including 20.5% who considered health facility delivery unnecessary, 18% cited abrupt delivery as the main reason and 11% cited high cost.

Chakraborty et al, (2003) examined a number of predisposing factors and enabling factors that influence the use of Maternal Health Care Services (MHCS). Woman's age, age at marriage, number of previous pregnancies, family size, husband's education, women's education, economic status, type of housing and distance from health facility were used as explanatory variables in the study. The results showed a strong association between certain enabling and predisposing factors and use of MHCS. Women's education was found to be important in explaining the utilization of MHCS with female education retaining a net effect on MHCS use when women's household characteristics, household,

socioeconomic status and access to health care services were controlled for. The study also found that women whose husbands are involved in services positively influenced utilization of modern health care services. They also found that disease severity influenced utilization of health services. However, the results were inconclusive on the influence of predisposing and enabling factors such as age, number of previous pregnancies and access to health services on the utilization of maternal health services.

Pell et al (2013) carried out qualitative studies on Factors Affecting Antenatal Care Attendance (ANC) investigating the social and cultural context of malaria in pregnancy in Ghana, Kenya and Malawi. It was found out that across all sites, women at least attended ante natal care at least once, though the women's description of the service was vague. In Kenya, for instance, some of the motivators to attending ante natal care were checking the foetus position and monitoring its progress. Local healthcare facilities and ANC services vary amongst these settlements: urban areas are located within a 30-minute walk to the district hospital, whereas, in rural areas, women mainly access ANC at the small community clinics or dispensaries, which, for some women, are up to two hours' walk from home. In Malawi, distances to health facilities providing ANC vary and some women face a three-hour walk (or journey on a bicycle taxi). In Ghana, the timing of first antenatal care visit was influenced by reproductive concerns and uncertainties in pregnancies, usually in the first trimester. Other factors like age of the mother, parity and associated implications for pregnancy disclosure, relationship with health workers, cost of the service determined the follow up appointments. Facility related factors were generally found to be a major determinant on ante natal care attendance.

Knight, Self and Kennedy (2013) carried out a study on Why Are Women Dying When They Reach Hospital on Time? A Systematic Review of the 'Third Delay'. The 'three delays model' attempts to explain delays in women accessing emergency obstetric care as the result of: 1) decision-making, 2) accessing services and 3) receipt of appropriate care once a health facility is reached. Thirty-two barriers to the receipt of timely and appropriate obstetric care at the facility level were identified and categorized into six emerging themes (Drugs and equipment; Policy and guidelines; Human resources; Facility infrastructure; Patient-related and Referral-related. The most commonly cited

barriers were inadequate training/skills mix (86%); drug procurement/logistics problems (65%); staff shortages (60%); lack of equipment (51%) and low staff motivation (44%).

Birhanu et al (2012) carried out a qualitative study on Health seeking behaviour for cervical cancer in Ethiopia. Various factors including cultural, socio- economic, and beliefs about the disease and health care system were found to affect the treatment seeking behaviors for cervical cancer. Some of the barriers included; stigma associated with the disease, limited access to health services, lack of awareness, and the asymptomatic nature of the disease. A major barrier to seeking identified was the stigma and discrimination affected women experienced by their family and the community. As the community commonly believed the cause of cervical cancer is due to unacceptable social behaviors, women were therefore reluctant to disclose their condition to the social consequences.

2.4 An Overview of Literature

Most of the studies covered (Mulemi 2010, Muriithi 2013, Strother et al 2013, Krause and Sauerborn 2000, Ensor and Cooper 2004, Buckle et al 2013, Kitui, Lewis, Davey (2013), Pell et al 2013, Chuma, Okungu, Molyneux 2010)   observed that distance and cost of the service affect choice of health facility negatively. Similarly, source of income as cited by Chuma, Okungu, Molyneux (2010), Kitui, Lewis, Davey (2013) and Buckle et al (2013), determined whether health care was sought or not. The household expenditure goes high when there are added responsibilities of seeking health care hence affecting demand for care. Households with Health Insurance policies like NHIF (Ekman 2007, Mostert et al 2009, Jarvis and Matheka 2014, Knight, Self, Kennedy 2013) state that seeking health care demand is affected positively if patients have insurance covers. Other studies cited facility attributes as major determinants of demand for facility health care (Mulemi 2010, Muriithi (2013), Krause and Sauerborn 2000, Ensor and Cooper 2004, Chuma, Okungu, Molyneus 2010, Kitui, Lewis, Davey 2013, Knight , Self , Kennedy 2013, Pell et al 2013 and Birhanu et al 2010). They all concur that quality of care, drugs availability and or shortage, patient waiting time, number of staffs heavily influence demand for health care. If the facility attributes are positive, then there is high likelihood of seeking health care therein and vice versa. This study is different from others because

it hypothesises that household health expenditure which affects demand care negatively would have minimal impact on the demand for health care if the household has a health insurance. This study assesses the influence of demand side and supply side factors in terms of how they can influence choice of healthcare provider for cancer and chronic/terminal illnesses. Most studies have not reflected on the influence of health insurance as a portion of health expenditure. Similarly the focus on terminal illnesses is rare in empirical literature.

CHAPTER THREE

METHODOLOGY

3.1 The Conceptual Framework

The model of cancer health services used in this analysis is based on the conceptual framework by Kroeger (1983). This framework is a development from the previous works of Anderson and Newman (1973). In Anderson and Newman model an individual's access to and use of health services is considered to be a function of three characteristics;

Predisposing Factors; The socio-cultural characteristics of individuals that exist prior to their illness such as education, occupation, ethnicity, social networks, social interactions and culture, age, gender, attitudes, values and knowledge people have towards health.

Enabling Factors; the logistical aspects of obtaining care such as income, health insurance, a regular source of care, travel time and cost, extent, quality of social relationships, availability of health personnel and facilities, waiting time, generic factors and physiological characteristics.

Need Factors; The most immediate cause of health service use from functional and health problems that generate the need for health services. This includes perceived need, which is how people view their own general health and functional state as well as how they experience symptoms of illness, pain and worries about their health and whether or not they judge their problems to be of sufficient importance and magnitude to seek professional help.

In the conceptual framework developed by Kroeger (1983), determinants of utilization of health services in the developing countries can be grouped into three. The first is the individual's traits or predisposing factors like age, sex, marital status in the household, house hold size, and ethnic group, degree of cultural adaptation, formal education, occupation, assets (livestock, land, cash and income) and social network interactions. Secondly are the characteristics of the disorder and their perception: chronic or acute, severe or trivial, expected benefits or treatment (modern versus traditional), psychosomatic versus somatic disorders. Finally are the characteristics of the service

19

(health service factors) and enabling factors; accessibility, appeal (opinions and attitudes towards traditional and modern healers) acceptability, quality, communication and costs. Predisposing factors reflect the fact that families with different characteristics have different propensities to use health services while the enabling factors reflect the fact that some families even if predisposed to use health services must have some means as well as be appealed to obtain them, which is these services should be acceptable and accessible. According to this model formal education is one of the factors that determine utilization of health services.

This model helped explain if enabling, predisposing or need factors determine demand for health services by cancer patients.

3.2 Econometric Model

In the event of an illness, a patient is assumed to seek help from a health care system characterized by many providers (Mwabu, Ainsworth and Nyamete, 1995). The patient or his relative is further assumed to choose the health care alternative that yields the maximum expected utility. Conditional on seeking treatment, the direct utility derived by individual (i) from treatment alternative (j) can be expressed as

$$U_{ij} = u_{ij} \ (h_{ij}, \ c_{ij})$$ ……………………………………………………………………….(i)

Where uij is the direct utility that individual (i) expects from health care provider (j), hij is expected improvement in health status for individual (i) after receiving treatment from provider (j), and cij is the consumption of non health care goods, the amount of which depends on choice (j), because of the monetary and non- monetary costs of treatment from provider (j).

$$H_{ij} = h \ (x_i, \ z_{ij})$$

$$C_{ij} = y_i - e_{ij}$$

Where xi is a vector of observable socioeconomic attributes of individual (i), for example age and education. Zij is a vector of medical and physical attributes faced by an individual (i) in facility j, such as availability of drugs and medical equipment and

sanitary conditions of the facility. Cij is the monetary value of non health care goods that individual (i) can consume after paying for medical care in facility j; y is annual income of household (i).eij is the value of resources that individual (i)devotes to medical care received from facility j. The level of eij is determined by such factors as the treatment fees, waiting time and access variables such as distance and travel time.

This model helps to explain the factors that determine/influence patients' choice of health care facility. In a typical household with i=1,…, n members, the utility (Uij) that individual i derives from alternative facility j for treatment can be expressed as follows.

$$U_{ij} = u_{ij}(h_{ij,}c_i) \underline{\hspace{7cm}}(ii)$$

Whereby, h_{ij} denotes healthcare that individual i receives from provider j and c_i is the consumption of non-health care goods by the same individual which is independent of the chosen healthcare provider.

Amount of healthcare received by individual i from provider j (h_{ij}) is a unobservable (latent) variable expressed in terms of measurable variables as:

$$h_{ij} = h(x_{ij}, z_{ij}) \underline{\hspace{7cm}}(iii)$$

Where x_{ij} is a vector of observable socio-economic characteristics of individual i and ij z is a vector of attributes faced by individual i in treatment facility j, c_{ij} (consumption of non-health care goods) is measurable and comprises of income (y_i) and costs of consumption goods (p_o) and treatment (p_{ij}).

$$c_i = f(y_i, p_{ij}, p_o) \underline{\hspace{7cm}}(iv)$$

3.3 Specification of Estimable Model

It is possible to express the healthcare demand function as a linear subject of social economic attributes, access characteristics of treatment facilities, incomes, price of health and non-health goods.

In general, the estimable model can be shown as follows

$$V_{ij} = v_{ij}(x_{ij}, z_{ij}, y_{ij}, p_{ij}, p_o) \underline{\hspace{6cm}} \text{(v)}$$

In which, Vij is the demand for cancer treatment by individuals among various health facilities. They are classified into private, public, mission, NGO's and others; xij are social economic attributes, z_{ij} are healthcare facility characteristics, y_{ij} is incomes, p_{ij} denotes prices of cancer treatment and p_o represents the price of non-health goods.

A multinomial logistic model is estimated. The functional form of the Multinomial Logit model takes the form

$$P(y_{ij}) = \frac{\exp(\beta x_i + \Phi z_j + \alpha p_{ij} + \varepsilon_i)}{\sum \exp(\beta x_i + \Phi z_j + \alpha p_{ij} + \varepsilon_i)} \underline{\hspace{4cm}} \text{(vi)}$$

whose estimation ensures only relative probabilities can be identified with respective to the base cancer treatment center among all alternatives. P (yij) above is the probability of an individual choosing facility j from among: 1=Government, 2=Private, 3=Mission, 4=NGO, 5=Other treatment centers.

3.4 Definition and Measurement of Variables
In this sub section, the study provides an explanation of both the Dependent and explanatory (Independent) variables to be used in the estimation of the choice of healthcare facility.

3.4.1 Dependent Variable

Choice of health care facility is the dependent variable. The following types of health facilities are available to individuals: 1=Government, 2=Private, 3=Mission, 4=NGO, 5=Traditional/Other facilities. This means the dependent variable varies from 1 to 5.

3.4.2 Independent Variables

In this study there are a number of independent variables that influence which type of healthcare facility an individual chooses to visit for treatment. They are described in the following narrative.

Household Health Expenditure: This is the total monthly household health expenditure and consumption, measured in Kenya Shillings. The study postulates that households with higher health expenditures are likely to prefer private healthcare facilities since they can afford.

User Fees/Treatment cost: This is the amount of money a patient pays to the facility in order to receive a service/treatment. The study investigates if higher fees influence the choice of a health care facility

Gender: This variable measures whether a respondent is male or female. The study investigates how the respondent's gender may influence the choice of different health facilities.

Employment: individuals who are employed (in formal or informal sector) are likely to choose government or private health facilities whereas those who are not employed are likely to choose government, mission or NGO run institutions on the basis of affordability and insurance.

Distance: This is a continuous variable measured in kilometres. Health facilities that are located far from a household are less likely to be visited for treatment purposes.

Waiting Time: Waiting time or turnaround time is a continuous variable measured in minutes. The time spent at the health facility, from the time a patient walks in to leaving the health facility can negatively influence the choice of a facility.

Age: is a continuous variable measured in years. The study sought to determine whether and how the age of a patient influences their choice of source of treatment.

Marital Status: Marital status of the patient is a dummy with four possibilities: married, otherwise, single and divorced. The influence on choice of facility is indeterminate.

Education: This is a discreet variable indicating the level of education attained, all the way from "none" to "primary", "secondary", "tertiary" and "college" level. Higher education is likely to influence the choice of certain facilities positively.

Rating of own health: How individuals rate their own health on an ordinal scale of one "very good" to five "poor" can pre-determine their seeking treatment behaviour negatively.

Religion: Religion is a cultural factor whose beliefs can affect the individuals' health seeking behaviour since it is an indicator of beliefs and attitudes.

Quality of Care: A scale ranking of respondent's satisfaction with staff attitude can also determine whether they choose that facility or not.

Health Insurance: the status of ownership of National Hospital Insurance Fund (NHIF) health policy can influence choice of facilities in favour of the provider where cost of care is covered by the insurance cover.

The predictor variables and their expected apriori effect on choice of healthcare facility (signs or direction) are presented in Table 3.

Table 3: Apriori expectation of predictors

Variable Name	Measurement	Expected Sign
Choice of Health Care Facility	A patient chooses either Public, Private, Mission, NGO's or others	-
Household Health Expenditure	This is the total monthly household health expenditure and consumption measured in Kenya shillings	Positively
User Fees/Treatment cost	The amount of fees/money paid to the facility	Negatively
Gender	Gender: 1=Female 0=Male	Indeterminate
Employment	1=Working 2=Seeking work 3= Home maker 4=Student 5=Other	Positively
Distance	Distance travelled (Km) to and from the nearest health facility	Negative
Waiting Time/ Turnaround time	Time spent at the health facility, from the time a patient walks in to leaving the health facility (minutes)	Negative
Age	The age of the patient in years	Indeterminate
Marital Status	1=Never Married 2=Married 3= Divorced 4=Widowed	Positively
Education	1=None 2=Primary 3= Secondary 4=Vocational 5=University	Positively
Rating of own health	1=Very Good 2=Good 3= Satisfactory 4=Poor	Negatively
Religion	1=Catholic 2=Protestant 3= Muslim 4=Traditional and other	Indeterminate
Quality of Care (Satisfaction with attitude of facility staff)	1= Very satisfied 2 = Satisfied 3 = Not satisfied 4= Not at all satisfied	Positive
Health Insurance	1=Insured 0=Not insured	Positive

3.5 Data Type, Sources and Analysis

3.5.1 Data Type and Source

Secondary cross section data was used for analysis. The study used the Household Health Expenditure and Utilization Survey HHEUS (2013) published by the Ministry of Health (MoH) and facilitated by the Kenya National Bureau of Statistics (KNBS). The survey was a National Health Accounts (NHA) initiative that attempted to establish health seeking behaviour. The HHEUS (2013) was a national survey usually carried out after every five years. The 2013 survey used a systematic randomized sample of 8,844 households covering all the 47 counties in Kenya. Respondents are clustered in 737 clusters of which 68% are rural.

The data was collected between September and December 2013. A high response rate of 96% of the initial target was achieved. The survey obtained detailed information on morbidity data including Cancer, malaria, HIV/AIDs, T.B, Dirrahoea, Diabetes, Gender Based Violence among others. This is the first Household Health Expenditure and Utilization Survey to gather data on Cancer and terminal illnesses. The variables used in the Survey and included in the study were age of respondent, education, religion, transport and treatment cost, residence, , working status, health insurance cover, distance to the health care facility, rating of own status among others.

3.5.2 Data Analysis and Diagnostics Tests

Data analysis was be preceded by data cleaning, a process that included pre-selecting only households that sought cancer treatment and variables relevant to the study. The Kenya Household Health Expenditure Utilization Survey (KHHEUS) (2013) data had an original sample of 29,200. Data cleaning, transformations and selection of only those variables that were relevant to this study were done. Transformations included generating new dummy variables during which all cases missing feedback and those with "Not Answered" or "Don't Know" response were dropped. Also only data for patients whose illnesses were cancer and terminal was retained for analysis. This procedure shrunk the sample size to the extent that analysis contained in Chapter Four is based on a subsample of 3,896 respondents. Selection of the dependent variable was done such that "terminal illnesses" variable was used to proxy for cancer due to low observation of cancer patients

in the data set. Validity of the findings is maintained since cancer is a key component of terminal illness. At the same time, data for cancer was included as part of the observations for terminal illnesses variable hence the interpretation of this variable makes reference to cancer and other terminal illnesses.

The data was analyzed by Stata statistical software using descriptive, causal and inferential statistics. A multinomial logistic regression model was estimated. Multinomial logistic regression provides a technique for predicting the likelihood of an individual choosing a certain health facility relative to a base alternative facility influenced by their individual, facility and other attributes. A Log-Likelihood Chi-square statistic and a pseudo R-squared were established alongside marginal effects of predictors on the probability of choice of competing alternative types of health facilities. The diagnostic test conducted was test of Independence of Irrelevant Alternatives (IIA) based on Hausman and Small-Hsiao IIA Chi-square statistics. The multinomial logistic regression model passed the IIA test implying validity of the findings of the study.

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATION AND DISCUSSION

4.1 Descriptive Statistics

A descriptive summary statistics was conducted. Age was an ordered dummy with each group comprising of five years. Other dummies were binary and included gender (male=1, female =0), residence (rural=1, urban =0), staff courtesy at health facility (four separate variables each rating "Yes=1 or No=0" whether courtesy was excellent, very good, good fair or poor), religion (five separate dummies each rating "Yes=1 or No=0" whether religion is Catholic, Protestant, Muslim, traditionalist, atheist or other), education (five separate dummies each rating "Yes=1 or No=0" whether education is nursery, primary, secondary, vocational or university), marital status (four separate dummies each rating "Yes=1 or No=0" whether marital status is never married, married, divorced or widow), employment (five separate dummies each rating "Yes=1 or No=0" whether employment is working, seeking work, home maker student or others), health status (five separate dummies each rating "Yes=1 or No=0" whether health status is very good, good, satisfactory, or poor) and insurance status.

The mean of all the above variables were established according to the type of healthcare facility visited by respondents for cancer treatment. Table 4.1 has the results.

Table 4: Summary Statistics (The mean) by Type of Facility Visited

Variable	Health Care Facility Visited					Scores Range	ANOVA F-statistic[1]
	Public	**Private**	**Mission**	**NGO**	**Traditional**		
Age (years)	46.1	45.2	49.7	37.1	47.7	15-87	3.42***
Gender	71%	73%	70%	71%	67%	0-1	0.00
Residence	67%	45%	64%	46%	72%		116.25***
Treatment Cost (Ksh)	797	1384	1363	1678	2115	50-6000	1.25***
Waiting time (Mins)	48	14.88	35.7	49.86	10.92	0-3000	82.43***
Transport Cost (Ksh)	139	225	264	156	156	0-65000	10.42***
Distance (km)	6.74	10	11	9.9	8.6	0-800	31.16***
Staff Courtesy 4	28%	49%	45%	55%	46%		
Staff Courtesy 3	62%	49%	51%	39%	53%	0-1	358.31***
Staff Courtesy 2	8%	2%	3%	6%	1%		
Staff Courtesy 1	2%	0%	3%	0%	0%		
Religion – Catholic	23%	22%	31%	21%	20%		
Religion – Protestants	69%	65%	62%	67%	64%		
Religion – Muslims	5%	10%	5%	11%	12%	0-1	3.05***
Religion – Traditional	1%	1%	0%	0%	1%		
Religion – Atheist	0%	0%	0%	0%	1%		
Religion – Other	1%	1%	1%	2%	0%		
Education – Nursery	14%	11%	13%	16%	24%		
Education – Primary	61%	52%	56%	50%	62%		
Education – Secondary	19%	25%	23%	22%	12%	0-1	11.72***
Education– Vocational	1%	0%	0%	4%	1%		
Education – University	1%	4%	2%	1%	0%		
Marital Status – Never Married	50%	45%	44%	53%	51%		
Marital Status – Married	42%	48%	47%	36%	41%	0-1	5.39***
Marital Status – Divorced	3%	3%	3%	7%	1%		
Marital Status – Widow	5%	4%	6%	4%	7%		
Employment – Working	43%	48%	48%	41%	41%		
Employment – Seeking work	2%	3%	2%	0%	0%		
Employment – Home maker	10%	10%	10%	11%	11%	0-1	9.73***
Employment – Student	9%	7%	8%	12%	4%		
Employment – Other	2%	3%	3%	2%	7%		
Health Status – Very Good	20%	26%	23%	22%	18%		
Health Status – Good	53%	53%	51%	47%	46%	0-1	1.67
Health Status – Satisfactory	18%	14%	16%	10%	19%		
Health Status – Poor	9%	7%	11%	21%	17%		
Insured respondents	16%	31%	27%	16%	7%	0-1	26.24***

*Source: KHHEUS, 2013 (NB: ***illustrates that statistic is significant at 1% level of testing)*

---

[1] ANOVA is crucial to point out differences in means that are significantly different according to type of healthcare facility. F-statistic is calculated at varied degrees of freedom. It was not possible to display all of these here

The mean age of respondents across the choice set of healthcare facilities lies between 37 and 48 years with the oldest respondent recorded among those who visit mission health facilities are and the youngest NGO facilities. Binary dummy variables are interpreted as proportions (Wooldrige, 1999). Hence across the different health facilities, male respondents were in higher proportion than females with the most extreme case being among individuals who prefer private health facilities of whom 73% were male. A majority of individuals who prefer public, mission and traditional health facilities are rural dwellers (67%, 64% and 72% respectively) whereas a minority of them prefer private and NGO healthcare (45% and 46% respectively).

On treatment cost, the average treatment of terminal illnesses cost for the last visit during the KHHEUS (2013) survey were Ksh 797 in public facilities, Ksh 1,384 in private facilities, Ksh 1,363 in mission facilities, Ksh 1,678 in NGO facilities and Ksh 2,115 in traditional facilities. This means that traditional facilities reported highest treatment cost whereas public facilities had the lowest. In terms of waiting time in minutes, traditional facilities had the shortest (11 minutes) while public and NGO facilities had the longest waiting time (49 minutes) to be served. Regarding accessibility, mission facilities were associated with the highest transport cost from home (Ksh 264) while the lowest was Ksh 139 to reach public facilities. Distance in kilometers was such that, mission facilities were furthest to patients (11km) with public facilities being nearest.

Service attitude among staff attending patients differed by the type of facilities visited for terminal illnesses healthcare. NGO facilities had the highest proportion of patients (55%) whose rating of staff is most favourable whereas public facilities had the lowest proportion of patients with such rating (28%). On matters of religion, Catholic Christians largely favoured mission and public facilities, Protestant Christians largely favoured public and NGO facilities, Muslim faithful were in preference of private and NGO facilities whereas atheists favoured traditional facilities. Education also varied with different facilities such that, a higher proportion of people with nursery and primary education visited traditional more than other facilities whereas those of higher educational attainment favoured public, mission and NGO facilities for terminal illness healthcare. A higher proportion of respondents who are working have more visitations to private and mission facilities than

people whose employment status is seeking work, students and home makers. Visitation to various facilities for terminal illness healthcare did not differ by own rating of health status among respondents. Finally, proportion of health insurance status differed significantly according to the nature of health facility visited. Specifically, the proportion of individuals with health insurance is nearly twice among those who visit private and mission health facilities as among those visiting other types of healthcare facilities.

4.2 Post Estimation Test of Independent Outcomes (IIA)

A multinomial logistic regression is considered valid when the outcomes of the discreet dependent variable are independent of one another. This property is called independence of irrelevant alternatives (IIA). In other words with respect to this study, the choice of any of the type of healthcare facility has a unique relationship with respondent characteristics regardless of the number of alternative facilities available. Hausman (1978) has a popular test for IIA is to formulate two different models: the first one where all outcomes of dependent variable are present while the second one is restricted with one of the outcomes exempt from the dependent variable. The resulting differences in coefficients of the two models are assessed for consistency using a computed Chi-square statistic. The null hypothesis is that, any differences are not systematic. A significant chi-square statistic leads to rejection of Ho in which case IIA assumption is violated. The converse is true.

Table 5: Results of the IIA Test

χ^2 Test (cal) Statistic	d.f.	Critical (α) Statistic	Criteria	Null Hypothesis (Ho)	Conclusion on Ho
0.00	15	24.99 at 5%	$\chi^2_{cal} < \chi^2_\alpha$	Difference in coefficients not systematic	Do not Reject
		30.57 at 1%	$\chi^2_{cal} < \chi^2_\alpha$		Do not Reject

b = consistent under Ho and Ha; obtained from mlogit

B = inconsistent under Ha, efficient under Ho; obtained from mlogit

Chi^2 (15) = (b-B)'[(V_b-V_B)^(-1)](b-B)

An insignificant chi-square statistic of 0.00 is established which implies that the null hypothesis of lack of consistency in different coefficients (between the original model and the constrained model) cannot be rejected. Hence there is no evidence of violation of IIA assumption. Thus the results of multinomial model are valid.

4.3 Multinomial Logistic Estimation Results[2]
Table 6: Multinomial Logit Model

Variable	Odd Ratios for Types of Healthcare Facilities			
	Private	**Mission**	**NGOs**	**Traditional**
Age	1.03	1.06	1.31	0.99
Gender	0.57**	0.59*	18.87**	1.10
Residence	0.73*	1.12	1.88	0.46***
Treatment Cost (Ksh)	1.00***	1.00	1.00	1.00
Waiting time	0.71***	0.89	1.04	0.29***
Transport Cost (Ksh)	1.00	1.00	1.00	1.00
Distance (km)	1.00	1.00	1.01*	0.99
Staff Courtesy – Satisfied	0.37***	0.47***	0.67	0.44***
Staff Courtesy – Not Satisfied	0.06***	0.26***	0.00	0.06***
Staff Courtesy – Not at all Satisfied	0.13**	0.00	0.00	0.00
Religion – Catholic	1.00	0.15*	228.10	0.18*
Religion – Protestant	1.18	0.12**	1185.00	0.19*
Religion – Muslim	2.55	0.15*	1.48	0.12*
Religion – Traditional	0.00	0.00	0.11	0.23
Religion – Other	3.84	0.89	6.67	0.54
Education – Primary	0.83	1.29	41.00	0.70
Education – Secondary	1.00	1.36	1975.00	0.47
Education– Vocational	0.65	0.00	3.59	2.89
Education – University	5.83***	2.38	91.42	1.38
Marital Status – Married	1.45	1.91*	0.14**	1.46
Marital Status – Divorced	0.77	0.30	0.96	2.00
Marital Status – Widow	0.99	1.50	1.05	1.26
Employment – Seek	3.38**	0.59	0.00	3.18
Employment – Home maker	1.61*	0.98	0.00	0.87
Employment – Student	0.70	1.55	0.19	0.90
Employment – Other	0.57	0.93	0.00	1.92
Health Status – Good	1.66*	1.18	1.39	1.18
Health Status – Satisfactory	1.59	0.82	0.31	0.94
Health Status – Poor	1.06	0.85	0.32	0.37**
Insured respondents	1.47*	1.95*	0.41	1.16
Constant	1.18	1.88	0.00	6.91

N=955; Log likelihood = -1039.4389; L.R. χ^2 (120) = 374.07; Prob > chi2 = 0.0000; Pseudo R^2 = 0.1525
***significant at 1%, **significant at 5%, *significant at 10% level of testing;
Source: KHHEUS, 2013

---

[2] The results displayed here by Table 4.3 are odd ratios (that is probability of choosing an alternative health facility divided by the probability of choosing a public/state sponsored health facility for terminal illness healthcare

A significant Chi-square statistic of ($\chi^2_{d.f., 120}$=374.07; $\rho>\chi^2$ = 0.000) is attained which implies that as compared to the constrained intercept only model, the expanded model with all predictors achieves a better prediction power for choice of healthcare facility by cancer patients. The model converges at the 15th iteration with a log likelihood of -1039.4389. A pseudo R-squared of 0.1525 is realized which indicates that the model with independent variables improves prediction of choice of health facilities by approximately 15%.

4.4 Choice of private versus public health facility

Respondent's gender, area of residence, treatment cost, waiting time, staff courtesy, education level, employment, health and insurance status are factors that significantly influence the choice of a private relative to a public healthcare facility for terminal illnesses. Ceteris paribus, males are 43% ([0.57-1.0]*100) less likely to visit a private health facility vis-à-vis a public health facility; rural residents are 27% ([0.73-1]*100) less likely to visit a private health facility given the option of a public health facility.

One more shilling increase in treatment cost leaves the patients indifferent between visiting public or private health which facilities. An extra hour of waiting for service decreases the odds of visiting a private vis-à-vis a public health facility by 29%. A worse-off rating of staff courtesy from "very satisfied" to "satisfied", "not satisfied" and "not at all satisfied" influence patients to be 67%, 94% and 87% (respectively) less likely to visit a private facility given the alternative of a public health facility. Ceteris paribus, individuals with university level instead of nursery level of education are 5.83 times more likely to visit a private rather than a public health facility.

Compared with working patients, job seekers and home makers are, respectively, 3.38 and 1.61 times more likely to seek private - not public – healthcare for terminal illnesses. Individuals who view their health status as being "good" instead of "very good" are 1.66 times more likely to visit a private as opposed to a public healthcare facility while those with medical insurance have a 1.47 times higher risk of opting for a private relative to a public healthcare for terminal illnesses if the effect of other factors is assumed constant.

In the absence of any predictors, the average individual is 18% more likely (has 1.18 higher odds or [1.18-1=18] x100) to visit a private as opposed to a public health facility for treatment of terminal illnesses like cancer.

Other variables do not have significant influence on relative preference for private facilities. Even though the effect of these factors are not statistically significant, it doesn't mean that they are not important but that the observed effect could vary from sample to sample hence chances of committing a type I error is high (Roxy and Devore, 2011).

Nevertheless, a year increase in age of respondents leads to a 3% increase in relative probability of visiting a private rather than a public facility, ceteris paribus. A shilling increase in transport cost, just like a unit kilometre increase in distance to a private facility makes the individual indifferent in choosing between visiting a private or a public health facility, ceteris paribus. Ceteris paribus, Catholic faithful are torn between visiting a private and a public health facility for cancer and terminal illness; Protestants are 18% more likely to visit a private given the alternative of a public health facility; Muslims are 1.55 times more likely to visit a private given the alternative of a public health facility; traditionalists are indifferent while those whose religion status is 'other' are 3.84 times more likely to visit a private given the alternative of a public health facility.

A rise in education level from none to primary, secondary and vocational levels leads to 17% reduction, zero change and 35% reduction in relative odds of visiting a private rather than a public health facility. Individuals who are married are 1.45 times more likely to visit a private instead of a public facility than the 'never married' lot. Individuals who are divorced are 33% less likely to visit a public health facility given a public alternative whereas widows are 1% less likely to visit a public health facility given a public alternative. Compared with respondents who are working, those whose working status is students or other are 30% and 43% less likely to visit a public health facility given the option of a public facility, ceteris paribus. Compared to individuals whose health status is very good, those with satisfactory or poor health status are 59% and 6% more likely to prefer a private to a public health facility when other factors are held constant.

4.5 Choice of mission versus public health facility

The choice of a mission health facility in the presence of an alternative public health facility is significantly influenced by treatment gender, staff courtesy, religion, marital status and insurance status. Specifically, males are 41% or (0.59-1=41)**100 less likely to choose a mission facility for healthcare on terminal illnesses, ceteris paribus. A change in perceived rating of staff courtesy from "Very Satisfied" to "Satisfied" and "Not Satisfied" cause 53% and 74% reduction in odds of visiting mission rather than public health facilities, ceteris paribus. Catholics, Protestants and Muslim faithful are 85%, 88% and 85% less likely to visit a mission rather than a public health facility, if the effect of other factors is unchanged.

Compared to respondents who were "never married", married individuals have a 1.91 times higher preference risk for mission relative to public facilities for terminal illness healthcare, assuming other factors have zero effect. Individuals with health insurance have 1.95 higher odds of opting for mission relative to public facilities for terminal illnesses healthcare, ceteris paribus. The autonomous component of odd ratios is 1.88. This means that in the absence of any influences, the typical individual displays 88% higher preference for private as opposed to public health facilities for terminal illnesses healthcare.

Other factors, including age, residence, treatment cost, distance, religion and education did not attain statistical significance. Males are 6% more likely to prefer mission to public healthcare, ceteris paribus. When other things are held constant, rural residents are 12% more likely to seek mission rather than public healthcare; Changes in treatment cost, transport cost or distance have no effect on choice of facility for cancer and terminal healthcare. Ceteris paribus, an extra hour of waiting to be served results in 11% fewer visitations to mission in favour of public healthcare. Traditionalists are indifferent between choosing mission and public healthcare whereas those whose religion is 'other' have 11% fewer relative visitations to mission health facilities.

An increase in education level from none to primary, secondary, tertiary and university results in respective 1.29, 1.36, zero and 2.38 times increase in probability of choosing mission relative to public healthcare for cancer and terminal illnesses, ceteris paribus. Compared to the never married lot, divorcees are 70% less likely and widows 50% more likely to prefer mission to public healthcare for cancer, ceteris paribus. Compared to working respondents, job seekers, homemakers and non-respondents are 41%, 2% and 7% less likely to choose mission relative to public healthcare; students are 55% more likely to seek mission than public healthcare for cancer. A decline in personal rating of health form 'very good' to 'good', 'satisfactory' and 'poor' leads to respective 18% increase, 18% decrease and 15% decrease in relative odds of preference for mission healthcare given the option of public healthcare for cancer and terminal illnesses.

4.6 Choice of NGO versus public health facility

Gender, distance and marital status have a statistically significant influence on choice of an NGO run healthcare facility for terminal illnesses. Compared to a public healthcare facility, males are 18.87 times more likely to choose an NGO-run health facility when all other factors are held constant. An increase in distance by a 1 kilometer from the respondent's home to the nearest facility increases odds of preference of NGO vis-à-vis public health facilities marginally by 1% (1.01 higher odds); whereas individuals who are married instead of "never married" have 86% or 0.14-1.0*100 less odds of choosing an NGO facility relative to a private health facility, ceteris paribus. The autonomous component of odd ratio is 0.00 which means that in the absence of any influences, the typical individual is 1.0 times or 100% less likely ([0.00-1.0= -1]*100) to visit an NGO facility as opposed to a public health facility.

Interpreting the insignificant variables, older people are more likely to prefer NGO to public healthcare for cancer and terminal illnesses, ceteris paribus. A year increase in age causes a 31% increase in relative odds of choice of NGO as opposed to public healthcare for cancer illnesses. Ceteris paribus, rural dwellers are 88% more likely to choose an NGO run instead of a public health facility; treatment and travel costs do not have any influence on the relative preference for health facilities. But an extra hour of waiting for

services makes an individual 4% more likely to opt for NGO rather than public health facility, all other things held constant. A drop in satisfaction with staff attitude makes individuals 33% less likely to visit NGO given the option of public health facility, if other influences are unchanged.

Catholics and Protestants, Muslims and individuals whose religion is 'other' are 221, 1185, 1.48 and 6.67 times more likely to visit an NGO as opposed to a state run facility for cancer and terminal illnesses healthcare. Traditionalists are 99% less likely to prefer NGO to public cancer health services. Education increases the relative preference for NGO facilities for cancer/terminal illnesses. A rise in education from none to primary, secondary, tertiary and university increases choice of NGO as opposed to public health services by 41, 1975, 3.59 and 91 times respectively, ceteris paribus.

Compared to respondents whose marital status is never married, divorcees have 4% lower while widows have 5% higher relative probability of choosing NGO facilities instead of public health facilities, ceteris paribus. Ceteris paribus, various employment statuses leave individuals more or less undecided whether to seek NGO or public health services for cancer and terminal illnesses. A decline in personal rating of health form 'very good' to 'good', 'satisfactory' and 'poor' leads to respective 39% increase, 69% decrease and 68% decrease in relative odds of preference for mission healthcare given the option of public healthcare for cancer and terminal illnesses.

4.7 Choice of traditional versus public health facility
The following attributes are significant influences of traditional as opposed to public facilities for terminal illnesses healthcare: residence, waiting time, staff courtesy, religion and own rating of health status. Ceteris paribus, as opposed to seeking healthcare from a public facility, the odds of seeking traditional healthcare decreases by 54% or (0.46-1)x100 among rural residents. An extra hour of waiting for service decreases the odds of visiting a private vis-à-vis a public health facility by 71%, assuming other factors remain unchanged. A worse-off rating of staff courtesy from "Very Satisfied" to "Satisfied" and "Not Satisfied" has 56% and 94% (respectively) lower odds of visiting a private facility given the alternative of a public health facility, ceteris paribus. Catholics, Protestants and

Muslim faithful are 82%, 81% and 88% less likely to visit a traditional rather than a public health facility, if the effect of other factors is held constant. Individuals whose own health status rating is "Poor" instead of "Very Good" display a 63% lower odd-ratio of preference for traditional vis-à-vis public health facilities, ceteris paribus. The autonomous component of odd ratio is 0.00 which means that in the absence of any influences, the typical individual is 1.0 times or 100% less likely ([0.00-1.0= -1]*100) to visit an NGO facility as opposed to a public health facility. In the absence of any influences, the typical individual is nearly seven times (6.91) more likely to visit a traditional facility as opposed to a public health facility for treatment of terminal illnesses like cancer.

Finally interpreting coefficients that did not attain statistical significance, it emerges that, an extra year in age of respondents decreases relative odds of seeking traditional healthcare given the choice of public health services for cancer treatment by 11%, ceteris paribus. Males are 10% more likely to visit a traditional rather than a public health facility for cancer and terminal illnesses. Again treatment and travel costs do not have any influence on the relative preference for traditional healthcare. However, an increase in distance by a kilometre will reduce the preference for traditional healthcare services by 11% in favour of public healthcare. Traditionalists and individuals whose religion is 'other' are 77% and 46% less likely to visit a traditional as opposed to a state run facility for cancer and terminal illness healthcare.

A rise in education from none to primary and secondary levels increases preference of traditional as opposed to public health services by 30% and 53% respectively while tertiary and university education status increases relative odds of choosing traditional services by 2.89 and 1.38 times respectively, ceteris paribus.

Compared to the colleagues who were never married, married respondents are 1.46 times more likely to choose traditional as opposed to public health services; divorcees are twice as likely and widows 1.26 times more likely to prefer traditional to public healthcare for cancer, ceteris paribus. Compared to working respondents, job seekers are 3.18 times more likely to seek traditional healthcare for cancer and terminal illnesses; homemakers

and students are respectively 13% and 10% less likely to seek traditional healthcare services, ceteris paribus. A decline in personal rating of health form 'very good' to 'good', 'satisfactory' and 'poor' leads to respective 1.18 times increase, 6% decrease and 67% decrease in relative odds of preference for traditional healthcare given the option of public healthcare for cancer and terminal illnesses. Finally, insured individuals are 1.16 times more likely to prefer traditional to public facilities for cancer health services, ceteris paribus.

4.8 Discussion of findings

As compared to the findings of Mulemi (2010), Buckle et al (2013), Kitui, Lewis, Davey (2013) and Buckle et al (2013) who identified distance, treatment and transport costs as important barriers to choice of health facility, this study provides mixed results on health seeking behaviour for terminal illnesses. Costs of treatment and transport do not explain preference for different healthcare providers in the sense that an increase in cost creates a dilemma in choice of alternatives to public healthcare.

Public health facilities are the lowest cost providers of cancer treatment but also have the highest service waiting time up to three fold that of private, mission and traditional healthcare providers. Mulemi (2010) discovered that waiting time especially in referral hospitals can influence demand for health services. It emerges that probability of visiting a public facility rather than alternative cancer healthcare providers increases with waiting time. Cancer and terminal illness healthcare demand responds to waiting time in favor of public than other healthcare facilities, which could be attributed to higher affordability of health services in government health facilities relative to others.

The mean distance travelled seeking healthcare services ranges from 6 to 11 kilometers across all types of facilities but some patients travel over 500 kilometers. This is an appalling situation considering that, distance and cost have been found to demotivate choice of formal health facilities in the case of maternal child birth by Kitui, Lewis and Davey (2013). In this study, every extra kilometer of distance travelled results in similar relative probability of seeking private, mission or NGO healthcare. But when distance covered is longer, the relative risk of choosing an NGO facility increases relative to pubic

40

healthcare while that of a traditional healthcare decreases. It is likely that, compared to other diseases, cancer and terminal illnesses healthcare services are in limited availability. Given such a scenario, patients would be compelled to meet whatever cost and distance requirement to receive healthcare without discriminating the provider based on cost and distance. Even though costs and distance do not influence the choice of source of treatment/ healthcare for terminal illnesses, the issue is whether distance to a cancer healthcare provider can affect the demand for the services. Following the law of demand, it is possible that the number of visitations can increase if cancer patients travelled a shorter distance or paid less cost to receive these services.

Public and mission facilities had the worst while NGO run facilities performed had the best staff attitude during service. Further analysis revealed that the government owns two thirds of facilities nearest patients with terminal illnesses but about half of whom cannot get related health services in those facilities hence they have to travel further away. The primary reasons provided for this is that medicine is unavailable and staff unqualified. Krause and Sauerborn (2000) too have discussed the problem of supply-side factors including service attitude and lack of drugs in the case of Burkina Faso. Muriithi (2013) has similarly cited service quality and information about that quality as major determinants of a patient's choice among alternative medical treatments in a Nairobi slum. Staff attitude among terminal illness healthcare providers is important in choice of facility such that, healthcare providers with more courteous staff are likely to witness a higher demand for healthcare for cancer and terminal illness services than public health facilities. This is typically a limitation facing lower level facilities in rural areas, including health centers and clinics more than referral hospitals in big cities. It must be the case that facilities that are nearest the homes of patients would be their first choice of healthcare if they were well equipped with drugs and qualified staff.

But other questions emerge such as: Are staff able to give timely diagnosis or do they take a while before they refer to the next facility? What happens at the referral facility? Are they subjected to long queues waiting for radiology or chemotherapy? If so what is the waiting period? Are the wards full? Are beds shared? Are there qualified staffs such as cancer specialists? According to Javis and Matheka (2014), Mulemi (2010), and

Strother et al (2013), the challenges of cancer healthcare include; prevention and screening are not available or accessible to most people, while many cases are often undiagnosed or misdiagnosed, partly due to inadequate healthcare infrastructure.

Evidence by Ensor and Cooper (2004) and Muriithi (2013) suggest that demand-side barriers "may be as important as supply factors in deterring patients from obtaining treatment". Such factors include lack of information about when to seek treatment, user costs, service quality, wealth, gender, intra-household preferences, demographics and sociocultural norms. In this study, individual attributes also impact on terminal illness healthcare demand preferences. Patients educated to university level are more likely to visit private, mission and NGO cancer healthcare facilities rather than public and traditional facilities. Compared to atheists, respondents whose religion status is Catholic, Protestant and Muslim have higher risk of visiting a public, private or NGO facility than a mission or a traditional service provider. Individuals with health insurance are at least one and a half times more likely to prefer private and mission facilities more than public, NGO and traditional cancer healthcare providers, a finding quite in harmony with Mostert et al. (2009). This could be attributed to the fact that health insurance facilitates affordability of treatment.

Across the board a typical individual is nearly seven times more likely to seek traditional healthcare as opposed to a public, private, mission and NGO run facilities for cancer and terminal illnesses healthcare. This observation points towards poor sensitization about cancer, social-cultural beliefs, family practices or even other reasons beyond the scope of this study as suggested by Birhanu (2012) as well as Ensor and Cooper (2004). Further, a small proportion of patients in the KHHEUS 2013 study who were diagnosed with cancer/terminal illness did not make the required number of visits as recommended by a specialist. The main reasons offered for this behaviour was lack of money, self medication or illness not considered serious enough. Whereas lack of money is an issue of affordability, self medication and intensity of illness could be an attitude, knowledge and practice issue. Regardless of the reasons provided, it could work to the detriment of the patient hence this is an issue that needs redress.

CHAPTER FIVE
SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

This study anchors on growth model to investigate how individual and health facility attributes influence the choice of healthcare provider for cancer and terminal illnesses. Literature reveals that various factors influence the choice of provider and demand for healthcare services in different countries. These factors range from age, education, beliefs of decision makers to accessibility, affordability, insurance status of respondents among others. The choice of variables for inclusion in the model for this study was rationalized from a review of previous studies. Using data from the 2013 Kenya Household Health Expenditure Utilization Survey, a multinomial logistic regression model was estimated whose findings have important issues for consideration. This chapter presents the implications of the study, practical policy recommendations and suggestions for further research. The study aimed at understanding the pattern of outpatient services provision for cancer patients among health care providers in Kenya and assess the influence of individual, household and health facility attributes on the choice of cancer treatment in Kenya.

5.2 Conclusion

It emerges that, rural dwellers have higher uptake of cancer healthcare services from public, mission and traditional health facilities than those of private and NGO providers. Traditional facilities have the highest treatment cost whereas public facilities have the lowest. Public facilities also report lowest travel cost from home which implies that are located in close proximity to more cancer patients than other facilities. The good thing is that public facilities are more affordable than other alternative cancer and terminal illness care centres. However only two thirds of cancer patients said they use these facilities hence the concern is on the remaining third. That notwithstanding, even in the event that all patients were to access public health services, there might be a constraint of facilities for diagnosis, treatment and care.

On the positive side, extremely few insured respondents with cancer and terminal illnesses go for traditional healthcare. Nearly twice as many individuals with health insurance seek services from private and mission facilities as public and NGO facilities. Thus, apart from affordability, there must be other reasons why insured patients feel motivated to seek cancer care services away from public health facilities. Findings indicated that the government owns two thirds of facilities nearest patients with terminal illnesses half of whom cannot get much needed health services in those facilities they have to travel further away. Primary reasons provided for this is that medicine is unavailable and staff unqualified. At the same time public facilities are reported to have the longest waiting time and lowest rating of satisfaction with staff attitude meaning that they are constrained by number of staff, quality of personnel, equipment or even a combination of the three challenges. Unless the aforementioned constraints are addressed, public facilities may not be an effective channel for cancer and terminal illnesses services.

Individual social attributes are important influences in choice of healthcare for cancer and terminal illnesses. For example, Christians favour mission and public facilities, Muslims favour private and NGO facilities whereas atheists favour traditional facilities more than others. But a more policy important finding is that of education whereby less educated cancer and terminal illness patients have preference for traditional healthcare whereas more educated counterparts prefer formal health institutions. Some of the patients diagnosed with cancer/terminal illness did not make the required number of visits as recommended by a specialist due to lack of money, self medication or perceptions that illness not serious enough. This indicates that education provision can improve knowledge, practices and increase access to formal health services for cancer and terminal illness.

5.3 Policy Recommendations

Given that demand for healthcare is not significantly responding to cost and distance among all types of health facilities, it is noted that the reason could be as a result of limited supply of cancer treatment services. Thus it is important for stakeholders (the

national and county governments, private investors, NGOs and development partners) to increase the range of alternative providers of such services in different areas of the country. Currently majority of well-equipped facilities are based in Nairobi. It is imperative for the national and county governments to upgrade existing cancer/terminal care facilities, say with diagnostic and treatment equipment. Equally important is to establish mobile clinics for a wider reach through distance and treatment cost of medication.

Given that some patients reported lack of money as a major impediment to health seeking across the various healthcare providers, diagnosis and treatment services of cancer and terminal illnesses should be subsidized significantly in public facilities to increase affordability and reduce possible loss of human capital for issues that could be prevented.

The experience of patients could be improved if they were met by a more courteous and receptive body of staff at whichever facilities they visit for healthcare. Indeed this was an important factor influencing choice of facility. Thus it is imperative that the Ministry of Health and administrators of non-state facilities conduct customer care training of staff at various levels to be able to handle cancer patients in a more sensitive manner.

All facilities should be encouraged to reduce turnaround time for service delivery. It emerges that a reduction in turnaround time increases preference for other facilities relative to public service healthcare. In the event that patients prefer to take up private, mission, NGO and traditional healthcare services for the shorter turnaround time, then visitations to public health facilities would go up if the patients would be attended faster. Hence health practitioners in public facilities should be facilitated and motivated to increase efficiency in service provision.

Cancer awareness among the public is necessary to dispel any myths that may be the cause of preference for traditional as opposed to formal healthcare for cancer and terminal illnesses. This initiative can be complemented by increasing access to universal primary, secondary and tertiary education to increase awareness about cancer. Specialized campaigns can also be carried out to promote early diagnosis and treatment.

The government should as a matter of priority strive to equip all lower level health facilities (especially level-5 hospitals and below) with drugs and well experienced personnel to handle cases of terminal illness. Much savings in terms of time and money can be saved, and household productivity increased among patients if they do not have to travel far to receive healthcare.

It is imperative to promote coverage of health insurance to facilitate affordable and prompt uptake of formal health seeking behavior for diagnosis and treatment of cancer and terminal illnesses. Also, sensitization on need and benefits of seeking timely health care is imperative at early stages to alleviate painful, costly experiences at later stages of cancer development.

Other general recommendations include increasing state budgetary allocations for sensitization forums through media campaigns, Information Education Communication (IEC) materials and engagement at the community on prevention strategies, diagnostic, treatment, and palliative care. It is also crucial to train specialized health care personnel that will lead to real time diagnostic and reduce referral dilemmas.

5.4 Areas for further study

Further study is necessary, with a bias towards demand (number of visitations) to explore what motivates the choice of traditional terminal illnesses healthcare in the presence of alternative formal health systems. Such as study will unravel the mystery about why traditional providers are still a preferred provider of cancer healthcare or why cancer patients would prefer to self-medicate.

In response to data limitations further studies need to widen the scope of study in terms of sample size and variables. For example data on cancer was available for very few respondents which can be resolved by increasing the sample size. Data on household expenditure was not available for this study yet it could be useful pointer towards household production of health versus other goods (such as education, nutrition et cetera). As such future studies could consider relying on primary data during which data can be gathered from more respondents and more variables added.

REFERENCES

Abubakar, Baar Fischer , Bomu , Gona, Newton. (2013) Socio-Cultural Determinants of Health-Seeking Behaviour on the Kenyan Coast: A Qualitative Study. PLoS ONE 8(11): e71998. doi:10.1371/journal.pone.0071998Adhikari, S. R. (2011). A Methodological Review of Demand Analysis: An Example of Health Care Services. *Economic Journal of Development Issues Vol.* 13 & 14 No. 1-2 (2011) Combined Issue

Bichaka,F. and Paulos,G. (2008): *A Health Production Function for Sub-Saharan Africa (SSA),* A Working Paper Series JEL classification: I12

Buckle G, Collins J, Sumba P, Nakalema B, Omenah D, Stiffler K, Casper C, Otieno J, Orem J, Moormann A. 2013. *Factors influencing time to diagnosis and initiation of treatment of endemic Burkitt Lymphoma among children in Uganda and Western Kenya: A cross-sectional survey.* BioMed Central Ltd

Charkraborty, A., Chowdhury, W. and Akhter H. 2003. Determinants of the use of maternal health services in rural Bangladesh. Kuwait University, Kuwait.

Chuma, O. and Molyneux. 2010, *Barriers to prompt and effective malaria treatment among the poorest population in Kenya.* KEMRI.

Chuma and Okungu (2011). Viewing the Kenyan health system through an equity lens: Implications for universal coverage. *International Journal for Equity in Health*, 10:22

Cheng, S. and Long, J. S. (2007). Testing for IIA in the Multinomial Logit Model. *Sociological Methods Research.* vol. 35 no. 4, 483-600.

Ekman, 2007**.** *The impact of health insurance on outpatient utilization and expenditure: evidence from one middle-income country using national household survey.* Jordan. BioMed Central Ltd.

Githanga Jessie. 2013. *Child Hood Cancer.* African Cancer Registry Network

Grossman, M. (1972). On the Concept of Health Capital and the Demand for Health', *Journal of Political Economy*, 80, 223-55.

Ferlay, Bray, Pisani. & Parkin D.M. 2005. *Cancer Incidence, Mortality and Prevalence Worldwide.* IARC Press, Lyon

Hausman, J. A. 1978. Specification tests in econometrics. *Econometrica* 46: 1251–1271.

Hausman, J. A., and D. L. McFadden. 1984. Specification tests for the multinomial logit model. *Econometrica* 52: 1219–1240.

Henderson W. J. (2011). *Health Economics and Policy*; 3rd Edition Baylor University India Edition

Jarvis and Matheka .2014. *Cancer Kenya's Preventable Killer.* Global Health Innovation Club. Kenya

Kamau P and Muriithi M. (2006). "A Baseline Survey of Devolved Funds in Nairobi: The Case of Kiambiu and Buruburu City Carton in Kamkunji Constituency". Undugu Society of Kenya. Nairobi. Kenya.

Kaseje.(2006): *Health Care in Africa: Challenges, Opportunities and Energy model for improvement.*

Kenya Medical Research Institute. 2006. *Cancer Incidence Report*. NAIROBI: KEMRI

Kenya Medical Research Institute. 2012. *Cancer Incidence Report*. Nairobi Kenya

Kitui J, Lewis S, Davey G. 2013. *Factors influencing place of delivery for women in Kenya: an analysis of the Kenya demographic and health survey*, 2008/2009. BioMed Central Ltd

Knight, Self and Kennedy (2013). *Why Are Women Dying When They Reach Hospital on Time? A Systematic Review of the 'Third Delay'* doi:10.1371/journal.pone.0063846.g002

Krause, G. and Sauerborn, R. 2000. Comprehensive community effectiveness of healthcare. A study of malaria treatment in children and adults in rural Burkina Faso. *Annals of Tropical Paediatrics* 20(4):273-282.

Kuunibe N. and Kojo S. D. (2012). Choice of Healthcare Providers among Insured Persons in Ghana. *International Journal of Business, Humanities and Technology*. Vol. 2 No. 6

Lagarde and Palmer, 2008. *The impact of user fees on health service utilization in low- and middle-income countries: how strong is the evidence?* Bill & Melinda Gates Foundation

Mail, Arantza, Were, Nana ,. Afrah, Chatio, Manda-Taylor, Hamel, Hodgson, Tagbor, Kalilani, Ouma, Pool. 2013. Factors Affecting Antenatal Care Attendance: Results from Qualitative Studies in Ghana, Kenya and Malawi. University of Massachusetts Medical School, United States of America

Mathers and Loncar 2006. Projections of Global Mortality and burden of disease from 2002 to 2030. Plos Medicine, 3: 2011-2030

McFadden, D. 1981. *Econometric models of Probabilistic Choice in Manski and McFadden (eds), Structural Analysis of Discreet Data with Econometric Applications,* MIT Press, New York 105-142.

Muriithi M. 2013. The Determinants of Health Seeking Behaviour in a Nairobi Slum Kenya. European Scientific Journal.

Muriithi M and Mwabu G. (2013), "Demand for Health Care in Kenya: The Effects of Information about Quality" in Kouassi E and Schaeffer V, Econometrics methods For analysing Economic Development. IGI Global.

Mostert S, Njuguna F, van de Ven PM, Olbara G, Kemps LJ, Musimbi J, Strother RM, Aluoch LM, Skiles J, Buziba NG, Sitaresmi MN, Vreeman RC, Kaspers GJ. 2009. Influence of health-insurance access and hospital retention policies on childhood cancer treatment in Kenya. *Periodical Journals*

Mulemi, B A 2010. *Coping with cancer and adversity: Hospital ethnography in Kenya*. Leiden: African Studies Centre.

Mwabu, G., Ainsworth, M. & Nyamete, A. (1993). Quality of Medical Care and Choice of Medical Treatment in Kenya: An Empirical Analysis. *The Journal of Human Resources,* 28(4), 838-862.

Mwabu, Germano, Ainsworth Martha and Nyamete Andrew. 1995. *Quality of medical Care and Choice of Medical Treatment in Kenya* in Schultz, T. Paul (ED) Investment in Women's Human Capital. Chicago and London. University of Chicago PressOdwee, Okurut, & Adebua, A. (2006). *The Determinants of Healthcare Demand in Uganda: The case study of Lira District, Northern Uganda*. AERC Research Paper 155.

Republic of Kenya. 2007. Kenya Vision: 2030 A Globally Competitive and Prosperous Kenya. Government of Kenya. Government Printer.

Republic of Kenya. 2010. *Draft National Cancer Control Strategy* 2010-2015. NAIROBI Government Printer

Republic of Kenya. 2011.*National Assembly; Policy Brief on the Situation Analysis of cancer in Kenya.* Government Printer.

Republic of Kenya. 2012. *National Cancer Registry*. Nairobi Government Printer

Rosal, Milagros, Cara, Lofgren, Ockene, Ockene and Hebert. 2001. *Journal of the American Dietetic Association*. Volume 101 p332.

Roxy, P. and Devore, J. (2011). *Statistics: The Exploration and Analysis of Data*. Cengage Learning. pp. 464–465**.** ISBN 0840058012**.**

Russell S, .2011. The Economic Burden of Illness for Households in Developing Countries: A Review of Studies Focusing on Malaria, Tuberculosis, and Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome. University of East Anglia. United. Kingdom.

Strother, Asirwa, Busakhala, Njiru, Orang'o, Njuguna, Skiles, Carter, Mega, Kaspers, Rosen, Krzyzanowska, Washington, Griest, Rosmarin, and Loehrer. 2013. *Journal of cancer Policy.* Volume 1, Issues 1-2

Sudenga S, Rotich A, Smith J. 2013. Knowledge, attitudes, practices, and perceived risk of cervical cancer among Kenyan women: *MedLline*

Warau S. 2012. Rise in Cancer Care in Kenya. *Africa Review*

Wawira Munyi. 2014. *Improving Care for Cancer Patients at Kenyatta National Hospital. Management for Health Services.*

Wooldrige, J.M. (1999), *Econometric analysis of Cross section and Panel data.* Cambridge, MIT Press, 1999.

World Health Organization. 2004. The global Burden of Chronic Diseases. Overcoming impediments to Prevent and Control. Geneva. WHO

World Health Organization. 2005. Non Communicable Diseases. An Overview of Africa's New Silent Killers. Geneva. WHO

World Health Organization. 2000. *Public Spending on Health care in Africa: Do the poor benefit?* Geneva: WHO

World Health Organization 2008. *Cancer Report*. Geneva: WHO

World Health Organization 2012. Cancer Report. Geneva: WHO

WHO World Health Organization. 2014. Non Communicable Diseases. Country Profiles. Geneva. WHO

Velazquez Eric.2011. Duke University Medical Center, Durham, North Carolina, USA

Zewdie Birhanu, Alemseged Abdissa, Tefera Belachew, Amare Deribew, Hailemariam Segn, Vivien Tsu, Kim Mulholland and Fiona M Russell (2012). *Health seeking behavior for cervical cancer in Ethiopia.* BioMed Central Ltd