HOUSEHOLD ACCESS TO PUBLIC PRIMARY HEALTHCARE FACILITIES IN NAKURU TOWN - KENYA

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DECLARATION AND RECOMMENDATION

Declaration

This thesis is my original work and has not been presented for an award of a degree in any other university.

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Recommendations

This thesis has been submitted for examination with our approval as University Supervisors.

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DEDICATION

I dedicate this work to the loving memory of my late mother, Mrs. Dorica Mokaya, who laid a good spiritual foundation for me, to become what I am today. Glory be to God. I would also like to dedicate the work to my beloved wife Prisca Bogonko and my dear sons Shedrack Mokaya and Joshua Bogonko for their patient understanding and encouragement that inspires me every day.

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ABSTRACT

Nakuru town has a restricted utilizable primary healthcare services for its people. Hence, patients die from illnesses which there is a cure and communities are affected by many diseases which are healable. This has contributed to the affrication of many avoidable illnesses. This study assessed the households' access of public primary healthcare facilities in Nakuru town. The main objective of this study is to reduce preventable morbidity and mortality in Kenya by improving levels of household access to and utilization of available primary health care services. The researcher involved a descriptive cross-sectional survey, health facility evaluation survey, and a key informant interview. A sample of 400 households was picked from the eleven wards in Nakuru town. Data was collected using a standard household questionnaire, healthcare facility evaluation schedule, and key informants, interview schedule. Various descriptive and inferential statistics was used to analyse the data. These were; chi-square test and logistic regression. Logistic regression results revealed that the major correlates of utilization of public PHC among households in Nakuru Town are; age of household ($P<0.5$); household of income ($P<0.01$); gender of household head ($P<0.01$); household heads' of schooling ($P<0.5$); households head's occupation ($P<0.01$) and household monthly income ($P<0.01$) were important factors that influence access and utilization of public PHC facilities in Nakuru Town. Within the study area, the PHC facilities have inadequate staff and drugs. The ratio of healthcare personnel to population was low at 1:10,020. The distribution of healthcare facilities in the study area is uneven; some wards such Kivumbini, Flamingo and Kaptembwo had no public PHC facility. The disparity in the distribution of healthcare facilities in the study implies disparities in the access and utilization of public primary health care facilities by the population within the town. There is therefore need to improve access and utilization of public primary health care facilities in all the wards in Nakuru town. Finally, there is need for the County Government of Nakuru to employ more staff and build more public PHC facilities using population threshold yardstick.

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LIST OF ABBREVIATIONS AND ACRONYMS

AFRO	-	WHO Regional Office for Africa
ANC	-	Antenatal Care
CHWs	-	Community Health Workers
EOC	-	Emergency Obstetric Care
FBOs	-	Faith Based Organisations
GIS	-	Geographic Information System
GoK	-	Government of Kenya
GPS	-	Global Positioning System
HIV/AIDS	-	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
KIPPRA	-	Kenya Institute for Public Policy Research and Analysis
KHPF	-	Kenya Health Policy Framework Paper
KNBS	-	Kenya National Bureau of Statistics
MoH	-	Ministry of Health
MoMS	-	Ministry of Medical Services
NCDs	-	Non-Communicable Diseases
NCSP	-	Nakuru County Strategic Plan
NDDP	-	Nakuru District Development Plan
NGO	-	Non Governmental Organization
NHIF	-	National Hospital Insurance Fund
NHSSP	-	National Health Sector Strategic Plan
OPD	-	Out Patient Department
PCH	-	Personal Care Home
PHC	-	Primary Health Care
RoK	-	Republic of Kenya
SPSS	-	Statistical Package for Social Science
SDGs	-	Sustainable Development Goals
TB	-	Tuberculosis
UHC	-	Universal Health Care
UN	-	United Nation
UNICEF	-	United Nations International Children's Fund
WHO	-	World Health Organization

CHAPTER ONE
INTRODUCTION

1.1 Introduction to Research Problem

There is ample evidence that the access to effective healthcare is a major problem to about 1.3 billion people worldwide, the majority found within the developing countries (Kara & Egresi, 2013). Millions of people suffer and die from conditions for which there exist effective interventions. Diseases such as diarrhoea, pneumonia and malaria are responsible for 52% of child death worldwide (WHO, 2020). There is a big difference between those who are supposed to benefit from healthcare and those who benefit in the area of reproductive health. In South Asia, only half of pregnant women get antenatal check-up while one fifth of births are supervised by trained medical personnel (Kara & Egresi, 2013). The degree of accessibility of healthcare facilities is one of the most significant indicators for measuring the efficiency of a healthcare system in any country (WHO, 2020). Globally there is evidence, which shows the significant role played by public primary healthcare services in promoting population health by reducing morbidity and causes of mortality (WHO, 2020).

The supply of enough healthcare services in developing countries is becoming more and more difficult over time (WHO, 2014). Increase in population, wide spread poverty and inadequate financial resources to construct healthcare facilities are the main factors responsible for the poor healthcare delivery systems in the developing world (WHO, 2016). Therefore, Primary Healthcare (PHC) is the only proposal of achieving the national goal of social justice and equity.

Sub-Saharan Africa is urbanizing rapidly (UN, 2016). Rural - urban migration, high birth rate in urban areas and the expansion of the urban boundaries within Africa are known to be some of the major causes of the rapid urbanization. Urban areas offer better employment, education, healthcare and culture. In addition, there are health disparities within the urban populations within most parts of the world (UN, 2016). In sub-Saharan Africa many people who live in urban areas, reside in congested slums with poor sanitation and poor housing. Poorly planned urban physical facilities which includes; housing, transport and food systems along with the social and lifestyle factors are causes of epidemic of non- communicable diseases which are connected to risks and hazards such as air pollution, poor diets and physical inactivity, traffic injuries and domestic injuries (WHO, 2016).

One of the biggest drivers of urbanization is the growth of small towns and intermediate cities (UN, 2014). Kenya has in the recent past experienced rapid urbanization and urban growth. Urban population have swelled from 8.3% in 1962 to 47% in 2016, with an estimated

16.5 million people living in major urban areas of Kenya (KNBS, 2017). By 2030 in Kenya, it is anticipated that majority of the Kenyans people at 54% will reside in towns and cities (UN, 2016). Towns in Kenya are growing at a rate of 3.9% and is projected that most of the towns will expand at rate of 4.2% (KNBS, 2017).

Even if many towns continue to deliver enhanced healthcare service, towns are still areas which produce many health problems and their environment are conducive for new catastrophes (WHO, 2015a). Towns are faced with many health problems such as contaminated water, environment pollution, increased violence and injury, non-communicable diseases, eating unbalanced diet, luck of exercising, drunkenness and dangers related to the outbreak of many diseases (Sachs, 2012, WHO, 2016). Many people in towns have adopted different ways of living which influence their choices like using vehicles for transport instead of walking and consumption of many kinds of food which is not healthy to their bodies hence contributing to many diseases (Evans *et al*., 2012; Gabrych & Campbell, 2009).

The rapid raise of urban areas in Kenya in recent times has lead to many challenges to urban authorities for examples inadequate provision of good healthcare services (WHO, 2016). Kenya has witnessed many changes in its healthcare delivery system which has been improved due to high demand for healthcare services by the ever increasing population (MoH, 2013a). Evidence shows that in many towns and cities where many people live, their environment is conducive for the causes of many diseases which affect them and this environment increase the incidences of communicable diseases (WHO, 2016). Without doubt, living in towns leads to people to come in contact with contaminated environment, presence of disasters, changes in climate, violence and injuries, drugs abuse and wide spread of infectious diseases (WHO, 2015b).

Fast growth of many cities and towns in Kenya, has contributed to many challenges especially high demand for essential services such as water, sanitation and healthcare services (WHO, 2014). Many people who live in towns in Kenya lack adequate access to health centres and dispensaries (WHO, 2015b). In addition, many studies have confirmed a shape raise in life style diseases for example cancer and cardiovascular diseases (WHO, 2015a). This is credited to the high number of middle class income people who are consuming the kind of food which is not healthy and not doing any exercises (UN, 2014). Many deaths in towns and cities in Kenya are due to malaria, pneumonia, HIV/AIDS, diarrheal and vomiting, road traffic accidents, bleeding in pregnancy and delivery and malnutrition (MoH, 2013a). In 2017, the towns and cities in Kenya grew by 27.5%, young children died at a rate of 33.6 per 100 live births; those below 5 years the death rate was 49 children per 1000 while deaths from mothers

who deliver was 510 deaths per 100000 live births (KNBS, 2017). There is a lower infant, child and maternal mortality rates within the urban areas of Kenya compared to the rural areas because of the accessibility of healthcare facilities, better healthcare services offered, and access to clean water by the urban dwellers (MoH, 2013a).

Even though the Kenyan Constitution promulgated in 2010 affirmed healthcare to be a universal right (Jacobs *et al*., 2012). Improvement on Universal Health Care (UHC) in Kenya has been inadequate (Chuman & Okungu, 2011). There is also insufficient information to the population on utilization of healthcare services. A recent healthcare benefit prevalence study in Kenya showed unfair distribution of services according to the ability to pay rather than need for care (Chuman & Okungu, 2011).

The developing countries have to ensure that the Sustainable Development Goal (No. 3) on health is on course to be achieved by 2030. The associated targets, aim to reduce global maternal mortality, the end of preventable deaths of newborn, the end of the epidemics of AIDS, tuberculosis and Malaria, as well as the reduction by third of premature mortality from non-communicable diseases (UN, 2015). Perhaps what should be noted is that a mere presence of healthcare facilities within a reasonable distance is not enough to ensure use of those facilities. The effectiveness of health care delivery system of a county depends largely on the number and quality of primary healthcare facilities available to respond to current and future health care needs (Duran *et al*., 2014; Sachs, 2012). Studies have revealed that Kenya's public healthcare system is categorized by inadequate trained staff, insufficient medical supplies, poor facilities and seclusion, which discourages patients who see no reason to travel long journeys to seek services from the badly equipped healthcare facilities (WHO, 2015a).

Presently, there is a discussion regarding the funding of healthcare sector and the county governments are requesting the national government reduce funds from other sectors like security and infuse it into the healthcare sector because of the existing startling health conditions in the system (World Bank, 2014). Even if there are good policies on universal primary health care, devolution of healthcare services and combined efforts to improve delivery of quality services, lack of enough resources and trained staff have contributed to little consumption of the services (AGH & Water Aid, 2016; WHO, 2015b).

According to Kitui *et al*. (2013), primary healthcare package ensures universal access to all healthcare services that is maternal and child healthcare services as predetermined in Kenya's vision 2030. WHO (2010) expects a well working healthcare system which promotes the health position of individuals, families and communities, protect the population against what threatens its health, safeguard populations against financial cost of ill-health and provide

equitable access to people centred healthcare. WHO (2014) noted that the challenges in the healthcare sector is minimal as compared to the quality of services offered but on the sufficiency of health facilities. The quality of services offered is related to the level of healthcare personnel available. The WHO has suggested a standard for the African region of 23 nurses, physicians and doctors per 10,000 population with the average hospital service range of 0-2 km radius (WHO, 2016).

Nakuru town presently has a population growth rate of 7% compared to the country's growth of 2.9% (KNBS, 2013). It also has high poverty incidences together with poor nutrition and other related health risks and challenges such as insufficient sanitation, unsafe drinking water and high rate of ecological pollution (Alebachew *et al*., 2014). These situations has increased high prevalence of both infant and adult diseases such as measles, diarrhoea, tuberculosis, cardio-vascular diseases and other respiratory infections (MoMS, 2012a). There is also an increasing number of child deaths of age 0-4 years and many deaths from expectant mothers. This has led to low life expectance than usual.

It is important to understand the great role played by healthcare system in promoting both preventive and curative care. It is for this reason that this research on PHC in Nakuru town was carried out. The study looked at the levels of access and challenges of PHC delivery system with aim of coming up with data for policy and planning.

1.2 Statement of the Research Problem

Nakuru town is one of the fastest growing towns in Kenya with growth rate of 7% per annum against 2.6% nationally. According to Nakuru County Government health records (2018), the top ten diseases in Nakuru town included: upper respiratory tract infection, other diseases of the respiratory system, diarrhoea, diseases of the skin, pneumonia, tonsillitis, ear infections, suspected malaria, eye infections and confirmed malaria. The area also experiences high infant mortality rate of 78 per 1,000 live births; under five mortality rate of 115 per 1,000 live births; maternal mortality rate of 150 per 100,000 live births; low immunization coverage; and low access to proper sanitation characterize the town's poor healthcare system. It is worthy to note that Nakuru town has 14 Public Healthcare facilities and 107 private healthcare facilities that if they are properly utilized would lead to improved health outcomes. . However, there are still high incidences of morbidity and mortality. There are limited data on access and utilization of public PHC facilities by households in Nakuru County. Hence, this study examines why incidence of preventable diseases is still high among urban households in Nakuru town in spite of the area having a relatively higher concentration of health facilities.

1.3 Objectives

1.3.1 Broad Objective

The main objective of this study is to reduce preventable morbidity and mortality in Kenya by improving levels of household access to and utilization of available primary health care services.

1.3.2 Specific Objectives

The specific objectives of the study were to:

i. Determine the variation in levels of households' utilization of public primary healthcare facilities in Nakuru town.
ii. Determine factors influencing urban variations of household's utilization of public primary healthcare facilities in Nakuru town.
iii. Establish the availability of human and medical resources in the utilization of public primary healthcare facilities in Nakuru town.
iv. Examine spatial distribution of public primary healthcare facilities in relation to population distribution in Nakuru town.

1.4 Research Questions

The study addresses the following research questions:

i. What is the extent of variation in the levels of household utilization of public primary healthcare facilities in Nakuru town?
ii. What are the factors that influence variations of household's utilization of public primary healthcare facilities in Nakuru town?
iii. Are human and medical resources in the public primary healthcare facilities in Nakuru town adequate for provisional services?
iv. Do spatial variations in location of primary healthcare facilities influence utilization of services in Nakuru town?

1.5 Justification of the Study

It is evident that infant mortality rate, under five years child mortality and maternal mortality rate are still at unacceptable levels in Nakuru (WHO, 2014). The demand for health care is high, but the utilization of public sector facilities for medical care health services are very low (AGH and Water Aid, 2016). According to WHO (2016), even if important Millennium Development Goals (MDGs) were achieved on many of the targets on health

worldwide, the progress was not uniform across regions and countries, leaving important gaps. Many people in Nakuru town especially the poorest and those underprivileged because of their sex, age, disability, ethnicity or geographical location were not considered for provision of healthcare services (UN, 2015). Therefore, there is need to target the most vulnerable people (WHO, 2016). According to MDGs Report, about 16,000 children under five years continued to die every day in 2015. Most of them died from diseases which can be prevented such as pneumonia, diarrhoea and malaria. Sub-Saharan Africa has the world's highest child mortality rate despite the fact that there has been complete reduction in child deaths worldwide (WHO, 2016).

This research therefore is important in line with the proponents of government of Kenya "Big Four Agenda" that sets out to achieve: food security, affordable housing, manufacturing and universal healthcare for accelerated socio-economic transformation, increased job-creation and improved quality of life for all Kenyans by 2022 (GoK, 2017). Under pillar four, the government of Kenya aims at providing universal access to quality and affordable healthcare by 2022. The pillar resonated with the objectives that informed this study.

In line with the sustainable development goals (SDGs), the government of Kenya has the responsibility of ensuring that by 2030 she has: ended preventable deaths of newborns and children under 5 years of age, end the epidemics of AIDS, tuberculosis, malaria; and combat water borne diseases and other communicable diseases. The government of Kenya has further undertaken to reduce maternal mortality ratio to less than 70 per 1,000 live births. The above targets requires the country by 2030 to attain universal health coverage that includes financial risk protection, access to quality, essential healthcare services and affordable vital medicines and vaccines for all by 2030 (UNICEF, 2015). This study is provides and information on access and utilization of PHC facilities and services which in important in the design of policies and programmes that will contribute to the achievement of universal healthcare (UHC) (WHO, 2020).

By identifying some challenges faced in the process of accessing and utilization of PHC facilities and making recommendations, Nakuru County healthcare department and Nakuru County Integrated Development reports will be enriched by this study. Given that PHC providers play a leading role in health, this study will contribute to the existing literature.

1.6 Significance of the Study

Studies on public primary healthcare (PHC) facilities is always purposed on inputs to healthcare such as suppliers, infrastructure and financing while does not look at the main

function of service delivery as experienced by users of the healthcare system which are vital for consideration in health service research for policy and planning reasons (WHO, 2020). One of the main aims of the Sustainable Development Goals (SDGs) is to ensure that all people worldwide have equal and balanced access to and ensure measures are in place to increase utilization of basic primary healthcare services (WHO, 2017). International prove shows that the primary role of the public PHC facilities is to improve population healthcare through the decrease of morbidity and all causes of mortality (WHO, 2020). At the village level, information concerning service utilization and preferences is used to promote the correctness of the medical and healthcare services provided. This research adds to the body of knowledge that exists concerning healthcare seeking behaviours among households in urban areas of Kenya.

1.7 Scope and Limitation of the Study

The study assessed the households' access and utilization of primary public healthcare facilities in Nakuru town. Nakuru town is one of the cosmopolitan towns in the country with representation of all communities in Kenya. This has positioned the town as an area of unlimited opportunities leading to growth in both cultural and economic activities with steady increase in population (KNBS, 2017). Aspects of medical geography including spatial distribution of disease and healthcare with associative analysis of environment (physical, biotic, social and cultural) influences were incorporated in this study. Hence, the study makes some contribution to existing body of knowledge in the field of population and community health in Kenya. The study focused on level 1 and level II public health facilities which by design are supposed to offer primary health care. The selection of public facilities was mainly because service provision in these public services is subsidized and almost free and there are generally no fees at the point of use, whereas the private clinics generally require out of pocket payments or possession of private health insurance cover. Further to this, government health facilities play an important role in immunization and reproductive health (MoH, 2020).

The limitations of this study were that consumers might have consulted more than one healthcare provider for treatment for the same episode; therefore, analysis based on the last visit to healthcare provider may not capture the complex decision-making behaviour of the people. To counter the limitations, the household questionnaire included questions on respondent's attitude about the distance to the nearest facility, and the quality of care offered in such facilities. Such information provided extra data to make conclusions.

1.8 Assumptions of the Study

This research made various assumptions. First, this study assumed that household heads have information on utilization of health care facilities by all members of the household. . Secondly, it was assumed that all respondents perceive illness the same way and hence they are likely to make a decision to seek care from a PHC facility. Thirdly, the study assumed that decision by any member of households to seek care from a health facility is a function of various socioeconomic factors that are measured at; individual, household and community level. The study further assumed that other socio-economic factors not included in the study did not change sufficiently during the period of the study to significantly affect households' access and utilization of public primary healthcare facilities.

1.9 Operationalization of the Study Variables

This section provides operational definitions of the terms and variables particularly in the context in which they are used in this thesis.

Access to Primary Healthcare Services: It is geographic accessibility, which includes user's location and service location and financial accessibility which include costs and prices of services and user's resources and willingness to pay.

Acceptability: For the purpose of this research, it refers to the description of primary healthcare services supply and the needs of patients.

Availability of Primary Healthcare: Refers to public health centres and dispensaries and the services they provide to the community. It also refers if the healthcare services are reached by the patients when they need them.

Determinants: Are those factors that strongly influence the health of individuals and communities and affect sustainability and accessibility of PHC services. These factors include; education, physical infrastructures, transport, income, occupation, sex, age, religious views, culture among other factors.

Financial accessibility: refers to the ability of the households to afford the cost and prices of services offered in PHC facilities.

Healthcare Facility: is a health service delivery structure that provides health care (e.g. out patient, pharmacy, and laboratory). In this study, focus was on government facilities that offer PHC.

Household: Refers to a residence where people live together sharing of income, resources and expenditures. Also there exist family or emotional ties.

Household head: Refers to individuals (male or female) in charge of the family and is readily available to offer health assistance to all members of the household.

Household level factors: refers to the determinants of the households access and utilization of PHC facilities e.g. family size, ethnicity, expectations, attitude, means of transport to the primary healthcare facilities and religion.

Individual level factors: refers to age, sex income, educational level and marital status of the household heads.

Institutional level factors: refers to the resources offered by the government for provision of PHC e.g. number of healthcare staff, equipment, drugs, building of PHC facilities and other services.

Morbidity: Refers to the incidence or prevalence of a disease or of all diseases in a population. It is the rate at which an illness or abnormality occurs, calculated by dividing the number of people who are affected within a group by the entire number of people in that group (WHO, 2016).

Physical accessibility: refers to the physical distance from the households to the PHC facilities.

Primary Healthcare: It refers to important healthcare which universally accessible to people and satisfactory to them, by fully participating at a cost the community and country can afford. It is a system of healthcare which is beyond the traditional healthcare system and focuses on health equity thus producing social policy. The basic elements of primary healthcare and its objectives help to attain better health services for all. This includes availability of drugs, treatment of communicable and non-communicable diseases, prevention of endemic disease, immunization and maternal and child health. For the purpose of this study, primary healthcare was limited to curative and preventive healthcare services.

Public healthcare services: For the purpose of this study, it refers to services provided by Public Primary Healthcare facilities to prevent disease, prolonging life and promoting health.

Town: Refers to Urban area comprise larger places and densely settled areas around them.

Utilization: Refers to the measure of the household visits to public PHC healthcare facilities in the last six months

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter reviews previous literature related to health care provision and utilization. It presents documented literature on access and utilization of health care facilities, factors influencing access and utilization of health care facilities and health care services. The chapter also presents a discussion of major theories that explain household health seeking behaviour and factors that influence such behaviours.

2.2 Urban Health Problems in Developing Countries

Health is both an outcome and a determinant of economic development hence it is associated with urbanization (WHO, 2013). The urban congestion and the dependence of the residents on general public resources contribute to many people being susceptible to more communicable diseases as compared to people who live in rural areas and are more spread out in terms of population distribution (UN, 2014).

According to World Bank Group (2014), the socio-economic variety of urban residents in developing countries has contributed to the coming up of different types of marketing strategies and functions to serve the demands of the urban residents. Most of these led to the spread of communicable diseases for example, the markets in which sex workers participate. Even if rural prostitution exists, its epidemiological role in the spread of sexually transmitted diseases (STDs) and HIV/AIDS is low as compared to urban prostitution, which deals with more interconnected sexual networks (WHO, 2010).

Towns in developing countries encounter many environmental challenges such as lack of enough water and sanitation, within house and community congestion, industrial pollution and air, water and food contamination (WHO, 2002). These challenges have contributed to accidents, parasitic disease, malaria, respiratory infections, tuberculosis and other infectious diseases (WHO, 2014).

Primary healthcare (PHC) service is significant worry for rapid increase of population mainly in developing countries. Cities in the third world countries are experiencing extraordinary growth for many years (Ndari *et al*., 2009). The increase in the number of people is linked to raise in demand for healthcare service, demand for physical facilities and other essential public services in order to live a good life. This has led to lack of enough healthcare facilities to provide enough healthcare services for the high population growth. If more people are added into an area through natural birth and those who come from other areas they will

cause strain on the existing healthcare facilities (Yamauchi & Chowdhury, 2007). This process slowly leads to disparity in service provision.

2.3 Access and Use of Health Services in sub-Saharan Africa

There are many reasons the population access and utilize healthcare facilities. Some of these reasons are to get well from an illness, to treat conditions caused by accidents and injuries, to reduce and delay incidences of diseases, to lessen pain, to improve living conditions of life, and for people to understand more about their health conditions. The distribution of all types of healthcare facilities is not fair because most of the facilities are located in towns and cities as compared to the rural areas in countries found in sub-Saharan Africa (Vega, 2013). There is a big difference in terms of access and utilization of healthcare facilities in sub-Saharan Africa. In towns, healthcare facilities are more accessible by the patients than in rural areas where healthcare facilities are very far from the homes of the patients. The layout of healthcare facilities is more leaning towards the towns and many are found at the urban centre as compared to outskirts and informal settlements (Thiede *et al*., 2007). In Ghana about 10% of the doctors are based in rural areas while 70% of doctors are based in urban areas, with doctor-population ratio ranging between 1:990 in cities to 1:70,000 in rural areas (Kutzin, 2013). This shows inequality in distribution of doctors between towns and rural areas which are disadvantaged.

According to WHO (2013) and Abouzahr and Boerma (2005), the distribution pattern of healthcare facilities influences the use of these facilities between rural and urban areas. This is due to the fact that distance is very important in accessing healthcare facilities and consumption of healthcare services. Countries which are found south of the Saharan in Africa lack adequate access to healthcare facilities which has contributed to low consumption of healthcare services (Fukuda-Parr & Yamin, 2013). These countries have many challenges especially lack of information, inadequate finance, presence of many diseases, issues with political instability and slow growth in their economy (Fukuda-Parr & Yamin, 2013). In sub-Saharan Africa the environment is conducive for the existence of many disease causing organisms which has contributed to raise of many communicable diseases. For this reason, there is an urgency to promote access to healthcare facilities and enhance the provision of quality healthcare services (Harpham, 2009).

The distortion of layout of healthcare facilities, which is a problem in the rural areas and urban fringe hinders access and utilization of healthcare services by people who lack adequate healthcare services and hence cannot add to the growth of the economy and the general development of the country (Gunther & Harttgen, 2012). In addition, healthcare system

in sub-Saharan Africa is poorly organized and this affects the delivery of efficient and timely healthcare services (Herpham, 2009).

2.4 Healthcare Delivery System in Kenya

There are many players in the healthcare system in Kenya who provides healthcare services to the population. These players include; public, private, faith-based and non-governmental organizations (NGOs) (Ministry of Health, 2013b). The private and faith-based healthcare facilities offer services at a cost with an aim to make gainful returns. According to WHO (2013), the highest number of healthcare facilities which serve the population are provided by the government of Kenya and they are the leading in the provision of services in rural areas. Therefore, this means the access and utilization of healthcare services in Kenya is greatly affected by how efficient the public health sector works in providing healthcare services to the patients (World Bank, 2014). The services offered by the private healthcare facilities account for 40% in the country and they consists those services which cure illnesses and prevent diseases from occurring and spreading.

According to KIPPRA (2018), healthcare facilities build by the government of Kenya consists of a wide range of facilities for example national referral hospitals, county referral hospitals and sub-county hospitals. It depends on which type of healthcare facility and how they are distributed out which has a bearing on the patient's desire to access and use them for healthcare services. The National Government is in-charge of providing healthcare services in the national referral hospitals. These hospitals consist of the highest level of services which they offer to the referred patients from county and sub-county healthcare facilities. In Kenya currently, there are four referral hospitals, which include, Kenyatta National Hospital, Moi Teaching and Referral Hospital, the National Spinal Injury Hospital and the Mathari Teaching and Referral Hospital (MoH, 2013a). In the country, there are also private referral hospitals, which consist of Nairobi Hospital and Aga Khan Hospital (KIPPRA, 2016).

WHO, identifies six functions of a working healthcare system in any country. These are; healthcare funding, provision of healthcare services, healthcare personnel, provision of information on medical products, carrying out vaccination exercises, offering leadership and governance. This defines the areas of coverage of the healthcare system and promotes access and utilization of healthcare services to all people (Wamai, 2009). The hospitals which are owned by the government of Kenya are faced with many challenges especially with regard in the supply of healthcare services to the targeted population (MoH, 2013b). Some of these challenges are those concerned with poor management of funds, lack of efficiency in service

delivery, inadequate healthcare personnel, lack of adequate equipments in the healthcare facilities and drugs stock outs all which lead to inadequate supply of healthcare services to the population (World Bank, 2014).

2.4.1 Kenya's Health Legislative Framework and Policy

The Kenya Health Policy Framework Paper (KHPF) of 1994 provided guidelines on the quality of healthcare services that are suitable, cheap and reachable by all Kenyans (MoH, 2013c). It shows the long-term strategic programmes and the agenda for the health sector in Kenya. The policy actions aimed at solving the problem of health sector expenditure, unproductive utilisation of resources, centralized decision-making, unequal management information systems, obsolete health laws, insufficient management skills at the district level, deterioration of poverty levels, rising burden of disease, and fast population growth (KIPPRA, 2018). The Kenya Health Care Policy has been put into action through two 5-year plans which consists the National Health Sector Strategic Plan (NHSSP) and the National Health Sector Strategic Plan II (NHSSP II). These policy plans provide guidelines to the public healthcare system and run from the village to the national level. The rural areas dispensaries, which are the majority in number and lowest level of care, consists of the lowest level of the pyramid. County and sub-county hospitals are fewer and higher on the pyramid. Kenyatta National Hospital (KNH), is the largest and top of the pyramid (MoH, 2013c).

The 2010 Kenyan constitution decentralized the healthcare services and put them under the county governments and some specific essential functions were left with the national government. The role of the national government was to offer leadership in the public healthcare guidelines, formulation and management of national referral healthcare facilities. On the other hand, county governments were left with responsibility of county healthcare services, pharmacies, ambulance services and support of primary healthcare services. In addition, other functions undertaken by the county governments deals with new strategies and actions to address the health needs of their populations which include the construction of more healthcare facilities, the purchase of new equipment and medication at these facilities, the purchase of ambulances and employing more medical staff (KNBS, 2015, MoH, 2013c).

The main function of the devolved system is to bring more possession and empower the communities to make decisions. However, through devolution there is insufficient funds which has come as a result of reduction of the budget and the fact that public administrators now have the duty to manage their public hospitals in a business-oriented way whish has led to many problems. There are differences on how each county manage its public healthcare

facility. It is expected with time the privatization of the management of public hospitals will be introduced to bridge the gaps in some counties. In addition, some county leaders are taken up their responsibilities seriously and have put more money in physical facilities and equipment (MoH, 2013c).

According to MoH (2014a), the Kenyan Health Policy of between 2014 to 2030 outlines the guidelines to be followed by the health sector in Kenya. These guidelines have contributed to great improvement in the delivery of healthcare services in Kenya. The policy guidelines have offered direction to healthcare system in Kenya by enhancing how healthcare facilities are supposed to work which services they are supposed to provide in order to promote the overall goal of ensuring proper and timely healthcare services are provided to the people. The policy gives guidelines on the aims of decentralization of healthcare services which ensures that there is equality in the supply of healthcare services, if these services are meeting the needs of the people and if they are offered in a timely manner and using acceptable standards (KNBS, 2015). The policy shows how access and use of healthcare facilities in Kenya can be achieved (MoH, 2014b). This policy ensures that each county has an healthcare department whose work is to make sure that timely and efficient healthcare services are provided to all people (MoH, 2013c).

The Ministry of Health (MoH) is the overall manager of the healthcare system in Kenya and ensures the sector is working efficiently and delivering services to the people. The ministry is also a custodian of the public healthcare services throughout the country. In addition, the MoH plays a role of bringing together all health players in the country and offers technical advice, which ensures that timely and efficient healthcare services are provided according to, laid down regulations and standards (KNBS, 2015).

The Government of Kenya has set up the Kenya Health Sector Strategic and Investment Plan of 2013 to 2017 (KHSSP) which gives out important guidelines on the management and delivery of healthcare services to the people. The KHSSP has constructed many healthcare facilities, provided medical equipments to healthcare facilities, it has ensured that healthcare facilities use information technology and provided ambulances in all healthcare facilities (MoH, 2013a, Netherlands Enterprises Agency, 2016).

The Kenyan Health Policy of 2014 to 2030 has provided important guidelines in the health sector which aims at promoting efficient, equitable and timely healthcare services to Kenyans. The policy ensures that there is proper guidance in the healthcare system in order to improve and strengthen the objectives and goals of healthcare service delivery (Netherlands Enterprises Agency, 2016).

2.4.2 Primary Healthcare in Kenya

The primary healthcare services provision in Kenya serves both rural and urban communities (MoH, 2013a). It is the first contact with the formal healthcare providers for many patients. The primary healthcare service provides many essential healthcare services which reaches out to the susceptible patients in the society (MoH, 2013a). Services offered by primary healthcare include, infant immunization, delivery care, family planning, treatment of infant diseases and control and curing of Malaria.

There are many healthcare facilities in Kenya which cut across the country extending to more than 9,000 facilities spread across six levels of healthcare provision (MoH, 2013a). Most of this healthcare facilities are health centres and dispensaries, sub-county and county referral hospitals consist of secondary healthcare facilities which offer expert services. National referral hospitals offer specialized services and hence carryout teaching, training and research services. In Kenya healthcare service provision is offered by public facilities and those owned by religious organizations and they mainly provide primary healthcare service (World Bank, 2012). The religious healthcare organizations account for 13% of healthcare facilities accessible at the health centre and 16% and 15% at sub-county and county levels. There are fewer healthcare facilities under the care of religious organizations at the national level.

According to MoH (2013a), dispensaries in Kenya are the first facilities to offer healthcare services between formal healthcare delivery system and the patients however in some areas patients' access healthcare centres or hospitals as their first points of contact. Dispensaries are minimal level of the public healthcare service provision. They provide many services especially those dealing with preventive healthcare measures, which is the most important purpose of the healthcare guidelines (MoH, 2013a, & KIPPRA, 2016). Additionally, they also provide services to infants and handling simple medical problems during pregnancy such as anaemia, and irregularly conduct normal deliveries and basic outpatient curative care.

According to MoH (2013c), health centres are headed by medical officers of health and staffed with program heads of various areas such as; midwifery, public health, laboratory services, environmental and nutrition. They offer many types of healthcare services mainly, basic healing and other services which prevent diseases before they occur for adults and children, as well as delivery healthcare services. They also operate with minor cases for example incision and drainage. In addition to these services, they also provide other healthcare services to the community and refer difficult cases to the county referral hospitals (KIPPRA, 2016; MoH, 2013). The network of health centres also offer ambulance healthcare services to

the patients. Health centres generally provide preventive and curative services, mostly tailored to local needs. There are the community workers at the village level (CHWs) who provide basic services to the community. The community health workers services is a system designed to improve access to care, to bridge the disparity gap in obtaining quality care services and reduce the non-financial problems to health care delivery (WHO, 2016).

In connection with CHWs, there is also the traditional healthcare system. The traditional healthcare system refers to treatment that use herbs, animal parts, and minerals to treat ailments (WHO, 2015a). This ailments are; labour-intensive therapies and religious medicine without the use of drugs (WHO, 2014). Conventional medicine plays a very important role in providing healthcare services in Kenya. It is distribute across all parts of the country and it composed of customary medicine to treat ailments. Conventional medicine healer is a person who treats patients using plants, herbs and use of primitive ways of curing diseases which consists of faith healers, traditional and alternative medicine, and traditional birth attendance. This category of healthcare services provision combines healthcare practice, information and philosophy for example by use of plants, mineral-based medicine and sacred therapies (WHO, 2016).

2.4.3 Milestones in Evolution of Primary Health Care in Kenya

In Kenya, the Primary healthcare method has witnessed many important milestones. Since 1963, the government of Kenya started to offer free healthcare services to all people. In 1965, the government put an end to paying of fees to access healthcare services in health centres and dispensaries found among the local communities. Since 1970, the government has worked hard to come up with extensive primary healthcare policy. Nevertheless, the policy was not effective in ensuring that patients access and use public primary facilities. By the year 1973, the government of Kenya was unable to provide free healthcare services because of the poor state of the economy. Hence, it was not viable to offer healthcare services in public healthcare facilities without requiring the patients to meet the cost (Netherlands Enterprises Agency, 2016).

In 1980, the government came up with an action plan on how communities should take part in healthcare services supply (Netherlands Enterprises Agency, 2016). In 1989, patients were required to pay for the healthcare services provided by the MoH. In 1992, there were changes in the healthcare system by the establishment of district health management boards which was mandated to ensure that the sharing of cost in healthcare services is workable and people in disadvantages areas are given subsidized healthcare services (MoH, 2013c).

By 1990, there were many problems as pertains adequate finances to facilitate proper running of healthcare facilities and offer services. In 1994, the government of Kenya set up the Kenya health policy framework paper (KHPF), which brought many changes in the healthcare sector and ensured there was steady supply of healthcare services which were acceptable, affordable and accessible to all (Muga *et al*., 2014).

The Ministry of Health and concerned parties came up with the Second Health Sector Strategic Plan (NHSSP-II) of year 2005 to the year 2010 in changing attempt to advance healthcare service provision (KIPPRA, 2016, MoH, 2013c). The aim of this plan was to promote healthcare service provision through all levels of healthcare services delivery. This structure NHSSPs rolled out to the public healthcare provision was set within ordered system. The dispensaries which are found in the rural areas are many in number and form the least level of healthcare service provision. District healthcare centres and provincial hospitals formed the lowest number in the healthcare system. At the highest level of provision of healthcare service is Kenyatta National Hospital (KNH) and it is the biggest public healthcare facility in Kenya (Noor*et al*., 2009). Dispensaries found at the community form the least in healthcare service provision. People in the villages are allowed to come up with their own precedence on healthcare services and the providers are supposed to enhance their priorities, possession and dedication. At the community level, there are healthcare committees which are tasked to promote and improve the primary healthcare services within their villages. Public health centres and dispensaries will provide essential healthcare services related to Kenya Essential Package for Health (KEPH) activities which are concerned with improvement and provision of essential healthcare services to the community. County, sub-county and tertiary hospitals will offer mainly healing and correction healthcare services to their clients.

For the last twenty years, there has been a change in policy guidelines and learning which has lead to adoption of the Kenya Essential Package for Health (KEPH) idea which was accepted in the year 2005. KEPH has supported the growth of action plan to improve public PHC. It has come up with remarkable effect on cost-efficient remedies for different age brackets and guides the types of healthcare services to be supplied at each level of the healthcare system. The strategy is still the only way public PHC services are provided in Kenya (Ministry of Health, 2014).

Kenya as a country chose to take-up a new constitution in 2020, which led to the creation of decentralized county government. This led to setting up of 47 counties which have their own system of governments and have some kind of self ruling as concerns budg*et al*location for healthcare services (MoH, 2013c). The MoH give guiding principles to promote

procedural guidance to essential national programs and is in control of the national referral hospitals and teaching hospitals. The new constitution started working in 2013 and brought changes in roles and responsibilities from a national to a county governments. The aim of decentralization of healthcare service delivery is to promote equal access to the physical facilities, thus promoting healthcare services supply to many Kenyans (Netherlands Enterprises Agency, 2016).

The public healthcare services provision in 2013, was transferred from the national government and Ministry of Health (MoH) to the county governments. From that time the MoH responsibility is only to give out support and technological leadership to the counties and also to control the healthcare service provision and the counties for the supply of healthcare services. The Kenya Health Sector Strategic Plan (KHSSP) guides the ministry of health and is done every four-year election cycle. Kenya has elections in the year 2020 after which there was a new cooperation between the national government and county government as regards public healthcare service provisions (MoH, 2020).

2.5 Access and Utilization of Primary Healthcare Services and facilities

According to Van Berg *et al*. (2016), they emphasize the significance of orderly structured public PHC system in ensuring that there is equal access to healthcare services and contribute the achievement of universal healthcare coverage (UHC) which ensures that all people receive all-inclusive and quality healthcare services when they need the services without financial problems. The trends in consumption may be used as the foundation for projecting future healthcare needs, general direction to predict healthcare services costs in the future or for offering healthcare personnel training and ensure steady supply. According to Bernstein *et al*. (2003), reaffirms that the consumption of rate of healthcare facilities services does not show what kind of services are consumed by specific people and cannot be used to show the rate of access and use of specific healthcare services and the worthiness of care.

Those who go to the healthcare facility, receives services such as tests, procedures, and surgery and get information for general healthcare from the healthcare personnel. The healthcare provision of services nowadays has experienced many changes over a very short duration of time for the last many years. The current innovations in technologies has been witnessed in the areas of drugs, equipments, ways of treating diseases, testing of diseases and imagery which has re-volutionalized the way healthcare services are given and where the healthcare facilities are constructed (Detmer & Gelijns, 1994). High consumption of ambulance surgery, has been enhanced by development in anaesthesia and analgesia and by the progress

of non-invasive or modestly enveloping techniques. Many cases performed on the patients which tool long period of time to promote healing of patients now take a short period of time to heal (Lumsdon, 1992). Presently discovery of new medicine which treats many sicknesses and can prolong the incidences of disease have been developed even though they are very expensive and discourage patients from accessing them. Some of these medicines are very expensive hence the poor cannot afford them leading to limited to access and utilization of healthcare services.

The private and public healthcare facilities have shown great achievement in diagnosing the causes of disease and disability, offering treatment and cure to the patients and encouraging the healthcare personnel to teach the communities on how to decrease the occurrence and frequency of main diseases and the purposeful limitations and uneasiness among the patients (KIPPRA, 2018. Actions to be taken by medical personnel have been created and supplied to healthcare service providers in order to follow the recommended ways of treatment. The public has been educated through campaigns in order to encourage patients to change behaviour in their life styles especially exercising daily, engage in weight reduction programs and treatment regimens that can lower and lead to control of the incidences of diseases and there effects.

In Kenya access to and utilization of healthcare services has undergone tremendous changes because the needs of the population have changed also. The factors that determine the need for healthcare services include aging, socio-demographic characteristics of the population, and changes in the occurrence and frequency of different types of diseases. As the incidences of persistent diseases increases, there is a home-based and village-based healthcare related service, which has been witnessed and has reduced healthcare facility visits (Bernstein *et al*., 2003).

Okunade & Miles, (1999), explained that the emergency of managed healthcare services and ways of paying for these services by insurers and other players is an effort to manage the rate of healthcare spending which has led to limited access and utilization of healthcare service. The employers in the healthcare system have recruited more health care personnel to ensure good management of patients and offer efficient healthcare services as well ensure major Medicare and Medicaid cost control efforts such as the prospective payment system for hospitals and the Resource Based Relative Value Scale for healthcare personnel payment have created incentives to move physical facilities to where services are provided (Gilman, 2000). They have also provided motivation by offering efficient healthcare services by providing these services differently through the increase of capital payment and use of

gatekeepers which has enhanced access to primary healthcare services (Chaix-Couturier *et al*., 2000).

A study in Ghana which was done on 30 employers for seven-years to assess of managed behavioral healthcare use, it found out that about 60,000 employees enlarged the overall use of mental healthcare services, improved the provision of system care and reduced lasting expenses for behavioral and healthcare services (Goldman *et al*., 1999). The main idea of healthcare consumption identifies predisposing, enabling, and want factors of healthcare services (Anderson, 1995). Predisposing factors comprise of the appetite to seek healthcare services such as whether the sick person customs accepts the sick role or encourages stoicism, and what types of healthcare services can be accessible for definite symptoms. Enabling factors comprise of healthcare insurance coverage, if a person can afford co-payments or deductibles, whether services are accessible and can be reached and other factors that allow one to receive healthcare services. The desire to access healthcare services also influences the consumption of the healthcare services but need is not always easily influenced without healthcare personnel prescription. A great number of people are not aware if they require healthcare services and what is most favourable time to seek medical care as many sicknesses are not easily diagnosed and treated. However if patients can access constant healthcare services needed by patient and offered by healthcare supplies will only affect healthcare supply, consumption, but be an hindrance to needed healthcare services, for example the presence of services and the rate of supply of those services, ability to pay and discrimination have serious effects on the access and use of healthcare services.

The main factors that influence access and utilization of healthcare services include; federal and state laws in United States of America (USA), rise in population, high number of people without insurance, inadequate access to medical providers, patient and provider's first choice. There is enough evidence from data gotten from Florida Agency for Healthcare Administration in USA which indicated that 70% of hospital visits were made by persons under age 45 years and that visits by females were 18.5% higher than males. The highest number of hospital visits had sharpness level which was from low to moderate, and the healthcare services accounted for the largest proportion of high-acuity of hospital visits. The leading frequent persistent major diagnoses were diseases of upper respiratory infection, middle ear infection and viral infection (O'Malley *et al*., 2005).

2.6 Dimensions of access and utilization of Primary healthcare facilities

According to Rosenstock (1988), the subject of access and use of primary healthcare services is classed together into five these are; availability, accessibility, affordability, accommodation and acceptability. These classes are used to assess and explain the current situation of access and utilization to primary healthcare service. Each class is explained and divided into simpler indisputable and irrefutable form.

Availability is to the extent which healthcare service provides facilities which meet the needs of the community (WHO, 2016). Campbell and Roland (2014) explain that the structure of healthcare facilities access can be as a result of a constituency of availability. Even if patients have access to adequate physical healthcare facilities there are other factors that hinder access to these facilities. These factors include, duration of waiting time before being attended by a medical personnel, waiting time before treatment or sometimes communication hindrance with the health facility personnel.

The area of residence of the patient is related to accessibility which can be determined by the distance in space covered by the patient, time taken to reach the healthcare facility, mode of transport used to access the healthcare facility, and type of road network among others factors are measured as physical accessibility of the patients in accessing healthcare facility. Research done by Talen and Anselin (1998) and Black and Ebener (2004) and Amer (2007) on physical accessibility to public healthcare facilities and healthcare service, found that accessibility influences the rate of consumption of healthcare services. Accessibility is the easiness of patients to overcome the length of distance to access healthcare services for themselves at specific healthcare facilities within space (Amer, 2007).

Physical accessibility can be explained using three main ways that is people, activities, and means of transport to reach the healthcare facility. The structure in Moseley (1979) explains that accessibility is different as compared to other qualities of each of these components and it is influenced by the relationship between the socio-economic characteristics of the population, those who use these services and spatial dimensions. To give a detailed explanation on the aspect of accessibility it can consists of one or more components mentioned above. Accessibility is looked at what time at which the service is available or which type of people are able to access and use the healthcare service. The hours of opening hour the primary healthcare facility and working hours of the healthcare personnel influence patients accessibility.

The financial aspects of the healthcare services offered at a healthcare facility influences the affordability. Even if healthcare facilities are adequate and medical care

personnel are enough in a place, if the services are expensive they cannot be accessed and used by vulnerable population. Nevertheless, if these healthcare facilities do not offer reasonable prices to their service, they will encourage patients to look for these services from other medical facilities which are far from them but offer cheap prices. Affordability takes into account costs of medical services like, doctor's fee, indirect costs like travel and medical costs that have impacts on the use and access of healthcare services. The other factors which also have influence in the access and utilization of healthcare facilities are, ownership and coverage of health insurance, public supports such as subsidized rate given to vulnerable groups.

Cultural and religious factors influence acceptability of healthcare facilities by patients. These factors which have influence on acceptability include; age, gender, education level, race and ethnicity. If the healthcare service supplied by providers meets the needs of the people in terms of gender issue, religious or cultural preferences, choose of a given healthcare facility and if the healthcare service provider and patients speak the same language. The perception of the patients also influences their personal opinion which might be different from people to people and different from religion to religion and from gender. When looking at this class of dimension, beliefs and prospect of different groups of people should be taken into account.

The excellence of healthcare services offered by providers and their personal behaviour influences adequacy of healthcare facilities to serve the population. To know whether the healthcare services given satisfy the patients and the patients have confidence on those services influence adequacy.

The above discuss classed dimension are interrelated and influence the overall access and utilization of healthcare facilities and services (Andersen & Mc Cucheo, 1983). To explain access and whether people use the available healthcare facilities and services and benefit from them can be explained by the above classed dimensions which have a bearing on how physical facilities are distributed across space. To understand more the difference between access to healthcare facilities and access to healthcare service the above factors must be considered together. Gulliford and Figueroa-Munoz (2002) explain the difference between these dimensions as influenced by availability of medical services, availability of medical facilities and the ability of people to afford these services together with organisational and socio-cultural obstacles to utilise healthcare service.

2.7 Determinants of Access to PHC Services

To discuss issues pertaining access and utilization of primary healthcare services, there is a desire to look at the key factors that influence access and consumption of healthcare

services. Looking at the available literature it shows, that developing countries use contemporary healthcare services that can be explained from three contending points of view.

Travassos *et al*. (2002) carried out a study in Brazil on ways of access and utilization of healthcare services using gender, family characteristics, and social status. Their research finding revealed that female utilized healthcare services more than male and family income and social status of the patients played an important role in the consumption of healthcare services. Cisse (2011) carried out a study in Co'te D'Ivoire on how individual household and community level factors that determine female use of delivery healthcare services. The research finding revealed that parity level, health insurance coverage, ethnicity, household wealth, educational level and religion were significance factors that influence the use of delivery services.

Zhang (2007) also researched on the relationship between social-economic status and use of healthcare services that prevent illness as regards cardiovascular disease and diabetes in Australia. The results from his study revealed that people with inadequate capital in society were less likely to use preventive healthcare services than people with high income. Birmeta *et al*. (2013) studied a survey to assess the factors that influence use of delivery services among the female in Ethiopia. From the research findings they found out that population, socio-economic and health related factors influenced the use of delivery services among female and children's clinic.

By the use of information from the third round of Indian counterpart of Demographic and Health Survey to establish the determinants connect with consumption of delivery healthcare services among married young women in rural India. Singh *et al*. (2012) carried out a study using 2005 and 2006 Zimbabwe Demographic and Health Survey to find out whether social-economic and cultural factors of pregnant women influenced the use of maternal healthcare services in Zimbabwe. Their research findings showed that factors of utilization influenced the consumption of maternal healthcare services in different ways.

Sari (2009) carried out a research to find out if socio-economic and population factors influenced delivery of healthcare use in Indonesia. From the research findings Sari found out that there was a positive correlation among the factors which influenced the consumption of delivery healthcare service. In investigating the factors that influence the consumption of children healthcare services and use of skilled healthcare personnel by pregnant women, De Allegri *et al*. (2011) found out that there was a significant relationship between 5 kilometre distance from the residence and the healthcare facility/ in addition, the religion, ethnicity, and

household income had insignificance relationship with children's healthcare services consumption.

According to KIPPRA (2018), in Kenya the main determinants in access and use of public PHC facilities across the county is distance and time taken to reach the nearest healthcare facility. It is also accepted that the residence must be over a distance of 5 kilometres from the nearest healthcare facility to ensure access to basic primarily healthcare services (WHO, 2016). Nationally the average distance to the nearest healthcare facility is about 3 kilometres and the average time taken to reach the nearest healthcare facility is one hour. Across the country, the distance covered to reach the nearest health care facility was between 1.4 kilometres and 52.6 kilometres while the time taken to reach the nearest healthcare facility was between 13.3 minutes and 93.3 minutes. In Kenya about 50% of the counties showed an average distance which was high compared to the national average distance which was lower, while 27% had high distance as compared to the expected standard. The distance that patients travel to reach a healthcare facility can be an influencing factor hindering the consumption of healthcare services (Ngugi *et al*., 2017).

McNamara *et al*. (2013) carried out a research to look at the correlation between age and other likely factors that influence the strength of service used in hospital, primary community and healthcare services in Ireland. From the findings of the study, aged people consumed more healthcare services than the young people. However, age itself had no significant impact on healthcare services utilization. A research to approximate the effect of socio-demographic characteristics on delivery healthcare services consumption in Ethiopia, Degne (2011) found out that social and population variables such as education level, household income, distance from the home and birth of a child were significantly related to the use of delivery of healthcare services.

According to Allotey *et al*. (2012), the socio-population characteristics of the patients influenced the inclination of a person to seek healthcare services. From the study socio-demographic characteristics of the patients are understood to influence the decision to seek healthcare services. This justification postulates that patients will act reasonably when looking at the most efficient way of achieving the given goal for example healthcare access and use behaviors (WHO, 2016). The crucial way of explaining this is that the patients with uniform socio-population characteristics will access and use healthcare services equally irrespective of their cultural setting. Little use of healthcare services is influenced by characteristics of the population such as level of education, profession and age (Vega, 2013).

Lawson (2004) carried out the research in Uganda to observe the factors influencing healthcare seeking behaviour in the rural areas. He carried out the research because of the introduction of paying fees to access healthcare services in Uganda. The aim of the study was to give good reason for the economical effect of user fees and level of income on accessing healthcare services in Uganda. He used variables such as gender, age, number of people in the house, level of education, income and religion as study variables. The results of these study showed that these factors influenced access and utilization of healthcare services in Uganda.

The study also revealed that more people in urban areas sought medical care services than those in rural areas. When divided into individual level characteristics such as level of income, high income was found to significantly increase healthcare access and utilization. In particular, people who were earning high income were found to access and use healthcare services more than people with low income. But there was no difference in utilization of healthcare services between women and men. This finding conquers with those obtained by Frederick (1998) in Tanzania. Further the findings indicated that age, user fees and distance had a significant relationship between seeking of treatment and the choice of healthcare service provider.

In Senegal, Lepine and Nestour (2011) used binary logit regression to study health care utilization in urban context. The main aim of the research was to understand the factors which influence the use of healthcare services by patients in urban Senegal. Households were interviewed by the use of stratified sampling procedure. The characteristics, which were used as independent variables, were household level of economy, educational attainment, and the cost of healthcare services. The study used a binary dependent variable, which was to show whether a patients' visit to a trained healthcare personnel occurred during the illness. The study findings indicated that, health insurance ownership, age, education, price, quality of medical care and household economy were key important factors which influenced the seeking of healthcare services.

In Uganda, Muhofah (2010) did a research and analyzed the factors that influence the use of healthcare services in Butalejah, urban district. The study examined the association between economic factors, socio-demographic characteristics, institutional factors and the use of healthcare services. From the research findings, there was an important correlation between age, sex, educational background, income, religion, household size and occupation of respondents and the use of healthcare services. Although basic primary education was highly correlated with increase in use of health care, education negatively influenced the decision to seek urban health care services in the study. The results were justified because the study was

based on preventive health care and not curative health care. More educated individuals may not regularly utilize health care services because they are more producers of health as compared to those who have basic primary or no education (Grossman, 1972).

In Zimbabwe, a related study by Kevany *et al*. (2011) was done on the relationship between socio economic status an the choice of health care provider care in Zimbabwe using 2005 – 2006 household survey data from Mutoko district. The objective of the study was to assess the impact of socio economic status on choice and uptake of health care providers. A total number of 5116 households responded where they most utilized medical care in case someone in their family was sick or hurt. The choices included traditional healers, pharmacies, government hospitals and private hospitals. The qualitative study based on Chi-square statistics found out that socio economic status measured by household assets had a strong association with both overall utilization of health care services and the utilization of specific health care providers.

Gunther and Harttgen (2012), explains the use of available healthcare services according to the cultural background which influences the consumption of traditional or convectional healthcare services. The cultural aspects and the utilization of healthcare services shows that the healthcare services need is not only influenced by physical presence of a diseases but also by the cultural judgment of illness. What is considered to a sickness by expectant mothers and children is influenced by culture (World Bank, 2012). The assumption which is fundamental for cultural rationalization, is that people may have no seriousness to certain healthcare sickness because they consider such situation to be usual based on their cultural thought and information about the illness (Ndavi *et al*., 2009).

Scarcity of resources is an important factor hindering healthcare service utilization where women are susceptible amongst the poor in the third world countries like Kenya (WHO, 2015a). This has contributed to the lack of capability to pay for transport to healthcare facility for both preventive and healing services and other added costs (O'Donnel & Wangstaff, 2008; Vega, 2013). Lack of resources reduce people's choices and frequently cause obstacle in accessing suitable healthcare services for example where finances are required to be used on a member of the family who may not be well prepared for emergencies which may arise (WHO, 2015b). There is evidence whish shows that household income has positive effect on the use of healthcare services (United Nations, 2014). There is evidence that rise in income as shown the increase in demand of healthcare services in Burkina Faso (WHO, 2010) and Thailand (Harpham, 2009). Income has also positive effect on the consumption of immunization services

in Ghana (WHO, 2014). Factors influencing access to primary healthcare services are illustrated by the following framework, Figure 2.1.

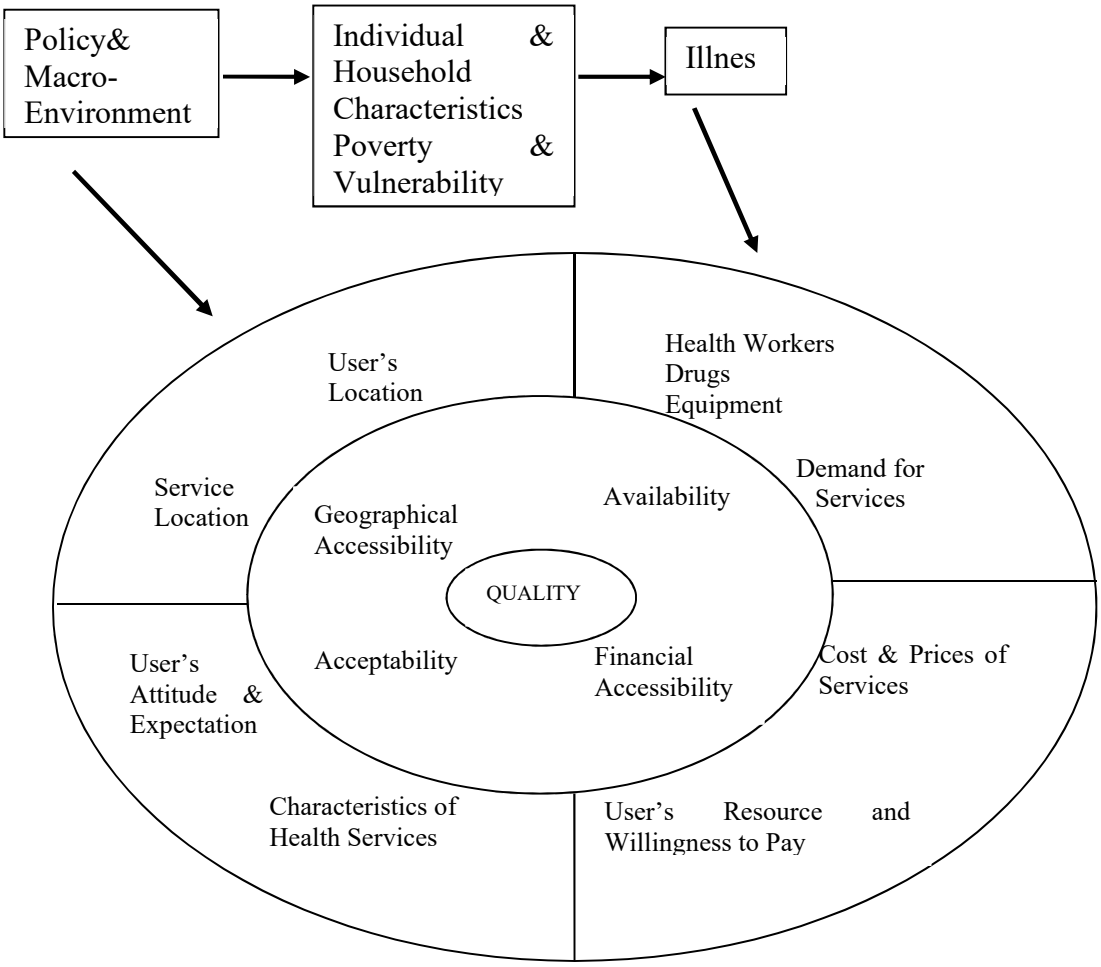

Figure 2.2: Determinants of Access to PHC Services

Source: Peters and Davis (2008)

2.8 Kenya's Health Insurance Coverage

In Kenya, health insurance is a way of protecting oneself from disastrous financial losses involved in having to pay for health services when unanticipated illness or injury occurs. According to Ministry of Health (2013), merely 1 person out of every 5 Kenyans at 17.1% have health insurance cover. This indicates an increase from 9.7% to 10% coverage in 2003 and 2007, respectively. The National Hospital Insurance Fund (NHIF) covers about 88.4% of the population, while private insurance covers 1.3% and 1.0%, of the population respectively. The urban population have the highest insurance coverage at 26.6% compared to rural populations at 12.1%. The NHIF is essential for those who are employed and covers about 2 million members. NHIF coverage in rural areas is at 92.2% while in urban areas is at 85.2%. Private

insurance was second in terms of coverage at about 4% for those residing in rural areas and about 14% of those residing in urban areas. NHIF covers 2.9 million Kenyans who are employed and earning salary and also covers 4 million in the casual labourer sector by using Health Insurance Subsidy Program for the Poor (HISP) (Netherlands Enterprises Agency, 2016).

In Kenya, healthcare insurance access is related to those who are rich (KNBS, 2013). The people with high-income access higher healthcare insurance coverage at 41.5% compared to the poor at 2.9%. looking across all income groups, the majority of Kenyans were covered by NHIF at 92.9% of the poor people and at 83.0% of the rich people. Rural-based insurance covered mostly the middle wealth people at 2.8% while private insurers covered the rich at 17.0%. There was enormous gaps in insurance coverage which was observed among counties. The coverage was high in Kiambu at 34.0%, Nyeri at 32.9%, Nairobi at 31.9%, Kericho at 31.5%, Kirinyaga at 29.0%, Bomet at 25.4%, and Laikipia at 23.1%. Lamu had the lowest at 6.7%, Samburu at 6.7%, Trans-Nzoia at 5.4%, Tana River at 5.1%, Kwale at 4.6%, Turkana at 6.7%, and Marsabit at 1.8%, (KNBS, 2013). Private Health Insurance sector has grown tremendously during the last 20 years with private insurers going up to 1.5 million. The penetration of the private healthcare insurance all over the country is about 2% of the total population and is divided into insurance companies underwriters and Medical Insurance Providers (MoH, 2013c).

MoH, (2014b), indicated that those who seek outpatient services for insured were low compared to with those without insurance registered the same number of visits per capita to the healthcare facilities, whish indicated that insurance was not important factor in explaining the demand for outpatient healthcare service. Nevertheless, there was high consumption of healthcare service of those who were admitted and had insurance cover at a rate of 76 admissions per 1,000 of the population compared with those without insurance cover at 30 admissions per 1,000 of the population. This shows that insurance cover promotes access and utilization of healthcare services. For the government of Kenya to reduce the cost and ensure universal access to quality and affordable healthcare by 2022, it must ensure that all Kenyans are registered under the NHIF medical insurance cover. This will call for corporation between the NHIF and private sector insurance providers and review the rules governing private insurers, to lower the cost of cover and ensure both the government and Kenyans are protected from fraud and abuse and to encourage private insurers invest more in providing medical cover (GoK, 2017).

2.9 Perception of Need Determinants

In Kenya, all healthcare providers and programmes have irresistible weight on quantitative portion of service delivered which means that in the process of achieving required targets, we ignore the concept of superiority of healthcare which is the basic right of patients (Kutzin, 2013). Health care providers and programmes all over the world have increasingly acknowledged that the excellence of healthcare they provide determines their overall achievement in attracting the patients and meeting their needs. (Chuma & Okungu, 2011 Obrist *et al*., 2007).

Sahn *et al*. (2002) in their research in rural Tanzania established that quality is a significant factor for the demand of healthcare services. The desire for more healthcare services will increase if patients have a choice to see a better doctor or nurse, get access to pharmaceuticals, and attend a health center, clinic and dispensary that is cleaner, has a toilet and water, and a roof. Their research also established that patients in rural Tanzania are highly reactive to the price of healthcare services and that this reaction is greater for patients at the lesser end of the income supply. When prices of services are costly, there will be a sheer reduction in the consumption of healthcare services.

A study carried out in Cote d'Ivoire by Alimatou (2011) describe the reason for reduction in healthcare service use by expounding factors of alternative to healthcare providers using multinomial logit model. The results indicated that the education level of the household head, households' income, price of medication, and time to reach the healthcare provider influence the selection for a precise healthcare provider. They also found out that level of education and income positively determined the choice of healthcare provider, while the cost of prescription and the time to reach the healthcare provider affected negatively the choice of healthcare provider. Another research by Arega and Ababa on demand for curative care in Jimma town in Ethiopia found out that level of health status, number of children in the family and the accepted maximum use of healthcare services were important factors that determined household's decision of choosing modern medical treatment (Arega & Ababa, 2003).

Arega and Ababa (2003), confirms that the level of health status negatively influence the choice of modern medical treatment whereas the number of children in the family and the expected maximum use determined the preference of modern medical treatment positively. From this study, it showed that the selection of healthcare providers indicates that the use, the patients' age and interpreted quality of treatments are significant factors that influence the demand for curative health care. The fact that utilization is a significant factor of the demand for healthcare providers it implies that household income, direct and indirect costs are

important factors of the demand for curative health care (WHO, 2013). To calculate the impact of these variables, the researcher computed arc price and arc waiting time elasticities for both public hospital and private providers. The result showed that the demand for curative healthcare is affected by the price.

A research study by Amarech (2007) examined the factors influencing healthcare provider choice of urban households of Ethiopia. The study investigated the effects of user fees on the demand for healthcare services by different segments of socio-economic group. The results of this study showed that for any given rise in healthcare cost, there was reduced demand by the poor for healthcare services compared to the higher income population. Hence, an increase in user fee was likely to impact on the largest of segment of the poorest households from seeking healthcare services.

People's regard about the excellence of healthcare services always determine if they will seek and continue to using healthcare services (MoH, 2007; World Bank, 2002). Being insubstantial in nature, the understanding affects the quality rating in service supply (Chuma & Okungu, 2011). The public health sector in Kenya is overwhelmed by irregular demand and perceptions of poor quality (Ministry of Medical Services (MoMS, 2012a). All over the country, the underutilization of existing facilities is of important concern. Information about village regard with the needs and prospect of the community about the health care services can help in enhancing delivery and increased utilization of healthcare services (RoK, 2008). The choice to use available healthcare services depends on people's understanding of the services offered. People's perceptions and decisions are always influenced by their traditions and culture which are considered significant and perceived competency of the healthcare personnel (Luo & Wang, 2003). Perceptions are influenced by the patients satisfaction with the healthcare services and their judgment of the approach of healthcare personnel, which will determines if they would come back in future (UN, 2014).

WHO (2015) explains that to achieve universal health for the population, it is important that all stakeholders understand the people's outlook of healthcare service provided to ensure thriving interventions. This is crucial in coming up with suitable promotional messages and campaigns, aimed at creating demand for particular health interventions. Figure 2.2 shows community perceptions of health systems components and how they influence healthcare outcomes.

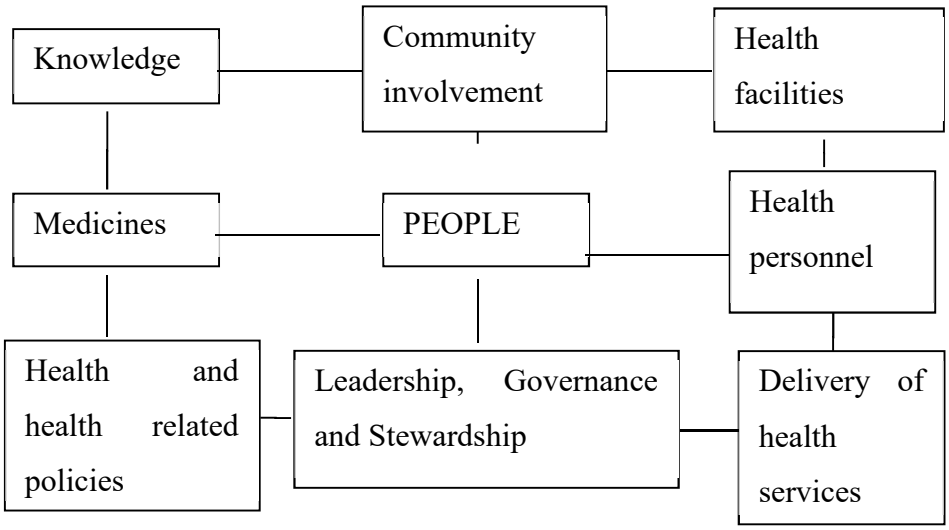

Figure 2.3: Community Perceptions of Health Systems Components

Source: WHO(2013).

2.10 Patient Perceptions on Quality of Services

The perception of those who are sick is to know by use of senses or mind, the outlook of something and event (KIPPRA, 2018). Perception stresses that the sick people are able to understand the services provided and how they meet their needs.

The patient's contentment was found to be the most important outcome measure of the healthcare. This includes the patient's perception on whether the healthcare facilities have met their needs. Argentero *et al*. (2008), carried out a research in order to understand why patient's perception on contentment of the quality of healthcare services is essential. He integrated 4 sick people aspects which included access to medical information, emotional relationship with health care staff, performance of dialysis center staff, and organizational aspects of healthcare service. An investigation of how sick people understand the perception of quality of healthcare services indicated that courtesy and kindness of staff, but proof of challenges facing the organizations and structural factors was an important hindrance to patients' satisfaction. On the other hand, the most crucial aspect was the supply of information. There was a significant relationship between staff personal achievement and understanding about the quality of healthcare services and a significant negative relationship between staff emotional fatigue and patient contentment. There was no significant relationship between staff personal abilities and supposed excellence of healthcare services. In order to come up with a solution on how to prohibit the healthcare personnel suffer exhaustion may cause patient to be contented with the

healthcare services provided. From the results also their was evidence that patients value open conversation, acknowledgment as a exceptional people, friendly warm personality, giving gentle contact and the presence of health professionals during service delivery. Healthcare personnel need to be aware of the strengths and weaknesses of the services they provide from patients point of view, improved patients' service needs and improve the value of healthcare service providers in order to promote patients' dissatisfaction.

Bazant and Koenig (2009), carried out the research in Nairobi, Kenya with an intent of quantifying female with maternal services in slums. The study also looked at description of women who deliver in healthcare facilities whether they are contented. The research variables incorporated, access to the facilities, provider sympathy and location of facility relative to the outcome variable, which was the sick people's contentment. From the study, the result indicated that healthcare services and healthcare personnel's attitudes powerfully influenced the understood the value of healthcare services thus patient contentment. Consequently, in promoting quality of healthcare services, healthcare managers and those who are involved healthcare matters need to perfect and improve the quality healthcare services. It was established to be done by the healthcare personnel by identifying the causes of discontentment and challenges faced in delivery of quality healthcare services especially those that may not be provided.

Hu *et al*. (2011) carried out a study to establish how overall patient contentment and patient dependability correlate with the healthcare service quality attributes supplied in Taiwan. The study looked at how patients' contentment was affected by patient dependability, understood quality of healthcare services, healthcare personnel capability and competency. The results showed that patient contentment was unconstructively affected by patients' complaints. Patients' dependability proved to be self-determining of patients' contentment and patients' complaints, which may have been caused by the obstacles put on to discourage patients from seeking another healthcare service provider. The most important result from the study showed that perception of the patients towards is based on how professionally the healthcare personnel handle the patients or their ability to handle complaints and the skills they have towards their work. The understood healthcare service value offered in a hospital affects the patient's contentment, confidence and consequently its performance.

A study was carried out in Kenyatta National Hospital in Kenya with the intent to ascertain factors affecting provision of quality healthcare services in the Public healthcare facilities (Wanjau & Wangari, 2012). The researchers looked at how healthcare personnel competence, technology, communication and financial resources affected outcome variable i.e.

quality of healthcare service delivery. The study findings showed that low healthcare personnel capability led to a reduction in provision of healthcare service quality in public healthcare facilities while lack of enough technology embraced in supply of healthcare service led to a reduction in provision of healthcare service quality. The unproductive communication ways influenced supply of healthcare service quality in public healthcare facilities while inadequate financial resources resulted to decline in the supply of healthcare service quality. This inferred that low healthcare personnel competence, low technology taking up, unproductive communication ways and inadequate fund affecting delivery of healthcare service quality to patients in public healthcare facilities, affect healthcare service quality perceptions, patient contentment and dependability.

Dang *et al*. (2013) conducted a research with the aim to examine the link between supposed quality of healthcare and observance to HIV care. The study examined how perceived healthcare service quality affected HIV containment indirectly through preservation in HIV care and observance to HAART. The result variable, supposed service quality was based on one modified from the Consumer Assessment of Healthcare Providers and Systems survey and one tailored from the Delighted-Terrible Scale. Consequently, interventions to advance the quality of healthcare knowledge, without essentially targeting objective medical performance measures, could serve as an inventive method for optimizing HIV outcomes.

According to the research by Maina (2014) to find out the effect of patient understanding on performance of Karen Hospital in Kenya. The study intended to determine how hospital healthcare personnel affected patient's contentment on healthcare services, the price of healthcare services and supposed quality of healthcare. The observation on price had a frail constructive relationship with perceived quality of healthcare services. Perception towards hospital healthcare personnel had a well-built relationship with quality of healthcare services. These findings showed that perception towards the hospital healthcare personnel was significantly related to perceived quality of healthcare services. Patient understanding on the quality of healthcare services offered has a significant relationship with hospital performance and patient contentment. Change in performance of hospitals can be attributed to patient perception on the price of healthcare service, hospital healthcare personnel and quality of healthcare service. This showed the important function played by the patient perceived quality of healthcare service.

2.11 Human and Medical Resources at Healthcare Facilities

2.11.1 Health Care Facilities

According to Kimathi (2017), for patients to access and use healthcare services there must be presence of healthcare facilities. In Kenya, healthcare facilities have increased from the low of 8,616 facilities in 2013 to 11,324 in 2017. This has increased the number of physical facilities country wide from 19 to 24 healthcare facilities per 100,000 populations (MoH, 2017). Dispensaries and health centres are the majority of healthcare facilities at about 80%, and they offer primary healthcare services while the other healthcare facilities consist of 20%. These facilities cover sub-county and county hospitals and they provide services to the patients who are referred from lower levels. Referral healthcare facilities also provide highly specialized healthcare services, they also offer training and research services (Wamai, 2009).

Healthcare facilities are inequitably spread across the forty-seven counties. In Kenya, there are 65 public healthcare facilities as compared to a total 4,929 private healthcare facilities (MoH, 2014a). In Kenya, it is only 18 per cent of pregnant mothers who give birth at a healthcare facility as compared to the national average of 61.2 per cent of pregnant mothers. About half of the counties in Kenya have limited healthcare facilities approximately to two healthcare facilities per 10,000 people and limited to a distance of 4.2 healthcare facilities per 100 square kilometres. Mombasa and Nairobi with high population of 134 and 124 healthcare facilities per 100 square kilometres respectively but have inadequate healthcare facilities per 10,000 people that are 2.9 and 2.4 respectively. Marsabit, Tana River and Isiolo have the lowest number of healthcare facilities per 100 square kilometres, but high numbers of healthcare facilities per 10,000 people (MoH, 2013a). Despite the fact that these counties may have an adequate number of healthcare facilities for the population, patients travel long distances to arrive at a public healthcare facility (Muoko & Baker 2014). Further than the number of healthcare facilities, there are also huge gap between the numbers of healthcare personnel per county offering healthcare services in these facilities. On the whole, the ratio of healthcare personnel to the population falls below the WHO recommended 230 per 100,000 people (GoK, 2010).

The number of healthcare facilities has been 22 healthcare facilities per 100,000 population in the last four years (Kiambati *et al*., 2013). There are inadequate healthcare facilities for example in arid and semi-arid areas. This has contributed to inadequate access and congestion in the few existing healthcare facilities. Lack of enough healthcare facilities limit the number of patients admitted hence reduces the number of healthcare services offered to the patients. The number of healthcare facilities has increased since the time of decentralization of

primary healthcare system (MoH, 2014c). Many counties have few healthcare facilities as compared to the recommended WHO number of healthcare facilities per county. It is only 7 counties who have enough healthcare facilities to cater for the needs of the patients and the rest of the counties have less than 50% and other are below the required norm. Lack of supply of adequate healthcare services is due to lack of funds to construct physical facilities in under-served areas (Ministry of Devolution & National Planning, 2015). On the other hand, during the first four years of decentralization of healthcare system, counties have built many new healthcare facilities, which have promoted access and utilization of healthcare services.

The number of beds and related equipments in the healthcare facilities in Kenya influences the ability of these facilities to offer efficient healthcare services by healthcare personnel to targeted patients. The number of hospital beds in Kenya range from the high of 39 to a low of 7 beds per 10,000 population. Quite for a long period of time, the number of beds has not increased with increase in population thus limiting inpatients admissions (MoH, 2017).

2.11.2 Health Workers in Primary Health Care facilities

The increasing population by at least a million more persons each year coupled with the increasing disease incidences in Kenya is raising the demand for more health workers within the primary health care facilities. In addition to population and disease burden, the dynamic nature of health care service requirements has raised the demand for more trained healthcare workforce (Ministry of Devolution & National Planning, 2015).

There are disparities in carders of health care workers at public and private primary health care facilities across counties in Kenya. However, the number of registered medical personnel has been increasing gradually in the country. For instance, the number of registered medical personnel increased at an annual average of 8 per cent between 2013 and 2016 (MoH, 2014b). A population of 10,000 in Kenya is served by 0.25 healthcare personnel compared to the WHO standard of 3.0 healthcare personnel per 10,000 people (WHO, 2016). The shortage of healthcare personnel in 2015 was 3,801 while on the area of clinical officers and nurses the shortage was at 6,696 and 40,468 respectively. In county hospitals and national hospitals, there were 12,300 and 7,700 healthcare personnel respectively. The reasons for inadequate healthcare personnel in the healthcare sector was due to some healthcare personnel who had taken over administrative positions in the healthcare sector (Kinuthia, 2016).

Nairobi and Central Kenya counties have more healthcare personnel as compared to those in rural and disadvantaged areas. According to the constitution of Kenya, county

governments are supposed to recruit and employ healthcare personnel. Every county has a public service commission whose work is to employ public servants using the guidelines of the Act of Parliament (GoK, 2010). In order for the country to offer sufficient primary healthcare services, it has to have a higher number of doctors and nurses. The number of doctors per 10,000 people in the 47 counties is between zero in Mandera and two in Nairobi. This is very low compared to the national norm of 3 healthcare personnel per 10,000 people (MoH, 2013b). The number of nurses in counties range from 0.9 per 10,000 people in Mandera to 11.8 per 10,000 people in Isiolo. Currently, it is only four counties in Kenya who have the required number of 8.7 nurses per 10,000 people (MoH, 2013c). This implies, counties with higher number of doctors are likely to have higher number of nurses. The lack adequate healthcare personnel in many counties have caused many strikes in the healthcare sector in several counties. In the year 2015, more than 22 counties had their healthcare personnel downing their tools and one of the reasons they gave was being overworked due to low number of healthcare personnel (Kariuki, 2014). Some of the reasons which have led to shortages of healthcare personnel was inadequate finances to employ more healthcare personnel and lack of laid down guidelines to put the healthcare personnel in their required cadres.

Most of the challenges facing the healthcare personnel are the once dealing with breaking down the personnel to their areas of specialization. Most of the healthcare personnel moved to other counties of their special interest leading to significant shortages of healthcare personnel in other counties. This was due to decentralization of healthcare services to counties whereby counties were required to employ their own healthcare personnel and also manage their own health sector. Currently about 30% to 40% of doctors who graduate from Kenyan colleges move to other countries where there are good working conditions and higher pay (Magokha, 2015). According to 2013 to 2018 Kenya five year health sector human resource strategy paper, currently the country does not have a general cancer doctor in public hospitals. This is very discouraging looking at the number of cancer patients who are diagnosed every year at an average 112 cancer patients everyday (MoH, 2014b). Currently, there is a critical shortage of healthcare personnel in other areas like medical engineering technologists and gynaecologists in the public healthcare facilities. Most of these very important healthcare personnel have been deployed in national referral hospitals or in the counties with highest-ranking level 5 hospitals hence, depriving other healthcare facilities critical personnel.

Unpleasant training of healthcare personnel, comparatively high population growth rate and death rate including movement of healthcare personnel, leaving and aging of the workforce are recognized as the main factors causing insufficient healthcare personnel in Kenya. These

factors have made the WHO to categorize Kenya as one of the 57 healthcare personnel for health catastrophe countries based on the fewer healthcare personnel compared to the population (Mwangi, 2013). In order to be familiar with the number of healthcare personnel requires information on active healthcare personnel, annual new graduates and immigration and emigration of healthcare personnel and losses of healthcare personnel who are still working.

Between 2011 to 2013, following decentralization in Kenya, there was an outstanding increase in number of healthcare personnel. Nevertheless, the number of healthcare personnel per 100,000 of the population did not change considerably (Mwamuye & Nyamu, 2014). Kenya's healthcare personnel scarcity is witnessed across the counties in the Arid and Semi-Arid Lands (ASALs) (Ministry of Devolution & National Planning, 2015). Consequently, these counties have inadequate skills and capability constraints for their existing healthcare personnel. The ASAL counties do not have enough healthcare personnel among the six listed cadres based on WHO standards and it is at 79%. The critical shortages are in the area of clinical officers at 93% and doctors at 82%. Gender distribution of healthcare personnel in these counties indicate that there was a problem of leaving work, which was influenced by that cultural factors. About 65% of all healthcare personnel were male whereby laboratory technicians were the majority at 91%, clinical officers at 84% and doctors at 75% respectively. Nationally, in 2013, there were 59.8% female healthcare personnel but the doctors' percentage was a low of 29.9% (MoH, 2013b).

There is a huge difference in the distribution of healthcare personnel in Kenya as well as in most counties. Nairobi has the highest number of healthcare personnel as compared to other counties and some rural areas. There is lack of enough training in rural areas, which hinders progression of healthcare personnel hence discouraging many to work in these areas. The rural areas also lack adequate social facilities such as schools and good transport, which also discourage healthcare personnel to enjoy working in these areas (Patrick, 2013).

In addition, most counties still have not met the required standard of the number of healthcare personnel. From 2015 to 2016, there is evidence that only two counties met the norm of 3 healthcare personnel per 10,000 population. There has been an improvement of number of the number of healthcare personnel from 0.25 per 10,000 population in 2012 to 0.6 per 10,000 in 2015 to 2016. This increased number of healthcare personnel is attributed to increase in employment and deployment of healthcare personnel by counties and national government at the time of decentralization (MoH, 2014b).

Most counties are building more healthcare facilities without having enough healthcare personnel to work in these facilities. In addition, counties have procured sophisticated healthcare equipments but lack proper human personnel to man them (Olugo, 2015). About 25% of the counties confirmed that they have enough healthcare personnel in their healthcare facilities. There was also disagreement with the distribution of healthcare personnel with only 53.1% of the counties agreeing that healthcare personnel were uniformly distributed across healthcare facilities while about 50% had the correct number of healthcare personnel (Ministry of Devolution and National Planning, 2015). There was shortage in competence of training, capacity building and general healthcare personnel improvement. Throughout the country, there is urgent need to employ more healthcare personnel and make sure they are well distributed across the country. This can be done through efficient employment and more institutions allowed to offer training to their healthcare personnel and capacity building programmes. Emphasise must be employing healthcare personnel based on the needs of healthcare facilities and needs of each county.

2.11.3 Health Equipment

Apart from drugs, medical equipments are very essential in offering healthcare services to the patients (Stanfield, 2002). Nevertheless, access to proper working medical equipment is a problem to the third world countries with inadequate capital (Moimane *et al*., 2016). Many healthcare facilities do not have enough information on the available and important medical equipment (Stanfield, 2002). Most of the third world countries about 50% to 80% of their medical equipment are in poor conditions and even some not working at all (WHOM, 2010). Most of primary healthcare facilities in Kenya about 86% have the lowest number of medical equipments whereby private hospitals and urban public healthcare facilities have many equipments (KIPPRA, 2018).

Primary healthcare facilities do not have the same number of medical equipments as this is determined by the level of the healthcare facility, number of healthcare personnel in the facility and the skills of the healthcare personnel who will handle these equipments (Stanfield, 2002). A good healthcare system in any country provides essential medical equipments to the communities which leads to the delivery of quality healthcare services to the patients (Moimane *et al*., 2016).

According to KIPPRA (2018), there are critical shortages of healthcare equipments in most PHC facilities. The highest number of equipments was witnessed with the mobile clinics,

which showed the highest percentage of adequate facilities. Most of the county referral hospitals all over the country were procuring their medical equipments to ensure provision of efficient healthcare services to their people. Exceptional renovating of healthcare facilities was in the area of renal units, ICU units and construction of dispensaries in counties to improve access to primary healthcare service (MoH, 2014a).

Healthcare personnel, use many different methods and medical equipments to mange and treat diseases (Story, 2010, National Research Council, 2010). A medical equipment is an essential tool, which is used by healthcare personnel to diagnose diseases, treat complicated ailments and prevent diseases before they become severe and life threatening (U.S. Food and Drug Administration, 2009). On the other hand, Moimane *et al*. (2016) explained that medical equipment are necessary healthcare involvement tool used by healthcare personnel to control, diagnose, monitor and treat diseases. These equipments consists of a machine, instrument, appliance, software or material, which can be used to diagnose and treat ailments before they become complicated and life threatening (WHO, 2010).

The basic health care equipment in all PHC facilities include child or an infant scale, adult scale, thermometer, stethoscope, sterilizing equipment and refrigerator (KIPPRA, 2018). According to Stanfield (2002) the basic medical equipment are required for general tasks that are carried out in all health facilities; diagnosis; general patient treatment and care; and boiling and sterilizing. The medical equipment in the category are the general staff equipment including apron, gloves, cotton wool buds, applicator sticks, measuring jug, stretcher, examination couch, screen, water filter, safe water, liquid drugs and some laboratory reagents and stains and toolkit.

The diagnosis equipment include: thermometer for measuring body temperature; sphygmomanometer and stethoscope for measuring blood pressure [BP]; adult and infant scale for weighing patients; height measuring board; spatula a tongue depressor for examining the mouth and throat; ophthalmoscope for examination of eyes (internal and external); Auriscope (otoscope) for examination of ears; and spinal needles (lumbar puncture needles) for Diagnosing meningitis.

The patients' treatment and care equipment in PHC facilities include oral rehydration solution spoon for making and giving oral rehydration solution or sugar-salt solution; medicine spoon; measuring cylinder; tablet envelopes and bottles for dispensing liquid medicines for dispensing medicine; feeding tubes, needles and syringes for giving general injections.

There are also some equipment required for dressings, minor surgical procedures and providing first aid to patients in the event of an emergency. They include bandages (cotton gauze; elastic; triangular bandage; and adhesive bandage), cotton absorbent; dressing pads as a protective second pad, adhesive tape, dressing set a box, gallipots, cotton wool and swabs, drum (compresses, cotton wool).

In order for the medical equipments to continue working properly and offer efficient services it must be serviced and well maintained in regard to the manufacturers manual (Republic of South Africa, 2011). Well maintained medical equipments works for a long period of time and reduces the costs associated with acquiring a new medical equipment. Most hospitals their equipments are defective and sometimes not in a proper working condition due to lack of proper maintenance plans and can lead to damage and loss of life (Gregory, 2014). In order for the equipments to work for a long period of time and offer efficient services, hospitals should ensure that they are well maintained and kept to avoid failure to work when they are urgently required or needed by the patients.

2.12 Spatial Coverage of PHC Services

The primary healthcare, are services accessed by households as the first formal healthcare services. It made-up of dispensaries and health centres as the key healthcare facilities that offer healthcare services. This level supplies healthcare services for both preventive and curative requirements of the people. At primary level, the ease of access of healthcare facilities is a significant matter, which does not call for overemphasizing (WHO, 2016). The distance to the nearest healthcare facility is one of the determinant, which has an effect on the choice to look for healthcare services in urban areas. The primary healthcare level serves as the first contact point between the patients and the healthcare services hence should be accessible to all people within the community. Physical accessibility to healthcare services and healthcare facilities is inaccessible to many people in urban areas as patients cover long distance to reach a healthcare facility (Van Berg, 2016).

One public health centre is supposed to offer service to about a 1,000 people and the anticipation is that people should live within 0-2 kilometres of walking distance to the nearest healthcare facility (WHO, 2016). In Nakuru, town primary healthcare facilities are not uniformly distributed as some wards have no dispensaries and health centres (KNBS, 2013). Furthermore, availability of village community healthcare personnel at the primary healthcare facilities plays an essential role in reducing physical accessibility of healthcare services. The

reason is community healthcare personnel offer treatment to the people in the case of minor illness (MoH, 2013a).

According to the 2009-2013 National Health Strategy, one healthcare personnel is supposed to offer services to 100 households (MoMS, 2012b). On the other hand, only 46% of urban households have access to community healthcare personnel in their wards in Nakuru town (KNBS, 2013). Additionally, the presence of community healthcare personnel at primary healthcare level can contribute to timely access to public information and education on healthcare services (WHO, 2016).

According to UNICEF (2015), the allocation outline of primary healthcare facilities determines the consumption rate of healthcare services in urban areas. This state of affairs is facilitated by the fact that distance is a key factor in the use of healthcare facilities (WHO, 2014). Research on utilization of healthcare services in the Ahafo-Ano South District of Ghana, done by Buor found out that the pre-eminence of distance by using a sample of 400 households from ten settlements, revealed that distance was the most important factor. The other factors he identified influencing utilization of healthcare services were level of income, treatment cost and level of education (Buor, 2004). A further research in Nigeria by Onokerhoraye 2010, found out that the layout of public PHC services in Nigeria are affected by high inequality. Some of the primary healthcare facilities are concentrated in one geographical area as compared to other areas. Thus, this has resulted in spatial disparity that witnessed all over Nigeria (Onokerharaye, 2010).

2.13 Situation Analysis of PHC Services in Developing Countries

The increase in the number of people, growing poverty levels and lack of adequate healthcare facilities within the urban areas in third world countries has contributed to lack of enough and unbalanced basic healthcare services (Kutzin, 2013; Vega, 2013). One of the vital importance of healthcare service supply is to achieve social and spatial justice (WHO, 2010). Consequently, healthcare facilities are supposed to provide healthcare services which consists of observational, diagnostic, research and therapeutic and rehabilitative services to the public. Enough and efficient allocation of healthcare facilities contributes immeasurably to healthcare service provision and needs of the patients.

According to WHO (2016), a rough calculation shows and deficit in the supply of healthcare personnel at 4.3 million while 57 countries portray a significant shortage which include shortfalls of 2.4 million doctors, nurses and midwives. In addition, there are many problems facing healthcare personnel which is obvious not only in shortages of healthcare

personnel but also in unbalanced distribution, poor training capacity, skills and skills mix deficits, and weak managerial systems. According to McNamara *et al*. (2013), after gaining independence, most sub-Saharan Africa countries tried to provide universal healthcare services to all people by use of primary healthcare system. Nevertheless, the rising circumstances where the number expected of public healthcare systems is going down because of the increasing demand basic healthcare services (De Allegri *et al*., 2011).

The provision of enough basic healthcare services in third world countries is becoming more and more difficult. The rising in the number of people, prevalent poverty and lack of financial resources to built healthcare facilities are recognized as key factors accountable for poor healthcare delivery services in the third world countries (WHO, 2014). As concerned the healthcare system, much worry has been expressed regarding to the outline of allocation of healthcare facilities and level of utilization. According to James and Muchiri, (2009), the layout fairness in healthcare facilities indexes accessibility. However, access to healthcare facilities is a purpose of how physical healthcare facilities are laid out across a region.

Accessibility in this circumstance has a spatial matter and signifies the ease with which possible healthcare seekers access to healthcare facilities where healthcare services are found. The past National Development plans have shown challenges in unbiased distribution of healthcare facilities in the country while regional studies have established the continuation of disparity in the distribution of healthcare facilities in Kenya (MoH, 2013d). The national health policy aims to attain healthcare access for all Kenyans based on the national philosophy of social justice and equity has clearly enunciated in the Kenyan health policy of 2014 – 2030 (MoH, 2014b).

The principals of social justice and equity and the ideals of freedom and opportunity have been confirmed in Kenya's constitution of 2010 (RoK, 2010). Therefore, the national health policy was formulated, using the national objectives and philosophy. In conclusion, the primary healthcare is adopted as the means of achieving the national goal of social justice and equity. As defined in Alma-Ata Declaration of 1978, primary healthcare services ensures that communities are close as possible to healthcare facilities (WHO, 2016).

While accessibility of healthcare facilities does not assure the consumption of healthcare services. Utilization is a very important gauge of healthcare status, health-seeking behaviour, and cost and quality of services (MoH, 2013a). The 2007 Kenya Household Health Expenditure and Utilization Survey showed that overall consumption of healthcare services by patients was 77.2% meaning that 22.8% did not seek healthcare services. The national consumption rate was 1.92 visits per person annually, with women showing a higher access

and use rates than men at 2.1% and 1.7% respectively. In addition, more people in urban areas reported being ill than people in rural areas at 19.5% compared to 16.9% and were more likely to use healthcare services at 81.5% as compared to 75.9%. However, cost of healthcare services remains a hindrance as those who were sick but never sought after treatment mentioned high cost of healthcare services at 44% and distance to reach the healthcare facility at 18% as the main obstacle access healthcare services (KNBS, 2011).

2.14 Gaps in the Literature

Powerfully built PHC system is very important to advance population health, still PHC services are not all the time easily reached in the rural and urban areas (United Nations, 2014). There is enough evidence to substantiate that access to efficient healthcare is significant challenge in Kenya. In many towns, patients suffer and die from ailments for which there exist treatment. Many towns in Kenya, are faced with many problems in the healthcare sector, as regards to funding, employment and deployment of health workforce (WHO, 2013).

Lack of coordination and responses across various levels of government are partly responsible for internal crises amongst healthcare personnel. Kenya has witnessed several healthcare workers boycott in the last 12 months, including all cadres of healthcare personnel. Recurrent healthcare personnel boycott culminate in the closure of public healthcare institutions denying Kenyans access to quality healthcare services (WHO, 2016).

The most important role of healthcare facilities planning is to ensure that there is even distribution across a geographical area that ensures adequate healthcare resources. When there is inadequate layout of healthcare facilities, facility planning need to achieve the following; by controlling the increasing of more healthcare facilities and ensuring equal access by adding more healthcare facilities in areas which are underserved (WHO, 2017). In addition, impartial spatial layout of healthcare supplies is a matter of ensuring that all areas are served equally to grantee access to healthcare services. Nevertheless, there is an argument that if people can afford healthcare services and if there is equity and fair healthcare facilities distribution a cross a given area. By looking at the spread out of healthcare facilities and provision of healthcare services can aid in prohibiting and reducing incidences of diseases before they occur. Finally, in addition healthcare planning can also be used to enhance efficient healthcare facilities utilization (WHO, 2020).

In addition, striking differences in health still exist within and between urban populations (WHO, 2015b). There are also inequalities in access to public PHC and this tends to affect the most vulnerable people in the communities. Despite many national PHC reforms

in Kenya, meaningful gaps in equitable access remain. These gaps particularly affect the vulnerable urban populations, such as, the poor, children, women and elderly (Harpham, 2009).

In Nakuru town there are many communicable diseases such as upper respiratory tract infection, other diseases of the respiratory system, diarrhoea, diseases of the skin, tonsolitis, ear infections, suspected malaria, eye infections and confirmed malaria are evident despite the high number of primary health care facilities including public and private facilities. In addition, these diseases do not evenly affect all Household within Nakuru town. Majority of the households affected are from the low income areas. Hence, this study has come up with solutions on how to access and utilize the public primary health care facilities and recommended how to improve the health outcome of the residence of Nakuru Town.

This study involved fieldwork in which first hand data and information obtained was used to analyze the problems and make recommendations. Studying the extent and coverage of urban PHC services in Nakuru town helps to identify the pressing problem in health service delivery. Thus, the findings of the study are significant for the PHC service providers in Nakuru town for designing more effective method of PHC service provision by narrowing the information gap between supply and demand. However focus on the contribution of access and utilization of PHC facilities by households is minimal. The findings generated from this study will be of great importance to policy makers, in ensuring proper and comprehensive policies have been developed and followed in order to accelerate access and utilization of PHC facilities in the study area and Kenya at large.

2.15 Theoretical Framework

The theoretical structure of this research is founded on one theory and two models of health care seeking behaviour. It is difficult to identify which factors are most significant in making choices about access and utilization of healthcare (Anderson, 1995; Andersen & Newman, 2005). Culture, economics, access, perceptions, knowledge, belief in efficacy, age, gender roles, and social roles are all among the extensive list of factors influencing both the choice to seek health care and the assessment of which health care option to utilize for prevention and treatment of illness. Hence, healthcare access and utilization is a complex issue that requires multiple theories and models to fully explain it (Harpham, 2009).

In this section, one theory and two models of health care utilization are described. The theory described is Suchman's stage of illness and medical care. The model discussed is Andersen's health behaviour model and the health belief model by Rosenstock. To differentiate between the theory and the models, it is important to understand the theory as the one that

explains the process of seeking healthcare services. Contrarily, the model can be considered as holding sets of association between factors.

2.15.1 Suchman's Stages of Illness and Medical Care Theory

Suchman's stages of illness and medical care theory Figure 2.4, points out that patient's stage of illness direct the process of deciding whether to seek healthcare services (Suchman, 1965). In addition, Suchman pointed out that the theory is founded on the conception that there is a direct instrumental connection between patients getting well and utilization of healthcare services. Suchman's theory holds that to sought healthcare services is essential in getting well from a sickness. The theory highlights that patients will not get well from the sickness unless they utilize the existing healthcare services.

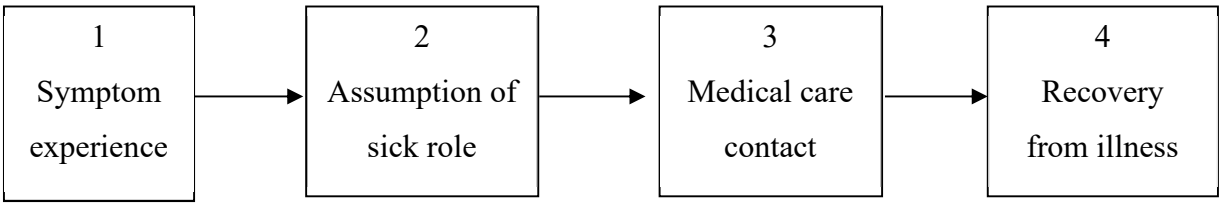

Figure 2.4: Suchman's Stages of Illness and Medical Care (1965)

Source: Suchman (1965)

In Suchman theory, people become aware that there is an issue affecting their health status and are aware of their physical constraint, respond sensitively, and show signs that a sickness has started. This leads to an individual taking the sick role and if signs of sicknesses prolong and become more severe, the illness assumes a social role. The individual now look for affirmation from their families and social groups that they are indeed ill to be exempt from ordinary duties and responsibility. This is categorized by expressive changes such as hopelessness. The next stage is that individual seeks assistance of healthcare services when home solutions do not work. The professional healthcare personnel givers confirm the illness, explain the symptoms, and treat the illness. This leads to the final stage where the sick dependents on the healthcare personnel to get well (Suchman, 1972). This theory explains how individuals who are sick seek and utilize medical facilities. Hence, it was used to understand the access and utilization of public primary healthcare facilities in Nakuru Town.

2.15.2 Health Belief Model

Health belief model is a psychological ideal that tries to expound and foretell healthcare seeking behaviours. This is carried out on concentrating on beliefs of patients (Rosenstock,

1988). The Health Belief Model is founded on the knowledge that a patient will use a healthcare facility if only the patient believes that will gain from it.

Health Belief Model also contain the acknowledgement that a patient satisfaction reflects healthcare use. In addition, the model embrace the concept that there are many healthcare services useable and both the type of service available and the aim of healthcare service will influence the kind of service used. Therefore, as stated by this model, whichever healthcare service is used and the rate a service is accessed will have different factors which are founded on characteristics of the population and the healthcare services.

According to Slater and Gleason (2012) figure 2.5, health belief model, postulate that six constructs foretell health behaviour, risk susceptibility, risk benefits to action, barriers to action, self-efficacy, and cues to action. This study sought to employ the use of health belief model as guiding structure for access and utilization of PHC facilities in Nakuru town.

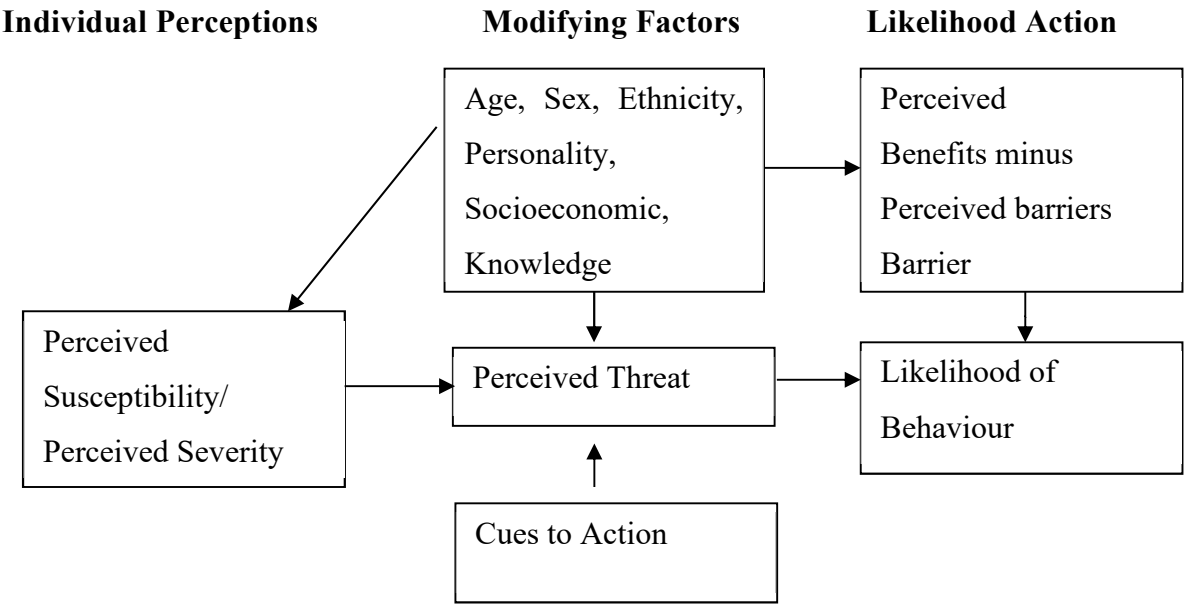

Figure 2.5: Health Belief Model

Source: Slater and Gleason (2012)

2.15.3 Andersen Model of Healthcare Utilization

Andersen (1968) constructed the procedure of healthcare services utilization (figure 2.5) which described three classes of factors and these are; predisposing characteristics - this expresses inclination to utilize healthcare services. According to Andersen, the probability of the patient to use healthcare is founded on population characteristics and status within the social structure and the confidence of healthcare services usefulness. A patient who trusts that healthcare services are beneficial will likely utilize those services. Enabling characteristics - this class contain resources owned by the family and the community. Family resources consists of economic position and place where people live. Community resources integrate access to healthcare facilities and the availability of demand for healthcare services. Finally, need based characteristics; the third class encompasses the perception of demand of healthcare services, whether patients, social or clinically assessed perceptions of necessity.

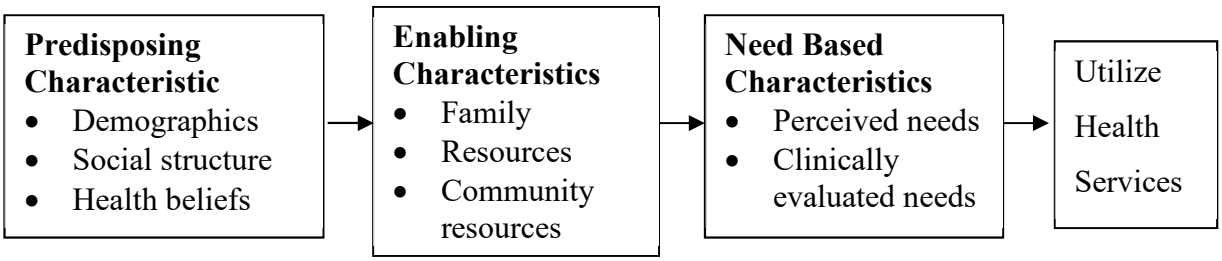

Figure 2.6: Andersen's Behavioural Model of Health Services Utilization

Source: Anderson (1968)

The model approach demonstrates that successful enhancement of access to PHC is essentially a process that requires understanding the causes and consequences of poorly performing urban healthcare system that create problems of accessing healthcare and attempts to identify pathways through which PHC access and utilization can be realized in urban areas. Hence the study will highlight the main challenges of increased access and utilization of healthcare facilities for PHC providers in ensuring high-improved access and utilization among households of Nakuru town.

The theory and models described provide a detailed understanding on access and utilization of healthcare services. They contain threads of commonality via three factors which influence the process of healthcare seeking; (i) healthcare access, (ii) healthcare facilities availability, (iii) and healthcare service utilization. They provide a comprehensive understanding of an individual's decision to utilize healthcare. The theories and models also show the factors influencing healthcare access and the relationship which exist between spatial setting of healthcare facilities, health resources, levels of physical accessibility, physician characteristics, patient characteristics and health outcomes. All these have the potential of influencing access and utilization of PHC services. Hence essential for the execution of this study.

2.16 Conceptual Framework

Healthcare is an essential human rights and national governments have a commitment to offer healthcare services to the people and make sure this services are satisfactory (WHO, 2016). The conceptual structure of this research takes into account that the determination to use healthcare facility depends on the patient's, households and community level factors. The conceptual framework describes the dependent, intervening and independent variables that contributed to undertaking of this study. It also point out that individual level factors,

households' level factors and institutional level factors influence access and utilization of public PHC facilities.

In this study the independent factors that have effects on access and utilization of healthcare facilities include income, educational level, age, sex, family size, marital status, ethnicity and religion. The socio-demographic characteristics of the population affect the fundamental habit of a person to seek healthcare service (Allotey *et al*., 2012). For example, children are susceptible to diseases therefore, the prospect of accessing and utilizing PHC facilities is high. The intervening variables in this study are; health policy and health resources. These factors are visualized to affect the dependant variables such as availability, accessibility and acceptability of PHC facilities. These variables influence low or high levels of access to; health centres, dispensaries and private clinics.

To establish the problems that restricts the measure of access to PHC facilities in a preference for improved healthcare services delivery. This can be executed through examining the socio-economic and organizational factors that may drastically influence access and utilization of PHC facilities. Efficiently implemented guidelines and rules on healthcare support appropriate methods in the delivery of PHC and use of healthcare services thereby supporting maintainable development and reliable utilization of healthcare services and eventually promoting access and utilization of PHC facilities among the households of Nakuru town.

The conceptual framework states clearly important variables about the knowledge of access to PHC facilities in Nakuru town. In addition, it provides a comprehensive knowledge on the causes and structures that shape PHC facilities access and assist to put in place an action and decision oriented understanding of PHC services access hence it's relevance in this study. The conceptual framework of this study is founded on the hypothesis that access to PHC facilities is influenced by diverse different socio-economic, socio-demographic and institutional.

This study was drawn significantly from Andersen's model of health services utilization. The model clearly captures the factors that influence access and utilization of healthcare facilities. It clearly portrays the interaction between the independent, intervening and dependent variables of this study. The conceptual framework presented is derived from this model that is stated in terms of predisposing and enabling components. Using this model, age, sex, family size, education, income and marital status are variables that determine access and utilization of healthcare facility.

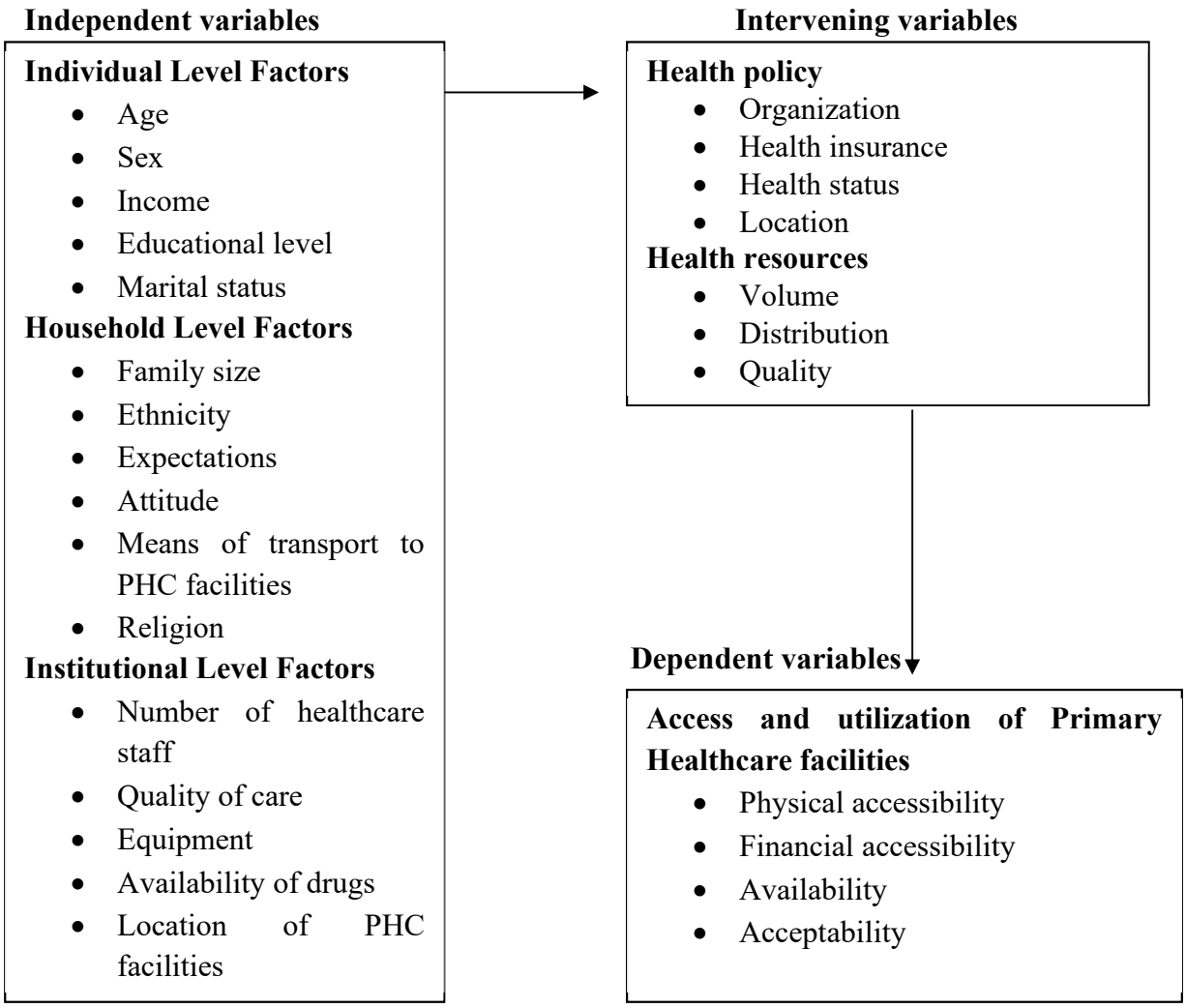

Figure 2.7: The conceptual framework

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter the researcher describes the study area and research methodology used. The sections within this section include; geographic location of study area, demographic characteristic, epidemiologic profile, climate, hydrology, socio-economic activities, research design, study population, data collection tools, ethical considerations and data analysis.

3.2 Study Area

Nakuru town is located in Nakuru County, Kenya. It is located 1850 meters above sea level, is 160 km North West of Nairobi and is the fourth major urban centre in Kenya beside Nairobi, Mombasa and Kisumu (Nakuru County Integrated Development Plan 2018 -2022). It lies 0^0 15' South of the Equator and between longitudes 36^0 04' East of Prime Meridian. It is the capital of Nakuru County.

Nakuru town covers an area of 348.6 square kilometres. According to the Independent Electoral and boundary Commission (2016) Nakuru town is divided into eleven wards including Rhoda (1.10 km^2), Kaptembwo (5.10 km^2), Barut (195.50 km^2), Kapkures (26.00 km^2), Biashara (19.60 km^2), Flamingo (2.60 km^2), Nakuru East (23.30 km^2), Shabaab (2.40 km^2), London (20.90 km^2), Menengai (26.20 km^2) and Kivumbini (25.90 km^2). It borders Njoro, Rongai, Gilgil and Bahati sub-Counties at Kiamaina, Lanet, Kiambogo, Ndugiri, Ngata, Njoro, Lare, Naishi and Miti Mingi wards.

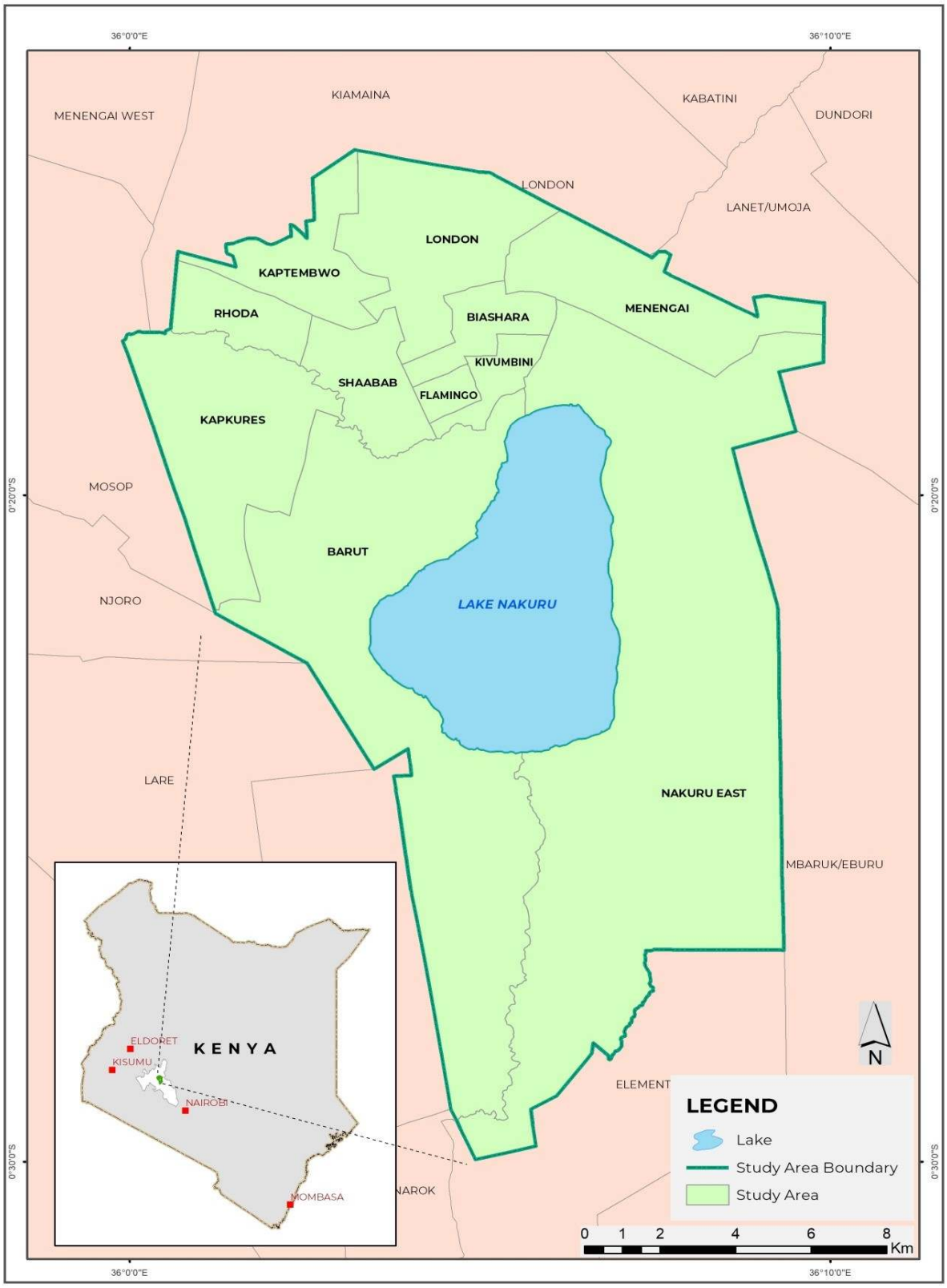

Figure 3.1: Map of Nakuru Urban Wards

Scale 1:50,000, using ILRI boundary shape files: GIS Archaism 10.2

In the recent times, Nakuru town has grown fast in the number of people which has contributed to the expansion of the boundaries of the town. This has been caused by migrants

from rural areas who settle in the already congested slums especially Rhoda ward (KNBS, 2017). This has contributed to high demand for essential services and physical facilities like more houses, supply of clean drinking water, adequate sanitation and construction of roads. Due to high population growth, the available resources have over been stretched becoming a problem to Nakuru county government to meet the needs of the people.

3.2.1 Demography and Epidemiology of the Study Area

According to GoK (2010), Nakuru town had a population of 500,000 people and 30,636 households. It had a population density of 974 persons per square kilometre and average household size is 5 persons (GoK, 2010). According to the KNBS (2017) Nakuru town population has been growing steadily from 150,000 people in 1987, to 310,000 people in 1999, to 500,000 people and the current 1,603,325 people in 2017. This trend reveals a pattern of urban demographic growth which urban authorities are ill equipped to cope with (World Bank, 2010).

From Nakuru County health department's health records, the top 10 diseases in Nakuru town included: upper respiratory tract infection, other diseases of the respiratory system, diarrhoea, diseases of the skin, tonsolitis, ear infections, suspected malaria, eye infections and confirmed malaria. According to the records, the rate at which young children die was 78 per 1000 live births (RoK, 2013). Those children who die under-five years the rate was 115 per 1000 live births. Women who die from birth related complications was 150 per 100,000 live births (MoH, 2013d). The average age people lice in Nakuru town was an average of 48 years. The number of children under one year who have been fully immunized against Measles is 82% and HIV incidence rate was 7.4% countrywide.

Currently Nakuru town is also affected by HIV/AIDS and this is indicated by high numbers from records in the figures from the County Aids and STI group (WHO, 2014). The town had an incidence rate of 5.7% compared to 2.8% nationwide (MoH, 2014a). This is caused by high population and many commercial activities within the town. The main challenge of Nakuru town is communicable diseases caused by contaminated environment for example unclean water and poor sanitation (MoH, 2013b).

3.2.2 Climate

The climate of Nakuru is mild and generally warm and temperate. The rainfall exhibits bimodal distribution with a major peak in April to May and a minor one in October to November. The rainfall is moderate with an average of 895 mm per annum. The temperature averages 17.5^0C. Rainfall is lowest in January and highest in May (Kakumu, 2007).

3.2.3 Hydrology

Nakuru town is adjacent to Lake Nakuru which is a unique ecosystem as it is one of the largest salty lake in Kenya's Rift Valley with flamingos (NEMA, 2011). The hydrological water conditions of Nakuru town are dependent on catchment supply through rivers such as Makalia, Endeit, Njoro, Naishi, Mereroni and Turasha in Gilgil. The forested areas of the catchment basic consist of the Eastern Mau, Eburu and Dondori forest (Ibid). The geology of Nakuru town lies in the Naivasha, Elementaita-Nakuru watersheds (Meijer, 2005). The geology is characterized by the following rocks; Alluvium, reworked water lain sediments, quaternary lucustrine deposits, rhyolites, comendite and obsidian (Ibid).

The area is dominated by faults and voluminous fissural volcanic eruptions since lower Miocene (Meijer, 2005). The water catchment within the area is composed primarily of basic volcanic rocks. It experiences high fluoride level in its ground water which leads to major problems such as dental and skeletal fluorosis among the residents (NEMA, 2011).Studies have shown that the area is geological and structural set up is responsible for high fluoride levels. The available water sources in Nakuru town include piped water, boreholes, rivers and harvested rainwater. Municipal water supply is treated while water sourced from other sources are usually untreated implying that most domestic water suppliers may be contaminated (Mwangi, 2003).

3.2.4 Socio-economic Activities

Nakuru town is one of the fastest growing towns in East Africa with growth rate of 7% per annum (KNBS, 2011). Its' urban area is a vibrant economic hub, with trade and tourism as the major activities. The area is a significant tourist destination earning foreign exchange especially from Lake Nakuru National Park. The lake is known to host a wide variety of birds, hippopotamus, lions, rhinoceros, waterbuck, buffalo, giraffes, impalas and antelopes. Nakuru town has many thriving industries such as bakeries, sawmilling, food processing, and textile processing (KNBS, 2013). The population relies mostly on agriculture, manufacturing and tourism for their livelihoods.

The business sector in Nakuru adds to about 19% of the economy of the town. The town is also a headquarter for many types of retail businesses that supply goods and services to the manufacturing and agricultural sectors. At the centre of the town, there are many businesses such as retail business, which take about 26%, wholesale trade that take 10% and informal sector enterprises at 18%. The main businesses in Nakuru town comprise of retail in hardware

and general wholesale. Within the town, there are many important systems of financial institutions, which offer banking facilities, insurance services and credit services to people who want to do business (KNBS, 2015).

The main source of lighting in Nakuru town is electricity at 55.4% while most people use firewood and charcoal as sources of energy for cooking at 44.6% and 30.7% respectively. About 80% of the town is covered by electricity. Common materials used to build houses in Nakuru town is iron sheets, which stands at 92.8%. The town is supplied by piped water from NAWASSCO and boreholes from private enterprises (Nakuru County Integrated Development Plan 2018-2022). About 19% of the build up areas have access to the sewerage network system. Majority of the people depend on cesspools and septic tanks, which have been constructed in high-income residential areas. However, most of the people in many parts of the town especially low-income areas have access to public latrines or dispose of their wastes in the open space and harp sadly (Nakuru County Integrated Development Plan 2018-2022).

3.2.5 Healthcare System in Nakuru Town

In Nakuru town, there are many types of healthcare facilities ranging from referral hospitals, private hospitals, health centres, private nursing homes and over 110 private healthcare clinics (Nakuru County 2019 health records). These healthcare facilities are evenly distributed across the town but are noticeably lacking in slum settlements (MoH, 2013a). Despite the fact that the incidences of diseases at the ward level are not available, the main diseases which affect the people of the town are respiratory system, upper respiratory tract infections, diseases of the skin, diarrhoea, arthritis, joint pains, urinary tract infection, pneumonia, suspected malaria, eye infections and hypertension which contribute to top ten diseases which cause illness in Nakuru County as shown in table 3.1.

Table 3.1 Outpatient Top-ten Diseases for over 5 years

No.	Diseases (New cases only)	Number of cases	% Disease contribution to the total cases reported in the county 2016
1	Other Diseases of Respiratory System	306,198	16
2	Upper Respiratory Tract Infections	216,944	12
3	Diseases of the skin	138,240	7
4	Diarrhea	66,776	4
5	Arthritis, Joint pains etc.	61,532	3
6	Urinary Tract Infection	53,412	3
7	Pneumonia	47,535	3
8	Suspected Malaria	46,012	2
9	Eye Infections	40,402	2
10	Hypertension	38,248	2
	Total Top 10 diseases	**1015299**	**54.7**
	Other diseases	**1755325**	**45.3**
	Total cases reported in the county	**1856624**	**100**

Source: Nakuru County Integrated Development Plan 2018-2022

In the study area the contribution to the total cases reported for the last five years from 2015 to 2019 are as shown in table 3.2.

Table 3.2: Outpatients Top Ten Diseases for the last five years (2015 to 2019) in Nakuru Town

No.	Diseases (New cases only)	Number of cases	% Disease contribution to the total cases reported in Nakuru town
1	Upper respiratory tract infection	166,200	31.6%
2	Other diseases of the respiratory system	98,944	20%
3	Diseases of the skin	42,240	8.5%
4	Typhoid	35,412	7.2%
5	Ear infection	32,540	6.6%
6	Diarrhoea	30,411	6.2%
7	Suspected malaria	28,226	5.7%
8	Confirmed malaria	25,300	5.1%
9	Eye infection	24,600	4.9%
10	Sexually transmitted diseases	20,330	4.1%
	Total	**494,203**	**100%**

Source: Raw data from Nakuru County Health Department Records (2019)

The ministry of health of Nakuru County is the one, which keeps all health related information, and data, which include records of controlled diseases and records of treated diseases and is in-charge of observing the progress in following healthcare regulations, guidelines and policies by healthcare providers.

In addition, the ministry of health of Nakuru County is tasked with the responsibility of promoting, regulating and providing of healthcare services to the people of Nakuru town. The ministry ensures that services that are provided and accessed are of high quality and enjoyed by all the residents of the town (MoMs, 2012a). The Nakuru County government has established a health strategic plan of 2014 to 2017, which gives policy direction on how to deliver targeted and efficient healthcare services to the people of the town (MOH, 2014a).

There are many challenges facing primary healthcare facilities in Nakuru town such as congestion, long waiting queues, long waiting time and lack of adequate physical healthcare facilities (MoH, 2013b). Even if the county has tried to build more healthcare facilities within the town, still many wards have no healthcare facilities and those who have are few as

compared to the number of people (MoH 2013c). Because of the problems associated with accessibility and utilization of PHC facilities, this study is designed to identify shortcomings in the delivery of PHC services in Nakuru town. It is hoped that the findings of this study will provide insights into the problems of accessibility and utilization and help to improve PHC service delivery in Nakuru town.

3.3 Methodology

This section presents research design, study population, sample size for households, healthcare facility sampling, the methods of data collection, validity and reliability, ethical consideration and data analysis.

3.3.1 Research Design

This study adopted a cross sectional household survey within various administrative wards that constitute urban Nakuru and health facility survey that included all the public facilities located in the study area. Survey research design is ideally suitable in describing the characteristics of large populations (Abiola, 2007). It gives room for many questions to be asked about given topic giving considerable flexibility to the analysis.

A cross sectional household survey was to gather data about household's perception on access and utilization of PHC facilities in Nakuru town. The household survey was conducted in Rhoda, Kaptembwo, London, Menengai, Biashara, Flamingo, Kapkures, Barut, Nakuru East, Shaabab and Kivumbini civic wards within Nakuru town.

Health facility survey was used to access the availability of PHC facilities in terms of physical structures and physical equipment. The scope of this research was public PHC facilities in Nakuru town. These included health centres and dispensaries. Key informant interview was used to collect information from medical personnel from the 14 public PHC facilities in the study area. Medical personnel in-charge of the public PHC facilities was interviewed because they have first-hand information on the general health information of their facilities.

3.3.2 The Study population

Nakuru town has a population of 1,603,325 people (KNBS, 2017). In this study, the household sampling frame comprised all households (30,636) in Nakuru town, which were within Rhoda, Kaptembwo, London, Menengai, Biashara, Flamingo, Kapkures, Barut, Nakuru East, Shaabab and Kivumbini wards.

3.3.3 Sample Size for Households

The sample size was obtained using the following formula (Yamane, 1967:886). A 95% confidence level and p= 0.05 are assumed for equation.

$$n = \frac{N}{N(e)^2}$$

Where n is the sample size, N (30,636 households) is the population size, and e (±5%) is the level of precision. These precision levels are predefined based on the levels of confidence used.

When this formula is applied to the above sample, we get:

$$n = \frac{N}{N(e)^2} \quad = n = \frac{30636}{30636\,(0.07)^2} \quad = 400 \text{ households}$$

The researcher used proportional sampling to distribute the sample among 11 civic wards in the study area. Proportional sampling is a method of sampling in which the researcher divides a finite population into sub-populations (strata) and then applies random sampling techniques to each sub-population. For a finite population size N, the population divided into h strata (sub-populations) according to certain attributes.

$$n_h = n\frac{Nh}{N}$$

Where: N_h is the size of h^{th} stratum.

N is the whole population.

n is the total known sample size.

n_h is the expected sample size of h^{th}stratum.

The total population of residents in Nakuru town is 1,603,325 people (KNBS, 2017). Applying proportional sampling technique, the study area was divided into wards which form the strata. Each ward's (stratum) is given in Table 3.1. For instance, taking Rhoda ward as (n_h) with a population of 92,642 people and the calculated households sample size of 400:

$$n_h = 400 \text{ x } \frac{92,642}{425,675} = 23 \text{ households.}$$

Table 3.3: Proportionate Sample Distribution of Wards

Ward	Population	Household Sample
Rhoda	92,642	23
Kaptembwo	264,984	66
London	88,826	22
Menengai	124,017	32
Biashara	77,493	19
Flamingo	121,870	30
Kapkures	33,733	8
Barut	25,541	7
Nakuru East	573,144	143
Shaabab	67,756	17
Kivumbini	133,317	33
Total	**1,603,325 people**	**400 households**

A simple random sampling technique was used to obtain a sample of households from each ward. Data was collected from randomly selected households by utilizing structured questionnaire. The researcher also conducted interviews to patients who seek medical care from public PHC facilities in order to compliment as well as supplement data from household survey. The researcher picked two patients from each of the fourteen public PHC facilities in the study area.

3.3.4 Healthcare facility sampling

All public PHC healthcare facilities in Nakuru town were listed from Nakuru County Health Department report showing the number of both public and private health facilities in Nakuru town. All the public PHC facilities were sampled and used for this study. They were disaggregated according to the level of care including health centres and dispensaries. All the public health facilities offering PHC were sampled with a view of establishing the resource availability to offer primary healthcare such as bed capacity, availability of drugs and equipments used for diagnosis and treatment of diseases. In addition, the utilization rate of these facilities was assessed through checking the number of outpatients who visited the facility.

3.3.5 Key informant Sampling

Key Informant Interviews were conducted among medical personnel in the 14 public PHC facilities within the study area. They included of those who were in-charge of the PHC facilities. They were useful in supplying information about health care services provided and equipment found at the public primary health care facilities. The informants were sampled from all public Health Centres and dispensaries. They gave information such as bed capacity of the facilities, number of staff members, number of outpatients and working conditions of basic medical equipment for PHC in their respective facilities.

3.3.6 Data Collection Tools

The study used different instruments to collect data for different study population. For the household survey, the household questionnaire was administered to 400 household heads. The questionnaire sought information on access and utilization of healthcare services, factors influencing household's access and utilization of healthcare facilities and perceived quality of healthcare services (Appendix I). The open-ended questions were useful in eliciting the respondents' opinion concerning the study problem while the closed-ended questions prompted the respondents to choose from a limited number of responses predetermined by the researcher.

Health facility Evaluation Schedule (Appendix II) was used to collect data on public PHC facilities, number of work force, number of beds in healthcare facilities, number of patients and medical equipments within the facility.

Key Informant Interview (Appendix III) was used to collect in-depth data in the quality of healthcare services, access and utilization of healthcare facilities.

Patients Interview Schedule (Appendix IV) was used to interview patients and/or household heads who sought healthcare services at all public PHC facilities in the study area. In addition, the researcher interviewed patients from each of the above facilities. Information from the patients captured views on perceptions of PHC services provided in Nakuru town.

Reconnaissance was carried out to identify the existing institutions, administrative units and road networks. Observation as a method of data collection involves observation of the PHC facilities in their natural setting. Observation was used to record physical characteristics of PHC facilities.

In identifying and mapping of all Healthcare facilities, information was collected from available records in Nakuru County Health Department. The researcher also collected data on the point location of PHC facilities using GPS. This data was used to show the distribution of the public PHC in the study area. In addition, observation was used to record the physical

distribution and characteristics of PHC facilities. The researcher also got a list of all health personnel working in public PHC facilities in Nakuru town, which helped in determining the population – health workers ratio.

3.4 Validity and Reliability of the Tools

3.4.1 Validity

Validity is the degree to which the method to be used in collecting information results in accurate information (Abiola, 2007). Kothari (2004) asserts that validity is dual in nature face and content. The face validity is determined by the way in which it appears while content validity is portrayed by the ability of the items to collect the required data succinctly. The validity of the items used was ascertained by the supervisors' advice from Egerton University and the pilot survey was expedited before the actual study.

3.4.2 Reliability

Reliability is the extent to which any measuring procedure yields the same results on repeated trials (Kothari, 2004). In ascertaining reliability, the tool was exposed to test and corrected. To test reliability of this research, the instrument was tested among 20 respondents from Naivasha and Gilgil towns in Nakuru County. This took a period of one week where I administered 10 questionnaires on respondents purposively selected from the two towns. 20 respondents are the recommended smallest number that yields meaningful results in a survey research (Kathuri & Pals, 1993). The main reasons for carrying out the pilot study were to test the instruments in regard to ambiguity and appropriateness. The piloted questionnaire was later subjected to the Cronbach's formula analysis technique to gain the desired reliability coefficient. Cronbach's alpha reliability ranges between 0 and 1, and reliability coefficient of the least a = 0.7 is acceptable (Mugenda & Mugenda, 2003). The household questionnaire had a reliability coefficient of 0.90. Therefore, the instrument was considered sufficiently reliable for this study.

3.5 Ethical Considerations

Prior to entry into the field, the researcher obtained an introductory letter and approval from the Director, Graduate School, Egerton University (Appendix VII). This letter and approval was used to seek authority to conduct research from the National Council for Science and Technology. Thereafter, the researcher travelled to each of the identified wards and administered the questionnaires to the households. Participants' involvement in the study was

strictly voluntary. At the same time, participants were not being required to provide their names or any identifying information as part of the survey. Every effort was made to assure participants confidentiality of any information they give.

The researcher obtained authorization from National Commission for Science, Technology and Innovation through graduate school of Egerton University to carry out the study (Appendix V). In addition, permission was sought from the ethical committee at the division of research and extension within Egerton University. In order to conform to the ethical standards of a scientific investigation, respondents were given thorough explanation on the purpose and objective of the study. They were requested to participate in the study voluntarily without coercion. To ensure anonymity and confidentiality, numbers were used to identify the households instead of person names. No respondent was forced to answer questions they would not wish to answer.

3.6 Data Analysis

The researcher coded and keyed data into the computer for analysis using SPSS software. Data was analysed by use of both Descriptive and Inferential Statistics. . Description of the study variables (tables, bar graphs), were used to analyse access and utilization of PHC facilities. Frequency tables are derived to show the distribution of respective dependent and independent variables. In order to measure the relationship between many variables, I used cross-tabulations and chi-square tests. To identify the factors that determine household utilization of PHC facilities in the study area, I used a logistic multivariate regression analysis.

Geographic Information System (GIS) and Global Positioning System (GPS) were used to map and analyse spatial location of PHC facilities in the study area. The analysis captured the spatial factors (Geographic location and distance) of the PHC facilities in the study area. This showed the number of existing healthcare facilities in the study area. The researcher got a list of all healthcare facilities in Nakuru town from the county health department. To assess the availability of staff, the researcher relied on the WHO (2016) recommended standard for the African Region of 23 nurses, midwifery, physicians and doctors per 10,000 people with mean health facility service range of 0.2 km radius, to determine the healthcare status of Nakuru town.

Table 3.2 presents a summary of methods used to analyse and present data for each of the specific objectives/research question. .

Table 3.4: Summary of Data Analysis

No.	Research Question	Independent variable	Dependent variables	Statistical Techniques Used
1.	What is the extent of variation in the levels of household utilization of public primary healthcare facilities in Nakuru town?	Quality of staff Status of PHC facilities Cost of service Distance to healthcare facilities Cultural and religious views	Number of staff PHC facilities Dispensaries Health centers Private clinics	Frequencies Percentages Cross tabulations Chi-square
2.	What are the factors that influence variations of household's utilization of public primary healthcare facilities in Nakuru town?	Availability of drugs Number of healthcare personnel Income of households Family size Geographical location of PHC facilities Means of transport	Financial access Geographical access	Frequencies Percentages Cross tabulations Chi-square Logistic Regression
3.	Are human and medical resources in the public primary healthcare facilities in Nakuru town adequate for provisional services?	PHC facilities	Number of healthcare personnel Laboratory equipment Drugs Other medical equipment	Frequencies Percentages Calculation of staff/population ratios Calculation of rates
4.	Do spatial variations in location of primary healthcare facilities influence utilization of services in Nakuru town?	PHC facilities	PHC facilities Dispensaries Health centers Private clinics	Mapping of PHC facilities using GIS Use of GPS

CHAPTER FOUR
RESULTS AND DISCUSSION

4.1 Introduction

The results discussed in this chapter are in line with the specific objectives of the study. The results are derived from data that was obtained from household survey, health care facility observation schedule, and key informants working in various health care facilities.

4.2 Socio-economic Characteristics of the Household Survey

The study respondents were drawn from the eleven wards that were included in the study including Shabaab, Kapkures, London, Kaptembwo, Nakuru East, Rhonda, Kivumbini, Menengai, Flamingo, Barut and Biashara wards. The respondents interviewed were household heads who gave views concerning the household members' information on access and utilization of public primary healthcare facilities. The socio-economic characteristics of the sampled population that is presented in this section include; gender, age, education, household size, religion, occupation, and monthly income. Table 4.1 to 4.7 shows the socio-economic characteristics of the households in Nakuru town.

4.2.1 Gender of the Household Head in Nakuru Town

The study sought to find out the gender of the household heads in Nakuru Town. Gender plays an important role in access and utilisation of healthcare facilities and services. For example, it is perceived that more women will utilize healthcare facilities more readily than men (Travassos *et al*., 2002). Gender attitudes and roles are some of the determinants of health care seeking behaviour (World Bank, 2004). Evident from Indonesia show that utilization of prenatal care increases with the control a woman exercises over household finances (Beegle et. al., 2001). Women in Africa make more use of public healthcare facilities than men in the highest income groups but in the lowest income groups is the opposite (Castro-Leal *et al*., 2000)

Table 4.1: Distribution of Gender of the Household heads in Nakuru Town

Ward	Percentage (%)		
	Male	**Female**	**Total Percentage**
Biashara	3.25	1.5	4.75
London	3.5	2	5.5
Menengai	4.75	3.25	8.0
Kivumbini	3.75	4.5	8.25
Kapkures	1.0	1.0	2
Barut	0.5	1.25	1.75
Shabaab	2	2.25	4.25
Flamingo	4.75	2.75	7.5
Rhonda	3	2.75	5.75
Kaptembwo	5.25	11	16.25
Nakuru east	15.75	20.25	36.0
Total	**47.50**	**52.50**	**100.00**

n = 400

In this study, both genders (male and female) were randomly included in order to get their views. According to table 4.1, 52.5% of the respondents (n=400) were females while the rest were males. This shows that most of the female household heads in Nakuru town are at home most of the time. This concurs with Osifeso (2013) finding on utilization of primary healthcare facilities on gender of the respondents in Nigeria where majority of the respondents were female at 63.3%. This may be because the female are more accessible and available at the residences during the day when most male have gone to their various workplaces. Male respondents were the more in Menengai 4.75% (19), Flamingo 4.75% (19), London 3.5% (14), Biashara 3.25% (13) and Rhonda wards 3% (12) while female respondents were more than male respondents in Nakuru East wards 20.25% (81) , Kaptembwo 11% (44), Kivumbini 4.5% (18), Shabaab 2.25% (9) and Barut 1.25% (5) within the study area. The gender parity in this study was small (5%) in terms of numbers included in the study. This study concurs with KNBS (2010) which found out that female respondents participated more in the 2009 census survey. On the other hand, the finding differs with CBS (2005) which found that there are more male-headed households (70%) than female in most rural areas of Kenya thus readily available to participate in studies.

4.2.2 Age Categories of Household heads in Nakuru Town

Age plays an important role in the access and utilization of primary health care facilities. For example, past research has revealed that as one advances in age, they are likely to have more health issues related to old age seek treatment more often. Further young parents may not have necessary experience on childcare compared to older parents (Vega, 2013).

Table 4.2: Distribution of Age categories of Household head in Nakuru Town

Ward	Age (years) (%)				
	18-26	**27-35**	**36-44**	**45-53**	**54-62**
Biashara	2.0	0.75	1.5	0.25	0.25
London	2.0	2.0%	1.0.	0.25	0.25
Menengai	0.5	4.0	1.0	2.25	0.25
Kivumbini	4.75	1.75	0.5	1.0	0.25
Kapkures	0.25	1.25	0.0	0.5	0.0
Barut	0.5	0.2	0.5	0.25	0.0
Shabaab	0.25	3.5	0.5	0.0	0.0
Flamingo	1.0	5.0	0.5	0.5	0.5
Rhonda	1.25	2.5	1.25	0.75	0.0
Kaptembwo	4.0	5.75	4.25	2.0	0.25
Nakuru east	6.5	16.25	7.0	5.5	0.75
Total	**23.0**	**42.95**	**18.00**	**13.25**	**2.50**

n = 400

The ages of the household heads are grouped from 18 – 26 years, 27 – 35 years, 36 – 44 years, 45 – 53 years, 54 years and above years. The mean age of the household heads was 34.08 $\pm$ 9.226 years with the youngest respondent being 18 years old and the oldest respondent was 60 years old. The highest percentage (43.5%) of household head was between 27 - 35 years old. The study indicated that most of the respondents were youths as they are below 35 years old. Age group 27 – 35 years had the highest respondents (43.25%) in Kaptembwo ward – 5.75%, Rhoda ward – 2.5%, Flamingo ward – 5.0%, Shabaab ward – 3.5%, Kapkures ward - 1.25%, Menengai ward – 4.0% and London ward - 2.0%. This study is in agreement with KNBS (2010) which indicated that most of the household heads in urban Kenya are of ages below 35 years.

4.2.3 Education of the Respondents in Nakuru Town

A person's level of education influences his/her understanding of the importance of accessing and utilising health care facilities. For example, the more educated household heads have the understanding of the importance of seeking health care services than the uneducated and the less educated (Buor, 2004, KIPPRA, 2018). Education in this study was categorised into no formal education, primary, secondary, tertiary and university.

Table 4.3: Education of the Household heads in Nakuru Town

Ward	Education (%)				
	No education	**Primary**	**Secondary**	**Tertiary**	**University**
Biashara	0.25	1.25	1.0	0.75	1.5
London	0.0	0.0	1.75	0.25	3.5
Menengai	1.0	0.75	3.75	1.0	1.5
Kivumbini	0.75	0.5	5.5	0.5	1.0
Kapkures	0.25	0.5	0.0	0.75	0.5
Barut	0.0	0.75	1.0	0.0	0.0
Shabaab	0.0	0.0	3.0%	0.5	0.75
Flamingo	0.5	0.75	4.5	1.75	0.0
Rhonda	0.0	0.0	3.0	2.0	0.75
Kaptembwo	0.0	1.25	3.5	7.0	4.0
Nakuru East	2.25	5.0	13.25	10.5	4.75
Total	**5.00**	**10.75**	**40.25**	**25.00**	**18.25**

n = 400

Most of the respondents (94.9%) had formal education (primary, secondary, tertiary and university level of education). Most of the household heads (40.25%) had attained secondary level of education while those with no education were the least (5.0%). Nakuru East ward had the highest number of household heads with no education (2.25%), with primary education (5.0%), with secondary education, with tertiary education (10.25%) and with university education (4.75%) as compared to other wards. According to KIPPRA, 2018, there was increased enrolment in secondary institutions in Kenya. This may be attributed to introduction of subsidised secondary day fees that lowered the cost of education enabling many to attend school. Unlike in another study done by Prosser (2007) that reported up to 38% of

respondents not having formal education, in this study 5.1% of respondents had no formal education.

4.2.4 Household size in Nakuru Town

Size of the household influences the amount of money that the household will use to access and utilise healthcare facilities. Households with more household members face financial constraints. Hence, the less likelihood of household with more members to access public healthcare facilities when a member is sick (Lawson, 2004). Composition of household members was grouped into number of individuals who live in one house as 0 – 3 members, 4 – 7 members, 8 – 11 members and >11 members. Distribution of household composition in the various wards was as shown in table 4.4.

Table 4.4: Distribution of Household sizes in Nakuru Town

Ward	**Household members (%)**			
	0 - 3	**4 - 7**	**8 - 11**	**> 11**
Biashara	0.75	1	1.5	0.0
London	0.5	1	0.9	0.0
Menengai	1.5	1.75	1.2	1.2
Kivumbini	2	3	1.5	0.4
Kapkures	0.5	0.75	2.1	0.5
Barut	0.25	1.25	1.3	1.3
Shabaab	2.5	1.5	0.4	0.4
Flamingo	3	1.75	0.15	0.0
Rhonda	2.5	3	1.0	0.4
Kaptembwo	4.5	6.75	1.7	0.7
Nakuru east	18.5	19.0	3.75	1.35
Total	**36.50**	**40.75**	**15.50**	**6.25**

n = 400

Table 4.4 shows that most of the respondents (40.75%) were from houses with between 4 – 7 members. 36.5% of the respondents came from houses with 0 - 3 household members, 15.5% from households with 8 – 11 members while 6.25% were > 11 household members. Nakuru East has the most households with household sizes between 0 and 3 members (18.5%), between 4 and 7 members (19.0%), between 8 and 11 members of the family (3.75%) and those

with more than 11 members (1.35%). Kapkures and London wards had the lowest number of households with between 0 and 3 members (0.5%). The findings are in agreement with KNBS (2017) that the average household size in Kenya is five persons.

4.2.5 Religion of the Household heads in Nakuru Town

Religious beliefs and opinions of a person influences how a person makes decision on his/her way of life. According to Harpham (2009), some faith groups discourage their members from seeking health care services because they believe in faith healing. Hence, this reduces the number of people in the affected area who access and utilize public primary health care facilities. In this study, religion has been categorised into four groups, protestants, catholic, Islam and others.

Table 4.5: Distribution of the Household heads according to Religion in Nakuru Town

Ward	**Religion (%)**			
	Protestants	**Catholics**	**Muslims**	**Others**
Biashara	2	1.75	0.25	0.75
London	1.75	1.5	0.0	2.25
Menengai	2	3	0.75	2.25
Kivumbini	1.25	4.25	1.75	0.75
Kapkures	1.5	0.25	0.25	0.0
Barut	1	0.75	0.0	0.0
Shabaab	2	2	0.25	0.0
Flamingo	0.25	4	2.25	1
Rhonda	3.25	2.25	0.0	0.0
Kaptembwo	9.5	5.75	1	0.0
Nakuru east	11	1.5	7.75	1.25
Total	**35.50**	**27.00**	**14.25**	**8.25**

n = 400

Most of the respondents (41.7%) in the study area are of catholic faith. Other faiths including Hindu and Legio Maria constituted the least number of respondents (8.3%) while Protestants and Muslims were 35.5% and 14.25% respectively. The number of Protestant and Muslims respondents were highest in Nakuru East ward (11.0%) and 7.75% respectively while

Kaptembwo had the highest number of Catholics (5.75%). An examination of the above table reveals that there is no significant variation in the percentages for all the religious groups.

4.2.6 Occupation of the Household heads in Nakuru Town

Occupation of the respondent can affect access and utilization of healthcare services since occupation may lead to a better understanding on the importance of seeking services such as diagnosis, and treatment hence the need to access and utilize health facilities (Cisse, 2011). In addition, occupation influences the cost of accessing medical services. For instance, all the government employees have access to health care insurance therefore are able to access and utilize medical services at a subsidized rate (KIPPRA, 2018). Table 4.6 shows the occupation of the respondents.

Table 4.6: Distribution of the household heads according to Occupation in Nakuru Town

Ward	Occupation (%)				
	Business	**Jua-kali**	**Farming**	**Formal employment**	**Other**
Biashara	2.25	2	0.25	0.0	0.25
London	2.5	0.5	0.5	1.0	1.0
Menengai	2.25	2.5	0.75	2.0	0.25
Kivumbini	4.25	1	0.75	2.0	0.25
Kapkures	0.75	0.0	0.25	1.0	0.0
Barut	0.75	0.25	0.75	0.0	0.0
Shabaab	2.0	1.5	0.0	0.75	0.0
Flamingo	2.25	3	1.25	0.75	0.25
Rhonda	3.0	0.75	0.25	1.5	0.25
Kaptembwo	7.5	0.5	0.75	7.5	0.0
Nakuru east	13.5	10	4.25	6.75	1.0
Total	**41.00**	**22.00**	**9.75**	**14.25**	**3.25**

n = 400

Estimated monthly income influences how many times a person will access and utilize healthcare facilities. It also affects the type of facility one is likely to visit when sick. Businesspersons are the majority among the respondents in Nakuru town (41.25%), followed by those in formal employment (23.25%), jua-kali sector (22.0%) and farmers (9.75%). In all

the wards except Kapkures ward majority of the respondents were involved in business activities as their main source of livelihood.

4.2.7 Monthly Income of the Respondents in Nakuru Town

According to World Bank (2004), there is a strong evidence that shows a positive relationship between income of the household heads and the utilization of health care facilities. For example, women who attend prenatal care and receive a medically supervised delivery rise with income (Barbhuiya *et al*., 2001). The estimated household monthly income was categorized into <10,000, 10,001-20,000, 20,001-30,000, 30,001-40,000, 40,001-50,000, 50,001-100,000 and >100,000 Kenyan shillings.

Table 4.7: Distribution of the Household heads according to Monthly Income in Nakuru Town

Ward	Monthly income (Amount in thousands) (%)						
	<10...	10..1-20...	20..1-30..	30..1-40...	40..1-50..	50..1-100..	>100...
Biashara	1.5	1	0.5	1	0.25	0.0	0.25
London	2	1	0.0	1.5	0.25	0.25	0.5
Menengai	2.5	2.5	0.75	0.5	1	0.5	0.0
Kivumbini	3.75	2.25	1.25	0.25	0.25	0.5	0.0
Kapkures	1	0.5	0.5	0.0	0.0	0.0	0.0
Barut	0.75	1	0.0	0.0	0.0	0.0	0.0
Shabaab	0.25	2.75	0.5	0.75	0.0	0.0	0.0
Flamingo	2.25	2	0.0	1.5	0.75	0.25	0.75
Rhonda	0.0	3	2	0.75	0.0	0.0	0.0
Kaptembwo	4.25	7.75	3.25	0.5	0.0	0.0	0.0
Nakuru East	6.25	14.25	6.75	3.5	1.75	1.75	1.5
Total	**24.50**	**38.00**	**15.50**	**10.25**	**4.25**	**3.25**	**3.00**

n = 400

Most of the household heads in the survey earned an average monthly income of between 10,001 and 20,000 Kenyan shilling while 3% earned more than 100,000 Kenyan shillings per month. Nakuru east ward had the most number of household heads with monthly income of less than Kshs. 10000 (6.25%), between Kshs. 10001 and Kshs. 20000 (14.25%), between Kshs. 20001 and kshs. 30000 (6.75%), between Kshs. 30001 and Kshs. 40000 (3.5%), between Kshs. 40001 and kshs. 50000 (4.25%), between kshs. 50001 and kshs 100000 (1.75%)

and those who earn over Kshs. 100000 (1.5%). This study shows that there is inequality in monthly income within the households in Nakuru. According to World Bank Group (2014), the standard measure of monthly household poverty line is Kshs. 10,522 in a household composed of 3 members. Thus, 24.50% of the households with the heads earning less than Kshs. 10,000 per month in Nakuru town fall below the poverty line.

Table 4.8: Distribution of Per-capita Monthly Income among Households in Nakuru Town

Monthly Income of heads (Amount in thousands)		Per-capita Monthly Income (Kshs.) of households (%)						
		<10...	10...1-20...	20...1 – 30...	30..1 - 40...	40...1 – 50...	50...1 - 100...	>100...
Household size categories	**0-3**	85.6	410.9	1,141.5	3,196	6,000	10,273	27,397
	4-7	204.4	460.1	511.2	1,431	2,208	4,601	8,179
	8-11	1,075	1,209.6	1,334	4,908	7,258	6,048	161,290
	>11	2,000	12,000	5,000	9,333	6,000	20,000	80,000

n = 400

Per-capita income of household heads categories was calculated based on the average number of household members per monthly income category to determine how the income of the household heads influence access and utilization of public primary healthcare facilities in Nakuru town. Table 4.8 shows that monthly per – capita income of the heads in households with 1 - 3 members, 4 – 7 members and 8 - 11 members were increasing. Household with between 0 - 3 members with earning of monthly income of less than Kshs. 10,000 had the least monthly per – capita income of Kshs. 85.6 while household with between 8 – 11 members earning of more than Kshs. 100,000 had the highest monthly per capita income of Kshs. 161,290. In Kenya, the poor are define as those who survive on 1 US dollar or less a day. Therefore, for an average household size of five the poverty line is at Kshs. 12,245 or less per month (Olielo, 2013). This indicates that households in categories 0 - 3 and 8 – 11 whose heads earn monthly income of more than Kshs. 100,000 and households with more than 11 members whose heads earn monthly income are more than Kshs. 50,001to over Kshs 100,000 fall above the poverty line.

4.3 Level of Utilization of Primary Healthcare Facilities in Nakuru Town

The first objective of the study was to determine the extent of the levels of household utilization of primary healthcare facilities in Nakuru town. In its purest form, the decision to

seek medical care is a behavioural response to a perceived need created by an illness. The complexity of the real world however introduces variability and constraints into this process. Underutilization of healthcare facilities is often related to peoples knowledge, based on previous experience that facilities are far away and often difficult to reach., that they may be closed, that needed drugs may be out of stock and that staff are often less helpful and polite. Results on levels of households' utilization of primary healthcare facilities are presented and discussed in this section.

4.3.1 Available Health Care Facilities Utilized by the Respondents in Nakuru Town

In this study, household utilization of PHC facilities was assessed by asking respondents two sets of questions; to name the type of health facility a member of household is taken to when sick; and to state the number of times a household utilized the preferred facility in the month preceding the survey. The responses are categorised as follows; public health care centres, dispensaries, private clinic, and traditional medicine. Those who reported visiting public health centre, public dispensary and private clinics were considered to have adequate healthcare than those who utilize traditional medical practitioner or none.

Figure 4.1 shows the distribution of the respondents according to the health care facilities they access and utilize in Nakuru Town.

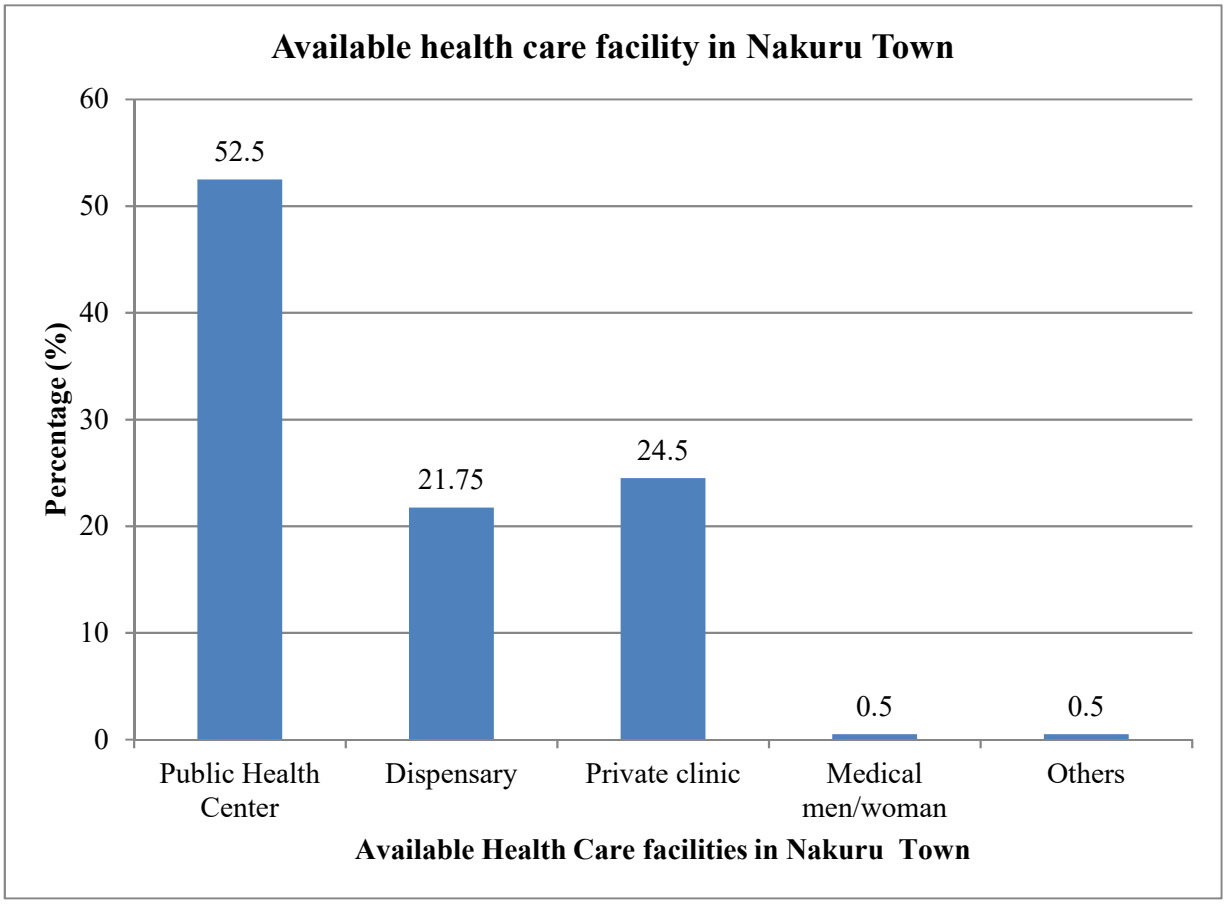

Figure 4.1: Available health care facilities utilized by the respondents in Nakuru town

The results presented above reveal that all respondents reported that they sought medical attention when they were sick. 52.5% of the respondents (n=400) visited a health centre to seek health care services (figure 4.1). 28.5% of the respondents who visited public health centre were from female - headed households while the rest were from male - headed households. Our study findings corroborates previous findings by Prosser (2007) in Busia, Samburu and Malindi districts indicated that most of the respondents (30%) attended public health centres more than other health care facilities. The same study also showed that the least number of respondents sought the intervention of traditional medicine men/women whenever they fell sick. They noted that the preference on herbal medicine is because it is effective and has fewer side effects compared to the conventional medicine. In China, the preference for public health care to other health care facilities among the urban residents of Hokou in the 1980s was found to be as a result of the negative willingness-to-pay for private health care as well as the people's previous interactions with the health care system (Tang & Zhang, 2016). Studies by Prosser (2007) and Tang and Zhang (2016) are in agreement with research finding on preference on public primary healthcare facilities to private facilities.

Some studies have however revealed situations where people prefer traditional medical practitioners to modern health care. A study on knowledge and practices on modern health care expansion in Ethiopia shows that there is inadequate information on utilization of modern primary healthcare facilities (Wassie *et al*., 2015). The above study shows that up to 80% of Ethiopians still use traditional medicine for primary health care. Another study in Cambodia found that traditional herbal medicine is used as a complementary alternative medicine among patients with chronic diseases (Pearson *et al*., 2018).

4.3.2 Percentage Distribution of Respondents by Type of Health care Facility Visited by Background Characteristics

As documented earlier in the theoretical and conceptual frameworks, the socio-economic and demographic characteristics of the respondents' households play a key role in influencing utilization of health services. To determine the role these factors in influencing utilization of public primary health care in Nakuru Town, the researcher conducted cross tabulations and the results are presented in table 4.9. The characteristics that were considered in our analysis are gender, age income, education, occupation, household size and religion of the households. In addition, chi-square test was determined to show the relationship between the variables as shown in table 4.9.

Table 4.9: Percentage Distribution of Respondents by Type of Health care Facility Visited by Background Characteristics

Characteristic	Type of facility visited (%)					
	Health Centre	Dispensary	Private Clinic	Traditional practitioners	None	Total
Gender						
Male	24	10	12.75	0.5	0.25	**47.50**
Female	28.5	11.75	11.5	0.5	0.25	**52.50**
Total	**52.50**	**21.75**	**24.25**	**1.00**	**0.50**	**100.00**
Age						
18-26	11.75	5.75	5.25	0.25	0.0	**23.00**
27-35	25.25	8.0	9.75	0.0	0.5	**43.50**
36-44	9.0	3.75	5.0	0.0	0.0	**17.75**
45-53	6.0	3.25	3.25	0.25	0.0	**12.75**
>54	0.5	1.0	1.0	0.5	0.0	**3.00**
Total	**52.50**	**21.75**	**24.25**	**1.00**	**0.50**	**100.00**
Income						
<10,000	16.5	7.0	0.5	0.25	0.25	**24.50**
10,001-20,000	21.75	8.75	7.0	0.25	0.25	**38.00**
20,001-30,000	7.0	0.75	8.0	0.25	0.25	**16.25**
30,001-40,000	4.0	3.0	3.25	0.0	0.0	**10.25**
40,001-50,000	2.0	1.0	1.25	0.0	0.0	**4.25**
50,000-100,000	0.75	0.25	2.25	0.0	0.0	**3.25**
>100,000	0.5	0.75	2.0	0.25	0.0	**3.50**
Total	**52.50**	**21.50**	**24.25**	**1.00**	**0.75**	**100.00**
Education						
No formal Education	2.75	0.75	0.75	0.25	0.5	**5.00**
Primary	5.25	3.25	2.0	0.25	0.25	**11.00**
Secondary	24.25	10.0	5.5	0.25	0.25	**40.25**
Tertiary	12.5	4.5	8.0	0.25	0.0	**25.25**
University	7.75	3.0	7.75	0.0	0.0	**18.50**
Total	**52.50**	**21.50**	**24.00**	**1.00**	**1.00**	**100.00**
Occupation						
Business	23.5	9.25	8.25	0.0	0.0	**41.00**
Jua Kali	10.75	6.75	4.5	0.0	0.5	**22.50**
Farming	5.5	3.25	1.0	0.5	0.0	**10.25**
Formal Employment	10.25	2.5	10.0	0.0	0.0	**22.75**
Other	2.5	0.0	0.5	0.5	0.0	**3.50**
Total	**52.50**	**21.75**	**24.25**	**1.00**	**0.50**	**100.00**
Household Size						
0-3	19.75	13.75	13.75	0.0	0.5	**36.75**
4-7	18.0	10.0	12.5	0.25	0.5	**30.50**
8-11	2.75	6.25	1.5	0.0	0.0	**5.00**
11+	0.0	0.0	0.5	0.0	0.0	**0.50**
Total	**40.50**	**30.00**	**28.25**	**0.25**	**1.00**	**100.00**

Gender $x^2 = 5.377$, $p = 0.372$, Age $x^2 = 19.677$, $p = 0.478$, Monthly Income $x^2 = 155.048$, $p = 0.000$, Education $x^2 = 60.854$, $p = 0.000$

Evidence from Table 4.9 shows that health centres are visited by majority of the respondents of both genders, those of ages 18 years to 53 years, majority of those with no education to those with the highest level of education (university) and those with income ranging from below Kshs. 10,000 to Kshs. 50,000. Majority of the aged (54 years and above) and those with income of more than Kshs. 100,000 prefer private clinics and dispensaries. Medicine men and women are the least visited by the respondents of both genders, of all the education levels and of different income categories. The findings are in tandem with Travassos *et al*. (2002) study in Brazil that found out that family characteristic (gender, age, and income) influences access and utilization of PHC facilities.

As earlier found and discussed (table 4.2), age plays an important role in the access and utilization of primary health care facilities. It is perceived that as one advances in age, they are likely to have more health issues related to old age. Table 4.9 shows age as a factor that influences access and utilization of different health care facilities in Nakuru town. 25.25% of the respondents who were between 27-35 years old their household members sought health services from health centres. 0.25% of respondents aged 18-26 years old and 0.25% of those aged 54 years and above their household members sought services from traditional medicine man or woman. This shows that most household heads are to terms in the use of conventional medicine. Further, it was found out that, there was no relationship between age of the household heads and the type of health facility visited by their household members ($p=0.478$ which is greater than 0.05). This implies that age does not influence the number of visits to the health facilities in the study area. This finding contradicts with Travassos *et al*. (2002) study which found out that age positively influences utilization health care facilities because old age is usually associated with greater confidence and experience and when combined with greater responsibilities within the household, it is not surprising that older people will seek health care more than the young one.

Utilization of health centres, dispensaries and private clinics increased as the respondents' age increased from 18 years to 35 years. The finding concurred with National Center for Health Statistics (2017) that increased functional limitations and consequent health-care utilization occurs in people as they age more so the working-age people and the older adults.

An examination of table 4.9 reveals that household heads who earn an average of KShs 20,000 and below their members preferred to visit a health centre while those who earned more than KShs 20,000 their members visited private clinics. This is because as people earn more they tend to visit private clinics, as they are perceived to offer better health care services than

public health care centres and dispensaries. In addition, most of the respondents who earn less than Kshs. 10000 their members visit public health centres and dispensaries compared to the respondents with income of more than Kshs. 100,000. On the other hand, most of the respondents who earn more than kshs. 100,000 their members visited private clinics than those who earn less than Kshs. 10000. Past research have revealed that income increases the likelihood of health services used (WHO, 2016). For example, average monthly income also played a role in the type of health facility that one is likely to visit when sick. Income is one of the limiting factors for seeking health care services as it is related to the cost of treatment (Nyamongo, 2002) and physically accessing treatment (Buor,2003). This study found out that there is a relationship between monthly income of individuals and the type of health facilities visited (p=0.000). This study concurs with Nyamongo (2002) and National Center for Health Statistics (2017) research findings on income trends verses health care facilities utilization. Nyamongo (2002) found out that since 41.3% of respondents in the rural Kenya get their income from personal business, thus influencing their ability to utilize health care facilities. National Center for Health Statistics (2017) found out that income trends of among the low-income households are similar to the utilization of public primary health care facilities. They also have greater rates of not receiving or of delayed medical care and obtaining prescription drugs because of the costs.

Income also determined the number of times one visited a healthy care facility. Generally, those who earned between Kshs. 10,000 and Kshs. 20,000 their members visited healthcare centres more often that other group of monthly income. Respondents with less than Kshs. 10,000 monthly income their members visited health care facilities more than five times compared to other groups. This study concurs with Muhofah *et al*. (2010), that those with lower income and low socio-economic status form the bulk of people utilizing public primary health care services in solving their health problems. The findings are in agreement with Muhofah *et al*. (2010) that very few individuals earning above Kshs. 100,000 sought treatment from public primary health care facilities including dispensaries.

Gender in this study has been categorised as males and females. More households headed by females (28.5%) indicated to have sought health care services from public primary health care facilities while more males headed households (12.75%) compared to females headed households went to private clinics (Table 4.9). There were more male respondents who visited private clinics and traditional medicine men or women than female respondents in Nakuru Town. This study concurred with Salganicoff *et al*. (2014) that women overall have higher health centres and dispensaries utilization than men. This might be because of financial

constrains as more males are financially empowered than the females. Gender has been reported to affect access and utilization of health care services in a study done in India (Pillai *et al*., 2003). Even though gender has been cited to be a determining factor in utilization of primary health care services in various studies, in this study, there was no relationship between gender of households heads and the type of health facility their members visited (p=0.372). This study is in agreement with finding by Mbagaya *et al*. (2005) that women in higher socio-economic group tend to exhibit patterns of more frequent use of maternal health services than women in the lower socio-economic group. The study is also concurs with Ensor and Copper (2004) findings that utilization of health facilities is determined by gender and age. Therefore, for this study, gender did not play a role as a limiting factor to accessing and utilising primary health care services. However, in a study done in Tshwane region, South Africa by Nteta *et al*. (2010) showed that most women had difficulties in utilizing primary health care facilities because of family responsibilities, distance to health care facilities and financial constraints.

Table 4.9 shows the relationship between the respondents' education and the type of healthcare facilities visited in Nakuru town. In this study, at least 56% of the respondents had attained secondary level of education. Those with secondary level of education (24.25%) their members sought healthcare services from health care centres (table 4.9). Those who had attained tertiary and university levels their members tend to seek health care services from private clinics. Respondents with no formal education their households sought medication from traditional medicine man/woman more compared to others. Education background is an important factor that influences the use of formal healthcare services. For example, the level of education of an individual influences a person's decision-making in all spheres of life including utilization of health care services. Further, education allows an individual to be effective in converting healthcare and other health enhancing goods into health. The findings of this study reveals that there is significant relationship between households with various level of education and the type of health care facilities they utilized when ill (x^2=60.854, p=0.000). The study finding concurs with the research finding that education level in Nakuru town is high (KNBS, 2013). Thus, the residents of Nakuru town are well informed on health issues including the type of public primary health care facilities they visit. The study on the other hand agrees with the findings of Ensor & Copper (2004) that better education among both men and women may raise understanding and appreciation of the benefits of the primary public health care and hence demand for it.

Further, table 4.9 most of the respondents 99.75% their members had visited a health care facility at least once in the past six months. This was regardless of their level of education.

66.7% of the respondents with secondary level of education their members had visited a health centre more than five times. In addition, 55.6% of the respondents with primary level of education their members had visited private clinics more than five times. A study done in Zambia indicated that women with low level of education were more likely to delay seeking medical attention (Needham *et al*., 2001). Studies done by Bertakis *et al*. (2000), Chukwuani *et al*. (2006) and Gong *et al*. (2014) showed that a person's level of education was one of the determinants in accessing and utilization of health care services. Thus from the study finding (table 4.9), it shows that education influence the number of times the residence of Nakuru town visited public primary health care facilities. This implies that the residence of Nakuru town access and utilize public primary health care facilities based on their level of education.

4.3.3 Frequency of Health Visits to Public Primary Health Care Facilities

Level of household access to public primary health care facilities including dispensaries and health centres was a measured by asking the respondents the number of visits made by any member of the household in the six months preceding the survey. The responses in this question were recorded as either; once, twice, thrice, four times and five ties. . The frequency of visits is used to imply the level of access. Cross tabulations were done between respondent's background characteristics and the number of visits made to a preferred health facility and the results are summarised in table 4.10.

Table 4.10: Percentage Distribution of the of the respondents by Visits to Public Primary Health Care Facilities for the last six months preceding the study

Characteristic	Number of visits (%)					
	1	**2**	**3**	**4**	**5+**	**Total**
Age of Household Head						
18-26	4.5	6.0	6.75	3.5	2.0	**22.75**
27-35	8.5	10.5	15.0	5.25	3.5	**42.75**
36-44	4.5	5.7	5.5	1.5	0.75	**17.95**
45-53	3.55	5.25	3.0	1.25	0.25	**13.3**
54+	0.25	1.0	0.5	0.25	0.25	**2.25**
Total	**22.30**	**28.45**	**30.75**	**11.75**	**6.75**	**100.00**
Monthly Income						
Less than 10,000	5.5	6.5	8.5	2.0	1.75	**24.50**
10,001-20,0000	9.5	9.5	13.0	4.0	1.5	**38.00**
30,001-40,000	3.25	5.75	2.5	2.75	1.25	**16.25**
40,001-50,000	1.5	4.5	3.0	0.75	0.5	**10.25**
50,001-60,000	0.25	1.0	2.25	0.25	0.5	**4.25**
50,001-100,000	0.5	0.25	0.75	1.0	0.75	**3.25**
100,000+	0.25	0.5	0.75	1.0	0.5	**3.50**
Total	**20.75**	**28.00**	**30.75**	**11.75**	**6.75**	**100.00**
Gender						
Male	12.25	14.5	11.5	6.5	3.25	**47.50**
Female	8.75	14.25	19.25	5.75	3.5	**52.50**
Total	21.00	28.25	30.75	11.75	6.75	**100.00**
Level of Schooling						
None	1.5	2.25	1.5	0.85	0.5	**6.60**
Primary	1.75	1.75	4.5	1.0	1.75	**10.75**
Secondary	9.25	12.35	11.0	4.5	2.75	**39.85**
Tertiary	5.5	9.0	7.25	1.5	1.0	**24.25**
University	3.75	3.75	6.25	3.85	0.95	**18.55**
Total	**21.75**	**29.10**	**30.50**	**11.70**	**6.95**	**100.00**
Occupation						
Business	8.25	11.0	9.25	3.5	10.75	**42.75**
Jua Kali	4.75	3.0	3.75	3.0	4.75	**19.25**
Farming	0.75	3.5	4.0	1.25	0.75	**10.25**
Formal Employment	2.85	4.5	8.65	3.0	3.0	**22.00**
Other	1.0	1.25	1.75	0.75	1.0	**5.75**
Total	**17.60**	**23.25**	**27.4**	**11.5**	**20.25**	**100.00**
Household size						
0-3	8.0	9.75	10.75	5.65	2.25	**36.40**
4-7	5.5	6.5	8.5	3.75	2.0	**26.25**
8-11	3.25	2.25	2.5	2.5	0.75	**11.25**
11+	3.15	2.15	3.75	7.55	9.5	**26.1**
Total	**19.9**	**20.65**	**25.5**	**19.45**	**14.5**	**100.00**

Table 4.10 shows that most households headed by female respondents visited the preferred healthcare facility three times (19.25%) unlike most male-headed households who visited their preferred healthcare facilities twice (14.5%). This study finding corroborates findings of a study done by Salganicoff *et al*. (2014) who found out that most women visit health facilities than men to receive diagnostic services, screening services, diet and nutrition counselling and sexual health care. In another study, the number of visits by the female-headed households of over 18 years of age and older women was found out by Owens (2008) to be as a result of reproductive health issues and cardiovascular diseases and osteoporosis cases respectively. The number of visits of the male-headed households was attributed to the socio-economic factors including work related health risks, health insurance and income (Mustard *et al*., 1998). The finding on age implies that most female headed households are likely to utilize health care facilities as compared to the male counterparts in Nakuru town.

Household whose head is aged between 27 – 35 years are the most who have visited their preferred healthcare facilities (15.0%). This was thrice in a year. In addition, they were leading in number of visits (1, 2, 3, 4 and more than five times) to their preferred health care facilities. Table 4.10 shows that there was an increasing number of visits by the respondents from once to twice in all households of all age groups. This concurs with studies by National Center for Health Statistics (2017), which showed more women household heads of age between 18 years and 64 years have higher rates of disability and self-reported fair or poor health status thus visit their preferred health care facilities than their male counterparts. Freid *et al*. (2012) found out that there was an increasing trend in number of visits to the preferred health care facilities of the household heads of the ages over 45 years due to multiple chronic diseases affecting them. The findings on age as a factor that determine the number visits to the public primary health care facilities imply that most of those who utilize dispensaries and health centres are within the active age bracket hence prone to health issues.

Table 4.10 further reveals that households whose income lies between Kshs. 10,001 and Kshs. 20,000 were more likely to have visited their preferred health care facilities. On the other hand, households whose monthly income was over KShs. 100,000 visited the health facilities less frequently. This could imply that the low-income households in Nakuru Town are likely to experience more health issues as compared to the high-income households. In addition, low-income households may prefer public primary health care facilities because most of the services are free. Thus, their rate of public primary healthcare utilization is high within the town.

Table 4.10 further reveals that households whose head had secondary level of schooling were more likely to have utilized a health care facilities compared to those who had no schooling. This implies that the level of formal education for household heads influences the decision to seek care. This is because formal education exposes a person to information on the different health care facilities and services offered to take their household members.

Current occupation of household head was found to influence number of visits made to a health facility in Nakuru town. An examination of table 4.10 reveals that household whose heads engage in business were more likely to visit health care facility frequently. . A study in the US revealed that a person's occupation is a major risk factor to disease and health care facilities utilization (National Center for Health Statistics, 2017). People involved in industrial jobs with exposure to chemical, biological and physical risks tend to visit health care facilities more compared to those who are in other employments (Meit *et al*., 2014). To find out whether household size influences the frequency of utilization of health care facilities, cross-tabulations were run between the size of households and number of visits made. The results presented in table 4.10 reveal that households with 0 – 3 members visited the preferred healthcare facilities more frequently in Nakuru town. This findings corroborates those of a study done by Niyas, Karimi and Kavosi (2018) which found out that the utilization of healthcare facilities in both rural and urban areas of Shiraz was dependents on various factors including the low household size of 3.86. This was attributed by the ability of the household heads to finance the costs of health consultations at the various health care facilities. The study finding on number of households shows that the smaller the household size, the more the ability to visit their preferred health care facilities within Nakuru town.

4.4 Peoples Attitudes on Utilization of Public Primary Health Care Facilities in Nakuru Town

The second objective of the study was to identify the factors that influence variations of household's utilization of primary healthcare facilities in Nakuru town. Different sets of questions were used to achieve this objective. For instance, respondents were asked to state reasons why they preferred a particular health facility, whether their households have health insurance cover, and modes of transport used to access health facility and their opinion about the cost of health care. This section presents a summary of findings on the above issues.

4.4.1 Reason for choosing Health Care Facility Visited

People have various preferences in terms of choosing where to seek healthcare services when they become ill. The reasons for preferring a certain healthcare facility include short waiting time, availability of drugs, quality of services offered, location of the facility, price charged for services, availability of diagnostic equipment and NHIF limitations.

From the research finding, 74% of the respondents indicated that they chose a specific healthcare facility due to availability of drugs. The second reason was better and quality health services offered at a healthcare facility (73.5%). 38.5% of the respondents indicated that they chose a specific healthcare facility due to NHIF limitations.

The respondents were asked to choose the reasons for preferring the type of health care institution the visited in the last six months before the survey. A checklist of possible factors including distance to healthcare facility, cost of health care services, religious views, culture, waiting time, availability of drugs, age appropriate services and value of health care services was presented and respondents selected those applicable to them. Results are presented in figure 4.2.

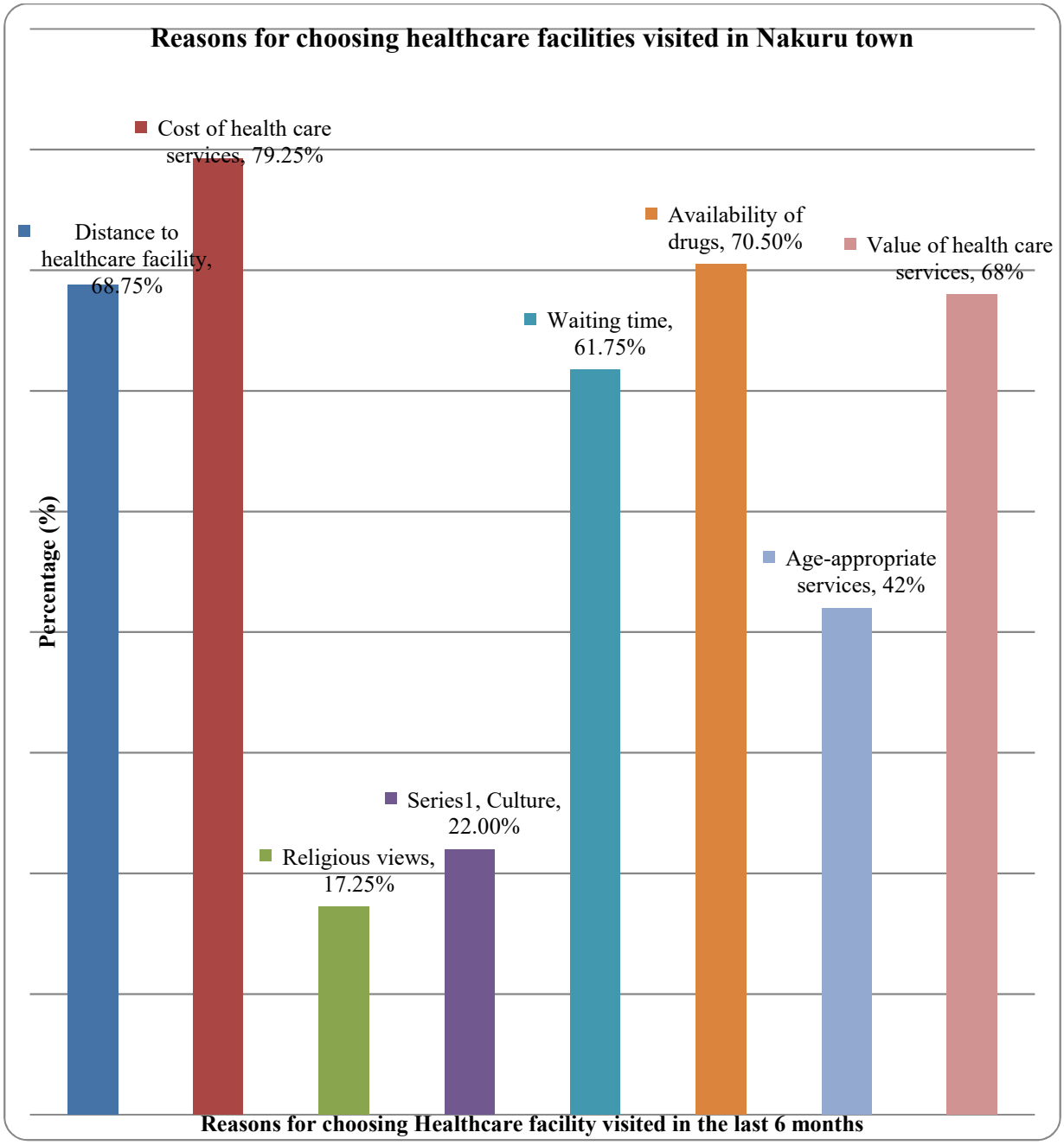

Figure 4.2: Reason for choosing health care facility visited

According to figure 4.2, cost of healthcare services (79.25%) was the most factors that influence the reason for choosing healthcare facility visited by the respondents and their family in the last six months before the survey. However, religious views (17.25%) and culture (22.0%) are the least factors influencing preference of healthcare facility visited. Various costs of accessing and utilizing health care facilities including consultation costs, costs of drugs, and travel costs to the health facilities determine reasons for utilizing the various PHC facilities. This study agrees with study done by Al-Omar and Saeed (1998) which found out that the

patients' preference of PHC facility is dependent on the high quality of PHC services at minimum costs.

Availability of drugs within the public health care facilities (70.5%) was the second factor that influenced utilization of PHC facilities in Nakuru town. The availability of essential drugs and their costs is the most important element of quality health by the consumers (Muiruri & Mugambi, 2017). In Nakuru County, public health care facilities experience acute shortage of drugs thus low utilization (Ministry of Medical Services and ministry of public health and sanitation, 2009).

A further examination of figure 4.2 reveal that distance to health facility was selected as the third reason (68.75%) for utilizing various primary health care facilities in Nakuru Town. Our finding corroborates findings by another study that found out that knowledge of utilization of health facility and services offered and associated factors including distance to the facility are important factors people use to choose which facility to visit when sick (Ngugi *et al*., 2017). Similarly, a study done within the rural areas of Nigeria, found out that the shorter the distance to the health care facility the more likely it will be visited by patients (Awoyemi *et al*., 2011).

Peoples' perception of the value of the health care services they receive (68%) was the fourth reason why the respondents prefer a given health care facility in Nakuru town. This revelation is worth noting because past research has revealed that there is inadequate population-level information on utilization of health services and uneven distribution of health services in Kenya (Chuma *et al*., 2012). Our current finding corroborates an early study done in Kenya by Ngugi *et al*. (2016) found out that majority of people seeking healthcare services utilize health care facilities they anticipate to offer the best service within their area of resident. The study by Ngugi *et al*. (2016) also found out that proportion of health facilities offering various health care services are always from outside the study area or those not identified as the closest to the patients' homestead.

It also worth noting that religious (17.25%) and cultural views (22%) were the least factors the respondents selected to determine their choice of health care facilities they utilize in Nakuru town.

4.4.2 Respondent's Attitudes on Distance to Health Care Facility

Distance between areas of residence of an individuals and a health facility can determine a person's ability to access and utilize public health care services. People with low income will specifically avoid health facilities that are far away to avoid transportation costs. 60.8% of the respondents visited a health care facility because it was near their homes. This

was coupled with low price that they pay for health care services. Most of the respondents (66.3%) of the respondents said that they visited facilities of their choice because of low price.

Table 4.11: Distance to health care facilities and number of visits

Number of visits	Distance to health care facilities (%)					
	<2Km	**2-4Km**	**5-7Km**	**8-10Km**	**>11Km**	**Total**
0	0.0	0.25	0.0	0.0	0.0	0.25
1	6.75	5	2.75	3.5	3	21.00
2	13.25	3.75	5.25	2.5	3.25	28.00
3	14	5.5	5	5.25	1	30.75
4	6.5	0.5	3.7	1.5	0.25	12.45
>5	2	1.75	0.5	1.5	0.75	6.50
Total	**42.80**	**17.50**	**17.20**	**14.20**	**8.30**	**100.00**

n=400, x^2=77.279, p=0.000

In this study, 42.8% of the respondents live less than two kilometres from the nearest dispensaries and health centres in Nakuru town. It is recommended that healthcare facilities should be located at a distance of 0-4 kilometers (WHO, 2016) to encourage access and utilisation of the facilities. In a study done in Nepal by Yadav (2010), it was observed that patients who lived more than two kilometres from health facilities sought alternative health services. On the other hand, Ngugi *et al*. (2017) found out that majority of the respondents (51.1%) from Rabai and Kaloleni sub-counties in Kenya sought health care services from health care facilities located near their homes. A study done in Olorunda Local Government Area, Nigeria indicated that 26.7% of the respondents cited long distance as hindrance in utilization of Primary health care services (Egbewale *et al*., 2013).

Further, the study findings are in agreement with WHO (2013) which found out that access and utilization of primary healthcare facilities is low in the developing countries because the distance between the place of residence and the nearest facility is more than the recommended distance of between 0 and 4 kilometres. In addition, KIPPRA (2018) noted that the national average of the nearest health care facility in Kenya was estimated to be at 3 kilometres while the distance across the counties ranges between 1.4 kilometres to about a high of 52.6 kilometres

The study findings (table 4.11) imply that the lower the distance between the place of residence of the respondents and the health care facility, the more the likelihood of accessing and utilizing the particular facility when the respondent or his/her family is sick. The chi-square test between distance and number of visits to a health facility at a significance level of p = 0.00 confirmed the finding that distance influence the number of visits to the public PHC facilities. This is in agreement with Akin and Hutchison (1999) study finding in Uganda, which found out that distance was an important factor in access and utilization of primary healthcare facilities.

4.4.3 Household Means of transport

In this study, respondents were asked to provide information on the means of transport commonly used by their household to access to health facility. Their responses were categorised as follows: walking, motor cycle, public transport, taxi, and own motorcar. An analysis of their responses is presented in table 4.12.

Table 4.12: Means of transport and number of visits

Number of visits	Means of transport (%)					
	Walking	**Motorcycle**	**Public transport**	**Taxi**	**Own car**	**Total**
0	0.0	0.25	0.0	0.0	0.0	0.25
1	8.25	5	6	0.25	1.25	20.75
2	7	5.25	11.5	2.5	1.75	28.00
3	3.5	7.5	15	1.5	3.25	30.75
4	1.75	2.3	4.25	2.25	1.5	12.05
>5	0.75	1.5	3.25	0.25	1	6.75
Total	**21.80**	**22.10**	**40.30**	**7.00**	**8.80**	**100.00**

n=400 $x^2 = 56.560$ p= .002

From table 4.12, most of the respondents (40.3%) in this study used public transport as a means to get to the nearest health care facility despite majority of them (42.8%) that they lived less than two kilometres from a health care facility (table 4.11). Public transport was the most preferred means of accessing primary public health care facilities and used to access the facilities most twice (11.5%). In addition, 15% of the respondents who visited a healthcare

facility thrice used public transport and 3.25% of them used their own cars to visit healthcare facility thrice. The relationship between means of transport to the public PHC and the number of household visit was significant at a p value of 0.002 confidence level. This suggests that household means of transport to the public PHC does not influence the number of visits.

Our results corroborate findings from Malawi and Burkina Faso where transportation costs and time of travel were identified as main barriers to access and utilization of primary health care facilities (Islam *et al*., 2002; Nteta *et al*., 2010). Evidence indicates that location of health care facilities is another important dimension of the cost of care. For example, the study in Burkina Faso suggested that transport cost account for 28% of the total cost of using hospital services (Ensor & Copper, 2004).

The available mean of transport and their cost are important factors in choosing the health facilities to visit (Lodenyo *et al*., 2016). In Malawi, most of the roads in rural areas are all weather roads and many do not have bridges, which is a challenge during the rainy season. Thus, animal drawn carts stood out as the most ordinary means of transport from home to the primary healthcare facility (Varela *et al*., 2019). In some areas in Malawi the most used means of transport is the bicycle while ambulance is used for transfer of maternity patients from rural health facility to district hospitals (Lungu *et al*., 2000). Rarely in Malawi, transportation from primary health facility to secondary or tertiary health facility is done by means of public hospital ambulances.

4.4.4 Role of mode of transport on Public Primary Health Care facilities Utilization

To measure the influence of personal and household characteristics on type of transport used, cross tabulations were conducted and results presented in table 4.13.

Table 4.13: The Role of Mode of Transport on Public Primary health care Facilities Utilization

Characteristics	Means of transport (%)					
	Walking	**Motor cycle**	**Public transport**	**Taxi**	**Own car**	**Total**
Age						
18-26	36.9	26.1	19.6	13.1	4.3	**100**
27-35	22.3	31.4	22.7	11.5	12.1	**100**
36-44	18.1	22.2	33.3	12.5	13.9	**100**
45-53	20.8	24.8	22.7	16.6	15.1	**100**
>54	10	20	30	30	10	**100**
Income						
<10,000	29.6	24.5	24.4	19.4	2.1	**100**
10,001-20,000	30.3	24.5	21.7	18.4	5.1	**100**
20,001-30,000	15.3	18.4	16.1	21.9	28.3	**100**
30,001-40,000	12.2	19.5	17.1	21.9	29.3	**100**
40,001-50,000	5.9	11.8	11.7	23.5	47.1	**100**
50,000-100,000	0	13.4	13.4	21.1	52.1	**100**
Gender						
Male	24.3	21.1	23.3	17.1	14.2	**100**
Female	14.2	27.4	24.7	21.5	12.2	**100**
Education						
No formal education	35.0	20.0	30.0	15.0	0	**100**
Primary	26.5	21.2	28.5	19.6	4.2	**100**
Secondary	9.9	31.8	27.9	20.5	9.9	**100**
Tertiary	8	30	19	26	17	**100**
University	16.4	25.7	15.5	21.9	20.5	**100**
Occupation						
Business	18.79	26.67	41.82	6.66	6.06	**100**
Jua Kali	29.68	21.59	36.36	10.23	2.14	**100**
Farming	29.79	17.95	35.55	5.15	11.56	**100**
Formal Employment	13.98	13.98	44.08	6.45	21.51	**100**
Other	38.46	30.77	30.77	0.0	0.0	**100**
House-holdsize						
0-3	19.28	17.15	43.86	10.96	8.75	**100**
4-7	25.2	23.58	38.21	2.44	10.57	**100**
8-11	5.0	20.0	65.0	5.0	5.0	**100**
11+	50.0	0.0	50.0	0.0	0.0	**100**
Religion						
Protestants	26.76	18.52	40.85	4.72	9.15	**100**
Catholics	18.67	22.29	43.37	6.62	9.05	**100**
Muslims	8.77	19.3	45.62	17.54	8.77	**100**
Others	39.39	39.39	12.13	6.06	3.03	**100**

According to table 4.13, walking to the public primary health care facilities is preferred by the households headed by respondents' of ages between 18 years and 35 years while motorcycle and public transport are preferred by households whose household heads are 36 years and above. Households with income of below Kshs. 20000 prefer walking to the health facilities while those with income of Kshs. 50000 and above prefer motorcycle and public transport. Most male headed households prefer walking and using public transport to the primary health care facilities while female headed households prefer using motor cycle and public transport. Most households headed by respondents with no formal education walk to the primary health care facilities while most headed with the respondents with secondary, tertiary and university education prefer using motor cycle to the health facilities. Most of the respondents in all occupations (Business, Jua Kali, Farming and Formal Employment), household of all sizes and of all religions, their households prefer using public transport when accessing and utilizing the primary health care facilities in Nakuru town.

Walking, as a means of transport to the health facility are preferred by households with male-headed respondents aged 26 years and below, with no education or primary level of education and earning income of less than Kshs. 20,000. On the other hand, most of the households who access health care facilities using their own cars are male household heads, aged between 45-50 years, with university education and earning kshs. 100000. This finding concurs with Amer (2007), Black and Ebener (2004) and Talen and Anselin (1998) studies which revealed that household characteristics including income, education and occupation among other factors influence the mode of transportation used to reach the health care facilities.

There are various benefits accrued from accessing primary health care facilities using public transport and taxis including its cost effectiveness and fastness. Generally, the findings from our study reveal that households in Nakuru prefer the modes of transport that are less costly to access a health facility. These modes of transport are walking, public transport and motorcycle.

4.4.5 Cost of Health Care and Household's Utilization of Primary Health Care Facilities

Varela *et al*. (2019) revealed that cost of health care including direct costs (surgical fees, drugs and other medical supplies, transport to health facility and hospital stay) determine the level of household utilization of services. In this study, respondents were asked to give their opinion on cost of health care. Respondents were specifically asked to give their opinions on the cost of the following aspects: doctors' consultation fees, medications costs, and travel costs. The results are presented in tables 4.14, 4.15 and 4.16.

4.4.5.1 Role of Doctor's consultation fee on Utilization of Public Primary Health Care Facilities

Table 4.14: Percentage distribution of respondent's attitudes on cost of doctor's consultation fee by background characteristics

Characteristic	Opinion on cost of doctor's fee (%)					
	Very Inexpensive	Inexpensive	Expensive	Very Expensive	Normal	Total
Age of respondent						
18-26	0.75	0.5	13.5	1.0	7.25	**23.00**
27-35	3.5	1.5	18.75	2.25	17.0	**43.00**
36-44	1.25	0.75	6.0	1.5	8.5	**18.00**
45-53	1.25	0.25	7.0	1.15	3.75	**13.40**
54+	0.25	0.25	1.5	0.1	0.5	**2.60**
Total	**7.00**	**3.25**	**46.75**	**6.00**	**37.00**	**100.00**
Monthly Income						
Less than 10,000	2.75	1.75	10.75	2.25	7.0	**24.50**
10,001-20,0000	3.25	0.5	17.25	1.0	15.75	**37.75**
30,001-40,000	1.5	0.0	10.50	1.25	4.5	**17.75**
40,001-50,000	0.25	0.25	4.25	0.38	4.25	**9.38**
50,001-60,000	0.55	0.75	1.55	0.5	1.25	**4.60**
50,001-100,000	0.0	0.0	1.27	0.0	2.0	**3.27**
100,000+	0.0	0.0	1.0	0.25	1.5	**2.75**
Total	**8.30**	**3.25**	**46.57**	**5.63**	**36.25**	**100.00**
Gender						
Male	2.75	1.0	22.25	3.25	23.25	**47.50**
Female	4.25	2.25	24.75	2.50	18.75	**47.50**
Total	**7.00**	**3.25**	**47.00**	**5.75**	**42.00**	**100.00**
Level of Schooling						
one	0.5	0.0	2.75	0.75	1.0	**5.00**
Primary	0.0	0.75	5.25	0.5	4.25	**10.75**
Secondary	3.75	1.75	15.5	2.75	16.5	**40.25**
Tertiary	2.0	0.5	12.5	1.25	8.5	**24.75**
University	0.75	0.25	10.25	0.25	6.75	**18.25**
Total	**7.00**	**3.25**	**47.25**	**5.50**	**37.00**	**100.00**

Occupation						
Business	4.0	1.25	17.5	3.0	15.5	**41.25**
Jua Kali	1.25	1.5	8.25	1.25	9.75	**22.00**
Farming	1.0	0.25	3.75	0.5	4.0	**9.75**
Formal	0.25	0.25	15.25	1.0	6.5	**23.25**
Other	0.5	0.0	1.75	0.0	1.0	**3.75**
Total	**7.00**	**3.25**	**46.5**	**5.75**	**36.75**	**100.00**
Household						
0-3	3.5	0.75	20.0	2.5	9.75	**37.50**
4-7	2.0	1.25	13.75	1.0	12.75	**40.75**
8-11	0.25	0.75	2.0	0.0	2.0	**15.50**
11+	0.0	0.0	0.25	0.0	0.25	**6.25**
Total	**5.75**	**2.75**	**36**	**3.5**	**24.75**	**100.00**

Table 4.14 shows that as the respondents' (male and female) monthly income of most increased from Kshs. 10001 to over Kshs. 100000, the number of the respondents who were of the view that the doctor's fee is expensive reduced. Similar trend in normal doctors' consultation fee were observed on the occupation of the household head, expensive on the respondents' education where there was increasing/decreasing number of respondents according to the household heads occupation, monthly income and education.

In addition, the table (4.14) shows that most of the respondents (n=400) in each category of the socio-economic background were of the opinion that the doctors' consultation fee in public PHC facilities within Nakuru town is expensive. Most of the respondents who were of the opinion that doctors' consultation fee is expensive were female (24.75%), household heads of between 27 and 35 years (18.75%), those earning between Kshs. 10001 and Kshs. 20000 (17.25%), those with secondary education (15.5%), those with formal employment (15.25%), those with between 4 and 7 members within the household (13.75%) and protestant household heads (21.25%).

In 2013, the Ministry of Health removed all user fees including doctors' fee in all public primary health care facilities (WHO, 2017). This was aimed at reducing the cost of accessing health care services in the country and to improve the quality of health care services in public health care facilities. Thus the findings imply that despite the fact that the government has removed the doctors' consultation fee in addition to subsidizing other medical costs within the public primary health care facilities there are still other charges and fees levied within the public PHC facilities that make the doctors' fee to be expensive.

4.4.5.2 Household heads' Attitudes on Medication Cost by Socio-economic Characteristics in Nakuru Town

The cost of medicine is most likely to affect compliance with prescribed treatment. However, to the extent that the cost of drugs figures in decision to seek health care, it can be expected to delay or discourage that decision. The financial costs of health services in the form of providers' fees and the price of medication are only some of the costs considerations facing individuals in their decisions to seek care. In this study, we sought to find out the households attitudes on medication by socio-economic characteristics in Nakuru town.

Table 4.15: Percentage Distribution of Respondent's Attitudes on Medication Cost by Background Characteristics

Characteristic	Opinion on cost of medication (%)					
	Very Inexpensive	Inexpensive	Expensive	Very Expensive	Normal	Total
Age of Household Head						
18-26	0.5	0.75	12.0	1.25	8.5	**23.00**
27-35	2.25	2.0	15.0	3.25	20.5	**43.00**
36-44	1.0	0.75	5.5	1.0	9.75	**18.00**
45-53	1.5	0.75	5.25	1.5	4.25	**13.25**
54+	0.13	0.25	1.5	0.12	0.75	**2.75**
Total	**5.38**	**4.5**	**39.25**	**7.12**	**43.75**	**100.00**
Monthly Income						
< 10,000	1.0	1.5	10.0	2.0	10.0	**24.5**
10,001-20,0000	2.75	1.25	14.75	1.5	17.5	**37.75**
30,001-40,000	0.75	0.0	6.75	1.5	7.0	**16.00**
40,001-50,000	0.5	0.5	4.25	0.75	4.25	**10.25**
50,001-60,000	1.0	1.0	1.25	0.5	1.5	**5.25**
50,001-100,000	0.0	0.0	1.25	0.25	1.75	**3.25**
100,000+	0.25	0.25	0.5	0.5	1.5	**3.00**
Total	**6.25**	**4.50**	**38.75**	**7.00**	**43.5**	**100.00**
Gender						
Male	1.75	1.5	17.0	4.5	22.5	**47.25**
Female	3.5	3.0	22.25	2.75	21.25	**52.75**
Total	**5.25**	**4.5**	**39.25**	**7.25**	**43.75**	**100.00**
Level of Schooling						
None	0.5	0.25	2.5	0.25	1.75	**5.25**
Primary	0.75	1.0	3.75	0.75	5.0	**11.25**
Secondary	2.25	2.25	13.5	3.0	19.5	**40.5**
Tertiary	2.25	0.25	11.0	1.0	10.25	**24.75**
University	0.5	0.5	8.0	2.0	7.25	**18.25**
Total	**6.25**	**4.25**	**38.75**	**7.00**	**43.75**	**100.00**
Occupation						
Business	3.75	1.75	16.5	2.5	17.25	**41.75**
Jua Kali	0.25	1.25	5.75	2.75	12.0	**22.00**
Farming	0.25	1.0	3.25	0.5	4.75	**9.75**
Formal Employment	0.25	0.5	11.75	1.5	8.5	**22.5**
Other	0.25	0.75	1.75	0.25	1.0	**4.00**
Total	**4.75**	**5.25**	**39.00**	**7.5**	**43.5**	**100.00**
Household size						
0-3	3.0	5.75	16.0	2.25	13.5	**40.5**
4-7	1.75	1.25	11.5	3.0	13.25	**30.75**
8-11	1.5	1.0	5.0	0.5	2.5	**10.5**
11+	0.25	0.75	0.25	11.75	5.25	**18.25**
Total	**6.5**	**8.75**	**32.75**	**17.5**	**34.5**	**100.00**

Table 4.15 shows that there were varied opinions among the household heads on the cost of medication within their preferred health care facilities. However, most of the respondents in all the categories of the socio-economic characteristics (n = 400) were of the opinion that the cost of medication at the primary health care facilities in Nakuru town is normal. The categories of the respondents who were of the opinion that the cost of medication in their preferred public health care facilities were normal included: the respondents were of ages between 27 and 35 years (20.5%); those earning monthly income of between Kshs. 10001 and Kshs. 20000 (17.5%); those having secondary education (19.5%); those in businesses (17.25%); those of household size with between 4 and 7 members (13.5%) and those of catholic religion (20.75%). The finding shows that there are various factors that influence the opinion of the household heads to in considering the cost of medication other than the background characteristics.

WHO on Primary health Care System in Kenya (2017) report that there are no regulations on medication costs in the country. However, the Kenya Medical Practitioners and Dentists Board (KMPDB) published in 2016 guidelines for fees to be charged for different medication services. Thus, the study findings imply that the respondents' opinion that the medication costs are normal at the primary health care facilities may be attributed to the removal of the fees charges on public primary health care services in the country.

4.4.5.3 Household Heads' Attitudes on Travel Costs to Health facility by Socio-economic Characteristics in Nakuru Town

Financial cost is an important variable that influences the consideration in utilization of health care services. Financial costs of receiving health care include transportation costs, physician and facility fees. Travel costs are influenced by economic status of the household head that include income and occupation. There is statistical association between economic status and utilization of health care services. In this study, the household heads' attitude on travel cost to health facility by socio-economic characteristics in Nakuru town was determined as shown in table 4.16.

Table 4.16: Percentage Distribution of Respondent's Attitudes on Travel Costs to Health Facility by Background Characteristics

Characteristic	Opinion on travel cost (%)					
	Very Inexpensive	Inexpensive	Expensive	Very Expensive	Normal	Total
Age						
18-26	0.75	0.75	5.25	0.75	16.25	**23.75**
27-35	2.25	1.75	9.25	1.0	28.25	**42.5**
36-44	1.25	0.25	2.25	0.25	14.25	**18.25**
45-53	1.25	0.5	2.5	0.75	8.0	**13.00**
54+	0.25	0.0	1.0	0.0	1.25	**2.5**
Total	**5.75**	**3.25**	**20.25**	**2.75**	**68.00**	**100.00**
Monthly Income						
< 10,000	1.25	1.5	7.5	0.75	18.75	**29.75**
10,001-20,0000	1.5	0.75	5.0	0.25	26.0	**33.5**
30,001-40,000	0.5	0.5	3.75	0.25	9.75	**14.75**
40,001-50,000	0.25	0.75	3.0	0.5	5.5	**10.00**
50,001-60,000	0.5	0.25	1.0	0.15	2.75	**4.65**
50,001-100,000	0.05	0.5	0.75	0.05	2.5	**3.85**
100,000+	0.25	0.25	0.5	0.5	2.0	**3.5**
Total	**4.30**	**4.5**	**21.5**	**2.45**	**67.25**	**100.00**
Gender						
Male	2.5	1.25	10.25	1.5	31.75	**47.25**
Female	4.75	2.0	11.25	1.5	33.25	**52.75**
Total	**7.25**	**3.25**	**21.5**	**3.00**	**65.00**	**100.00**
Level of Schooling						
None	0.25	0.5	1.25	0.25	2.75	**5.00**
Primary	0.25	0.25	4.0	0.5	6.0	**11.00**
Secondary	3.25	2.75	8.0	0.75	26.25	**41.00**
Tertiary	2.25	0.75	3.75	1.25	16.25	**24.25**
University	0.25	0.75	4.5	0.25	13.0	**18.75**
Total	**6.25**	**5.00**	**21.5**	**3.00**	**64.25**	**100.00**
Occupation						
Business	3.75	0.75	6.75	1.25	28.5	**41.00**
Jua Kali	1.5	1.25	5.25	1.0	14.25	**23.25**
Farming	0.75	0.5	2.75	0.25	5.0	**9.25**
Formal Employment	0.25	1.5	5.75	0.25	16.0	**23.75**
Other	0.25	0.25	1.25	0.25	0.75	**2.75**
Total	**6.5**	**4.25**	**21.75**	**3.00**	**64.50**	**100.00**
Household size						
0-3	3.0	1.5	9.75	1.5	30.0	**45.75**
4-7	1.75	1.2	5.00	1.25	30.25	**39.45**
8-11	0.25	0.05	1.25	0.25	11.75	**13.55**
11+	0.25	0.25	0.25	0.25	0.25	**1.25**
Total	**5.25**	**3.00**	**16.25**	**3.25**	**72.25**	**100.00**

Table 4.16 shows that there is a trend in number of household heads with opinion that the cost of travel to their preferred healthcare facilities was increasing from very inexpensive, expensive and normal. This is seen among the respondents with between 0 and 3 members in a family, those with secondary education, those of age between 27 – 35 years, and household heads earning between Kshs. 10001 and Kshs. 20000.

Most of the respondents in all categories of the households' socio-economic characteristics were of the opinion that the travel cost to the primary health care facilities is normal. They included most of the respondents in the categories of ages between 27 and 35 years (28.25%), earning monthly income of between Kshs. 10001 and Kshs. 20000 (26.0%), female household heads (33.25%), household heads having secondary education (26.25%), in businesses (28.5%), those of household size with between 4 and 7 members (21.25%) and of catholic religion (26.25%).

Distance and time impedance between the location of the population and the primary health care facilities are the major factors that determine the opinion of the patients on the travel costs (Jamtsho & Corner, 2014). Thus from the findings it can be implied that majority of the of the people access and utilized health care facilities near their place of residents that is why they consider the cost of travel as normal.

4.4.5.4 Total Cost of accessing Healthcare Services in Nakuru Town

The cost of accessing and utilising health care facilities include transportation costs, doctor's fees, cost of drugs and other services such as diagnosis using medical equipment. Total cost of utilising health care services affects the level of accessing and utilization of the services. These costs include doctor's fees and medical costs.

Table 4.17: Total Cost of accessing healthcare services

Costs	**Percentage (%)**					
	Very Inexpensive	**Inexpensive**	**Expensive**	**Very Expensive**	**Normal**	**Total**
Doctor's fee	7.0	3.8	46.6	5.7	36.9	100.00
Medication	5.3	4.5	39.3	7.1	43.8	100.00
Travel cost	6.0	3.3	22.9	3.0	64.8	100.00
Total cost	6.8	1.5	41.9	9.3	40.5	100.00

In this study, 46.6% of the respondents indicated that doctor's fee was expensive (table 4.17). On the other hand, 43.3% of them respondent that medication costs were normal range. These expenses coupled with travel cost make total cost of accessing and utilising health care facilities and services to be expensive as indicated by most respondents (42%). High cost of the services have been report as a reason for non-utilization of primary health care services in a study done by Muhammed *et al*. (2013) in Batsari Local Government, Nigeria. The government allocated 900 million Kenya shillings (US$ 9 million) for free PHC to be sent to counties to compensate for user fee removal for primary health care facilities (WHO, 2017). PHC facilities also benefit from the 4.3 billion Kenya shillings (US$ 43 million) set aside for free maternity services, is channelled via the National Hospital Insurance Fund (NHIF) to reimburse facilities for deliveries and prenatal services. This reduced the general cost of health care services in the country.

Cost such as doctor's fees, medication and travel costs can determine the number of times one visits a healthcare facility. These factors may therefore hinder or encourage the level of access and utilisation of public primary health care facilities and services.

4.4.6 Correlates of Level of Household Utilization of PHC Facilities in Nakuru Town.

Based on the literature review, our conceptual framework identified the covariates of utilization of primary health care facilities to include sociodemographic of the head of the household head and household factors. Sociodemographic characteristics of the head of household included respondents' age, level of schooling, gender, occupation and income level. Household factors included the number of dependents, household health insurance coverage

We conducted multivariate logistic regression analysis to ascertain whether the above sociodemographic and household factors influence the level of household use of PHC facilities. The dependent variable was the level of utilization that was categorized as 1 if any household member visited a health care facility for care more than three times in the month preceding the survey and low if the member visited the health facility twice or below. The independent variables on the other hand included the sociodemographic characteristics of the head of the household and household characteristics. One category was left out in each of the independent variables entered in regression analysis to act as a reference class. The results of the statistical analysis are presented in Table 4.18 below.

Table 4.18: Odds ratios for determinants of use of Public PHC facilities for care among households in urban Nakuru by selected variables.

Independent Variable	Odds ratio
Age of household head	
18-26 (R)	1.00
27-35	2.31*
36-44	1.40
45-53	0.90
54+	067
Household Monthly income	
Less than 10,000	1.68**
10,001 – 20,000	1.49**
30,001 – 40,000	0.94
40,001 – 50,000	0.65
50,001 + (R)	1.00
Gender of household head	
Male (R)	1.00
Female	1.98**
Level of Schooling for household head	
None (R)	1.00
Primary	1.05
Secondary	2.69*
Tertiary&University	2..21*
Occupation of household head	
Jua Kali (informal) (R)	1.00
Business	1.57*
Farming	1.32
Formal employment	2.71**
Other	0.75
Household size	
0-3	0.57
4-7	0.49**
8-11(R)	1.00
Insurance Cover	
Yes	0.49
No (R)	1.00

*p<0.5, **p<0.01, ***P<0.001

The results of multivariate analysis reveal that the major correlates of utilization of public primary health facilities among households in Nakuru Town are; age of household head, household level of income, gender of household head, household heads' level of schooling, households heads' occupation and household monthly income. Members whose household head is aged 27-35 years are two times more likely to utilize primary health care facilities compared to those whose heads are aged 18-26 years. A further examination of the results reveal that Level of utilization is significantly higher for members whose monthly income is below KeS 20,000. This finding resonates well with the study by Kevany *et al*. (2011) in Zimbabwe which showed that women who receive prenatal care and receive a medically supervised delivery rise with income. In addition, studies in Uganda by Muhofah (2010), showed that utilization of prenatal care increases with the control a woman exercises over household's finances.

Utilization levels is also significantly higher for members whose heads have attained secondary and tertiary levels of schooling. The results further reveal that occupation of the head of household significantly influences level of utilization. Those households whose heads engage in formal employment are two times more likely to utilize primary health care facilities compared to those whose occupation is in the jua kali (informal sector). As evident from the multivariate analysis results, gender of the household head determines level of utilization. Female-headed households are more likely to utilize PHC facilities compared to male-headed households.

4.4.7 Frequency of Visits to a Health Facility as a Factor influencing Household's Utilization of Public Primary Health Care Facilities

In this section, we present results on analysis done to determine the influence of doctors' fee, medication costs and travel cost on the number of visits made to public PHC facilities. Table 4.18, 4.19, 4.20 and 4.21 show the findings.

4.4.7.1 Doctors Fee and Number of Times the Households Visited Health Facilities

Doctor's fee was compared to the number of visits one accesses and utilizes public primary healthcare facilities in Nakuru Town as shown in Table 4.18.

Table 4.19: Percentage Distribution of respondents showing the Doctors fee and number of visits to public health care facilities

Number of visits to a health facility in the last 6 months	Doctor's fee to public PHC facility (%)					
	Very inexpensive	Inexpensive	Expensive	Very expensive	Normal	Total
0	0.00	0.00	0.25	0.00	0.00	**0.25**
1	3	0.25	8.75	0.75	8.25	**22.00**
2	1.75	1.5	11.25	2.25	11.25	**30.25**
3	1.5	1.25	15.75	1.5	10.75	**33.75**
4	0.00	0.00	7.0	0.75	4.00	**15.75**
>5	0.5	0.25	3.00	0.5	2.5	**6.75**
Total	**7**	**3.8**	**46.6**	**5.75**	**37.00**	**100.00**

x^2=27.268, p=0.609

According to table 4.18, 11.5% of the respondents who had indicated that the doctor's fee was expensive visited a public primary health care facility thrice. In addition, those who responded the fees to be of normal rate (11.25%) had also visited a healthcare facility thrice as indicated in table 4.18. The chi-square test between number of visits and the cost of doctors' fee show that there was no significant relationship (p = 0.609). This implies that doctors do not influence the visits to public primary health care facilities in Nakuru town. This concurs with MoH (2013c) that public primary healthcare facilities do not charge consultation fee on patients.

4.4.7.2 Cost of Medication and Number of Times the Respondents Visited the Health Facilities

Medication cost and number of visits to public primary health care facility were compared in Nakuru Town as shown in Table 4.19.

Table 4.20: Percentage Distribution of respondents showing Cost of Medication and Number of visits to public health care facilities

Number of times visited a health facility in the last 6 months	Medication Costs to public PHC facility (%)					
	Very inexpensive	Inexpensive	Expensive	Very expensive	Normal	Total
0	0.0	0.0	0.25	0.0	0.0	**0.25**
1	2.75	0.5	6.0	1.75	10.0	**22**
2	1.25	1.25	10.25	1.5	13.75	**30**
3	0.5	2.0	14.00	1.25	13.0	**33.75**
4	0.0	0.25	5.25	2.0	4.25	**15.75**
>5	0.5	0.5	2.75	0.5	2.5	**6.75**
Missing	0.25	0.0	0.75	0.0	0.25	**1.25**
Total	**5.3%**	**4.5%**	**39.3%**	**7.1%**	**43.8%**	**100.00%**

x^2=41.840, p=0.074

Table 4.19 finding shows that 2.75% of those who responded that medication costs are very inexpensive visited a healthcare facility only once in six months. 14% of the respondents who agreed that cost of medication was expensive visited a healthcare facility twice. In addition, 13.75% who responded that cost of medication was normal visited a healthcare facility only twice in the past six months. The chi-square test finding showing the relationship between number of visits and cost of medication was found to be insignificant at p = 0.074 which meant that medication costs had no influence on the number of households visit to the public primary health care facilities in Nakuru Town. The finding concurs with the study findings by Shi *et al*. (2003), there was an inverse association between public PHC visits, and medication costs in the United States linked to savings and in improvement in healthcare outcome.

4.4.7.3 Travel Cost to Health Facility and Number of Visits to the Health Care Facility

High travelling costs to the healthcare facility can reduce the number of visits patients make to seek medical services. Table 4.20 compares travel cost to the primary health care facilities in Nakuru Town with the number of visits.

Table 4.21: Percentage Distribution of respondents showing Travel cost to health facility and number of visits

Number of times visited a health facility in the last 6 months	Travel cost to public PHC facility (%)					
	Very inexpensive	Inexpensive	Expensive	Very expensive	Normal	Total
0	0.0	0.0	0.25	0.0	0.0	0.25
1	3.0	0.75	3.5	0.75	12.75	21.75
2	1.75	1.0	5.0	0.5	19.5	29.75
3	0.75	1.25	8.0	0.5	20.0	33.5
4	0.0	0.0	3.0	0.75	8.0	15.75
>5	0.25	0.25	1.5	0.5	4.0	6.5
Missing	0.25	0.0	0.25	0.0	0.75	1.25
Total	**6.0%**	**3.3%**	**22.9%**	**3.0%**	**64.8%**	**100.00%**

n=400 X^2=34.036 p=0.279

Most of the households who visited the public PHCs once, twice, thrice, four times and five times in the last six months preceding the study were of the opinion that travel cost was normal (12.75%, 19.5%, 20.0%, 8.0% and 4.0%). However, from the chi-square test results, there was no relationship between the travel costs and the number of visits to public PHC facilities in Nakuru town (p = 0.279). This means that travelling costs did not affect the number of visits one makes to a healthcare facility.

4.4.7.4 Total Cost and number of times the Respondents Visited Healthcare Facilities

Total cost of seeking public primary healthcare services was compared to the number of visits a household makes to a healthcare facility for the last six months as shown in table 4.21. The household head was asked to give his/her opinion on the total cost of accessing public health care facilities.

Table 4.22: Percentage Distribution of respondents showing Total Cost and number of Visits to Public Healthcare Facilities

Number of times visited a health facility in the last 6 months	**Total cost to public PHC facility (%)**					
	Very inexpensive	**Inexpensive**	**Expensive**	**Very expensive**	**Normal**	**Total**
0	0.0	0.0	0.25	0.0	0.0	**0.25**
1	2.75	0.25	6.0	1.75	9.75	**20.5**
2	1.75	0.5	9.25	3.25	13.0	**27.75**
3	1.5	0.75	13.5	2.75	12.5	**31**
4	0.25	0.0	6.5	1.0	4.0	**11.75**
>5	0.25	0.0	4.5	0.5	1.5	**6.75**
Missing	0.25	0.0	0.75	0.25	0.0	**1.25**
Total	**6.8%**	**1.5%**	**41.9%**	**9.3%**	**40.5%**	**100.00%**

n=400 **x^2=36.830** **p=0.182**

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2.75% of the respondents viewed the total cost to be very inexpensive and had visited a public healthcare facility once in six months (table 4.21). Those who viewed the cost as being very expensive (3.25%) had visited public healthcare facility twice in six months. Most of the household heads who viewed the total cost of accessing public PHC facility to be normal (13.0%) visited the facility twice in the last six months preceding the study. This study findings concurred with the study done in Ethiopia among urban household by Amarech (2007) which found out that increase in user fee among households discourage the demand for health care services. However from the chi-square test results, there is no relationship between the total cost of accessing public health care facilities and the number visits (p=0.182).

4.4.8 Quality of services offered at the Public Primary Health Care Facilities

People's judgement of the quality of medical care largely depends on their own experience with the health system and those of people they know. Thus, their evaluation of quality of care is generally shaped by the realities they have encountered in the health system.

Primary health care facilities offer services such as screening of diseases, immunization, ante-natal care, post natal care, counselling services and treating diseases among other services. In this study, the respondents were asked to rate the services offered at the health care facilities they seek treatment. They were to rate the quality of the services as excellent, good, fair and bad. Quality of services refers to serving clients to their satisfaction and meeting their needs. Clients need to be taken through the process of all procedures as their undergo treatment for them to understand better. Quality of services offered by a facility will determine whether clients will be willing to utilize them. The quality of health care services has been indicated to be one of the factors that determine the level of access and utilization of health care facilities in various studies (Egbewale *et al*., 2013; Prosser *et al*., 2007' Taffa *et al*., 2005).

Quality of health care services is tied to other factors such as waiting period, availability of drugs, distance to/from the facility, payment and equipment that are required for treatment. According to the study by Taffa *et al*. (2005), people would prefer to go to a private health care facility and pay for the services offered, as they are perceived to be of good quality than go to a free public health care facility.

Table 4.23: Rating of services offered

	Ratings (%)				
Service	**Excellent**	**Good**	**Fair**	**Bad**	**Total**
Health Education	18.5	45.25	29.75	6.5	**100.00**
HIV Screening	14.4	48.2	31.3	6.0	**100.00**
Immunization	14.1	41.9	36.1	7.8	**100.00**
Infant and childcare	13.9	42.9	31.8	11.3	**100.00**
Delivery care	13.1	40.4	35.9	6.1	**100.00**
Malaria treatment	12.4	45.5	32.8	9.4	**100.00**
Antenatal	11.6	37.4	40.7	5.8	**100.00**
Counsel patients	11.4	41.9	33.6	8.6	**100.00**
Postnatal care	10.6	40.4	38.4	6.3	**100.00**
Treat ailments	10.6	36.1	36.4	12.6	**100.00**
Nutritional care	10.4	40.9	38.1	10.6	**100.00**
Diagnosis	10.4	38.9	37.1	7.8	**100.00**
Prescribe treatment	10.4	42.7	35.9	7.1	**100.00**
Referral	9.6	40.4	36.6	9.1	**100.00**
TB Diagnosis	8.6	41.4	41.2	8.8	**100.00**
Dispense drugs	7.8	38.4	40.2	9.1	**100.00**

n=400

Table 4.23 shows that most of the respondent ranked health education as the leading service offered at public primary health care facilities - excellent (18.5%). On the other hand, most of the respondent's ranked treatment of ailments is the worst (12.6%) health care service offered at the public primary health care facilities. 73.5% of the respondents responded that they chose specific health care facilities because of better health care services provided. This study contradicts KIPPRA (2018) findings that the availability of the essential equipment and drugs at public primary health care facilities in Kenya were rate as the services brought satisfaction and attracted citizens to the facilities.

4.4.9 Health Care Insurance Cover as a Factor influencing Household's Utilization of Primary Health Care Facilities

In this study, we asked the respondents whether they have health insurance cover and the results are presented in table 4.24. With the rising cares of diseases coupled with cost of

treatment of diseases has seen a rise in health care insurance cover businesses. In Kenya, the insurance covers are offered both by the government through National Health Insurance Fund (NHIF) and private entities (WHO, 2017). The insurance covers cushions patients and eases the burden of health care costs by either, partially or fully catering for medical bills. In Kenya, all employees whether public or private are required to register with NHIF and premiums are deducted directly from their monthly income.

Table 4.24: Percent distribution of household heads with health insurance cover by background characteristics

Characteristic	Percentage Has Health Insurance	No Health Insurance	Total
Age			
18-26	10.5	12.5	**23.00**
27-35	20.75	22.25	**43.00**
36-44	9.75	8.25	**18.00**
45-53	5.75	7.5	**13.25**
54+	2.0	0.75	**2.75**
Total	**48.75**	**51.25**	**100.0**
Monthly Income			
Less than 10,000	5.75	18.75	**24.5**
10,001-20,0000	15.5	22.25	**37.75**
30,001-40,000	9.5	6.5	**16.00**
40,001-50,000	8.5	2.0	**10.50**
50,001-60,000	3.25	1.5	**4.75**
50,001-100,000	3.25	0.25	**3.50**
100,000+	2.75	0.25	**3.00**
Total	**48.5**	**51.5**	**100.0**
Gender			
Male	24.75	22.75	**47.5**
Female	24.0	28.5	**52.50**
Total	**48.75**	**51.25**	**100.0**
Level of Schooling			
None	1.75	4.5	**6.25**
Primary	5.25	5.5	**10.75**
Secondary	16.5	13.75	**30.25**
Tertiary	25.25	9.25	**34.5**
University	9.75	8.5	**18.25**
Total	**58.5**	**41.5**	**100.0**
Occupation			
Business	17.75	23.5	**41.25**
Jua Kali	12.25	9.75	**22.00**
Farming	5.5	4.25	**9.75**
Formal Employment	12.5	11.25	**23.75**
Other	0.5	2.75	**3.25**
Total	**48.5**	**51.5**	**100.0**

From table 4.24, most of the respondents within ages 27 – 35 years (22.25%), earning monthly income of between kshs 10,001 and kshs. 20,0000 (22.25%), female (28.25%), those carrying out business activities (23.5%) and protestant (22.75%) in the categories of socio-economic backgrounds (n = 400) have no health insurance cover. However, most of the respondents with tertiary education (15.25%) and with household size of between 0 and 3 members have insurance cover within the categories respectively.

This study finding concurs with the study done by Kazungu and Barasa (2017) which found out that the number of Kenyans with health insurance cover is very low. The study found out that NHIF is the main health insurer in Kenya, covering 16% of Kenyans, whereas the 32 private health insurers collectively cover a mere 1% of the Kenyan population.

4.4.10 Reasons for Non-utilization of Primary Health Care Facilities

Non-utilization of public primary health care services can be attributed to many factors ranging from perception of services provided, cost of services, and distance to health care facility and cultural and religious beliefs among other reasons.

Table 4.25: Reasons for Non-Utilization and Problems of Primary Health Care Facilities

Reason	%	
	Yes	No
Medicine unavailable	64.6	31.6
High cost of services	62.4	24.2
Poor quality of services	59.3	28
Long waiting time	55.8	41.2
Long distance to the facility	53.3	33.8
Self-medication	43.7	42.9
Fear of discovering serious illness	40.9	45.7
Unfriendly staff	32.6	63.6
Lack of privacy	29.3	66.4
Dirty facility	26.3	69.7
Religious views	24	62.6
Unqualified staff	23.5	72.4

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In this study, lack of medicine in health care facilities was the major reason for non-utilization of the facilities at 64.6% followed by high cost of services at 62.4% (table 4.25). Unqualified staff was ranked the lowest for non-utilization of health care facilities at 23.5%. In a study done in Nigeria, distance, poor quality of services, cultural and religious beliefs and cost of health care services were the major reason for non-utilization of health care facilities (Egbewale *et al*., 2013).

4.5 Perceptions of Patients seeking Healthcare Services from Public Primary Health Care Facilities in Nakuru Town

The perceptions and perspectives of patients are influenced and shaped by individuals and community encounters with the health system. The interaction between the healthcare providers and the patients is important in shaping people's experiences with health deliveries. It also determines how community members utilize the healthcare services, where they access care and the extent to which they participate in the delivery of health services. 28 household heads and patients who sought public PHC services were interviewed.

According to the patients interviewed, most of the respondents said that the facility do not offer all services and resources for treatment. They noted that the public primary health care facilities they visit have inadequate drugs; there were no laboratory facilities and proper maternal delivery services. Thus, majority of the patients were referred to the county referral hospital. However, some were of the opinion that the public primary health care facilities met their basic health care needs such as maternal health care services and child immunization. Thus, the patients' views on the ability of the public primary health care facilities imply that most of the facilities are unable to meet their basic health requirement.

Most health care seeking patients were of the opinion that the public primary health care facilities they visited were far from their area of resident. However, the public primary health care facilities they visited for treatment were closer to their residential homes compared to fourteen public primary health care facilities. They stated that their urgency for health services, perception that the public primary health care facilities they visit offer good services, the free medical services at the public PHC facilities including immunization, free drugs, free medical consultation and the public health care facility accepted national health insurance fund cover for their health issues.

The unavailability of the drugs, bad attitude of health providers and long waiting times were the main reasons for the poor rating of public PHC facilities. However, most of the patients said that the services offered at the public primary health care facilities were average.

Satisfaction is one of the key guiding principles of health systems strengthening (WHO, 2016) but it was the main challenge sighted by the patients seeking healthcare in Nakuru town. For those patients who were satisfied with the services, the main factors contributing to the positive opinion included responsive health providers and friendly environment.

The utilization of public health facilities depends on the value that clients place on the healthcare services as well as their estimation of the goal of achieving good health. Most of the patients' were of the opinion that the public primary health care facilities did not meet their health care needs. The patients with negative experience with healthcare facilities inform of "out of stocks" syndrome and bad attitude of health workers will definitely place lower value in the public sector health facilities (WHO, 2016)

The patients described various primary health care services at the facilities they visited. They noted that most of the public health care facilities were not offering adequate maternal health care services. Bondeni Maternity, Rhonda Maternity, and Lanet Health Centre were identified to offer good maternal services. All other including Nakuru West health centre, Barut dispensary, Kapkures health centre, Industrial area dispensary, prisons dispensary FITS health centre, Langa Langa Health Centre and Statehouse among others referred cases of delivery to the County referral hospital. The patients were of the view that child immunization services including tuberculosis, measles and polio among others were provided at all the public primary health care facilities in Nakuru town. In addition, they were of the opinion that there were not aware of specific health care service for the elderly at public primary health care facilities they visited.

On the average, the patients had good perception on the quality of treatment by healthcare workers in the study area. This was confirmed during the in-depth interviews conducted with some of the patients. However, some were of the view that the medical personnel at the public PHC facilities they visited were friendly while others were not friendly and rushed during the consultation.

The question was asked, "How is the personal treatment from all healthcare workers?" A patient is Barut health centre explains thus;

"Some of the nurses are good while others rush the work. The relationship between the nurse and us in our community is good, she is even part of our community, she lives and knows what most of the people's situations are like".

This statement indicates that there is a good relationship between healthcare staff and their patients.

Poor quality of services and lack of information underlies the poor perception of public healthcare facilities voiced by the patients. The patients sighted the characteristics of poor quality of services that included poor infrastructure, bad staff attitude towards the patients and lack of the drugs.

Most of the patients perceived public means of transport and motor cycle as the best mode of transport they utilize to access the health care facilities they visit. They noted that while at the health care facilities they took about two hours to receive the health services. This was because of the ever-long queues of the patients seeking health care services at the facilities with few medical personnel.

4.6 Availability of Medical and Human Resources in the utilization of Public Primary Healthcare Facilities

The third objective was to assess the availability of human and medical resources in the utilization of Public Primary Healthcare Facilities in Nakuru town. In this section, we present and discuss results of a situation analysis on the availability of medical and human resources in public primary health care facilities.

According to WHO (2004), 10000 people are supposed to be served by one level I public primary health care facility while 100000 people to be serviced by one level II public health care facility. Nakuru town have both public and private PHC facilities. These include referral hospital, sub-county hospitals, health centres and dispensaries. This study concentrated on the 14 public level one and two public PHC facilities. Table 4.26 shows the distribution of dispensaries (level 1) and health centres (level 2) within the wards in Nakuru town.

Table 4.26: Distribution of public PHC Facilities in Nakuru Town

Ward	Total Population	Level 1	Level 2
Rhonda	92,642	0	1
Kaptembwo	264,984	0	0
London	88,826	1	2
Menengai	124,017	1	2
Biashara	77,493	1	2
Flamingo	121,870	0	0
Kapkures	33,733	0	1
Barut	25,541	0	1
Nakuru East	573,144	1	1
Shabaab	67,756	0	1
Kivumbini	133,317	0	0

From the study results, Kaptembwo ward with a population of 264,984, Flamingo ward with a population of 121,870 and Kivumbini ward with a population of 133,317 have no level 1 and 2 public PHC facilities. This implies that households from these wards seek public health care services from other wards. Level one public PHC facilities were found in London, Menengai, Biashara and Nakuru East wards while level two public PHC facilities are available in Rhonda, London, Menengai, Biashara, Kapkures, Barut, Nakuru East and Shabab wards. The findings imply that there is uneven distribution of public health care facilities in the 11 wards in Nakuru town. In addition, it also implies that the distribution of the public PHC facilities is not according to the population of the town. The disparity in the distribution of public primary health care facilities demonstrate differences in the access of the population to the public primary health care facilities.

4.6.1 Availability of Medical Resources in Primary Healthcare Facilities

Medical resources include healthcare facilities and equipment used by the medical personnel to offer healthcare services. The medical equipment are important as they are used by medical personnel to collect health related information from their clients to enable them diagnose, identify and treat diseases. According to MoH (2017), primary health care facilities should be equipped with thermometer, blood pressure machines, weighing scale, microscope, blood sugar machines, haemoglobin machine, and height scale among others. In this study, the

key informants were asked whether the PHC facility they work at had all laboratory and specific equipment. Not all the respondents' identified all laboratory equipment to be available within the PHC facility they work. Only four PHC facilities in Nakuru town were found to have all required laboratory equipment. These were Bondeni maternity, Langalanga Health Centre, Rhonda Maternity and Lanet Health Centre. The key informants were able to identify different medical equipments at their workplace including: Microscope, Glucometer, Thermometers, HIV test kit, Malaria test kit, Height scale, Stethoscope, Sterilizing equipment, Weight scale, Emergency tray, HB and blood Pressure machine and Ampupe bag. Appendix 8 present specific equipment to be present at the Public PHC facilities in Nakuru town.

According to table 4.27, glucometer and ampupe bag were not mentioned to be available in some of the public PHC facilities in Nakuru town including Industrial Area dispensary, Mirugi Kariuki health centre, Nakuru west, Bondeni, Kiti, FITS, Kapkures and Statehouse dispensary. In addition to figure 4.27, Level II public PHC facilities including Bondeni maternity, Langalanga Health Centre, Rhonda Maternity and Lanet Health Centre public PHC facilities in Nakuru town were found to have all laboratory equipment. On the other hand most level II public PHC facilities including Kapkures, Barut, Nakuru west had no well-equipped and functioning laboratory equipment. All the level I public PHC facilities had no laboratory. The findings imply that most level 1 and 2 health care facilities in Nakuru town do not offer diabetes and respiratory compilation services. Further, the findings imply that dispensaries and health centres in Nakuru town have inadequate medical equipment to offer essential services. This shows that the level one and two public PHC facilities in Nakuru town are unable to diagnose most of the ailments thus referring them to higher levels of public PHC facilities within the County. This amounts to poor quality care that leads to low utilization rates.

4.6.2 Bed capacity in Public Primary Health Care Facilities

The availability of beds in public primary health care facilities implies that the facility offers restricted inpatient services before referral (KIPPRA, 2018). In addition, KIPPRA (2018) indicated that the bed capacity within PHC facilities indicate the ability of the facility to offer specialized long-term treatment under close support by health professionals. In this study, we asked key informants to indicate the number of beds within the public health care facilities. Table 4.28 shows the number of beds within the public primary health care facilities in the study area.

Table 4.27: Distribution of Bed capacity among Public Health Facilities

Ward	Healthcare Facility	Category	Bed capacity	%
London	FITC dispensary	Level I	1	
	Prisons dispensary	Level I	1	
	Industrial area	Level II	4	
Total			**6**	**4.87**
Barut	Baruti HC	Level II	5	**4.07**
Kapkuras	Kapkures	Level II	5	**4.07**
Nakuru east	Lanet HC	Level II	10	
	Mirugi Kariuki HC	Level II	1	
Total			**11**	**8.94**
Biashara	Bondeni	Level I	1	
	Bondeni maternity	Level II	46	
	Langa Langa	Level II	33	
Total			**80**	**65.05**
Shabab	Nakuru west health centre	Level II	1	**0.81**
Menengai	Kiti	Level I	1	**0.81**
Rhonda	Rhondah maternity	Level II	14	**11.38**
Kaptembwa			0	**0**
Flamingo			0	**0**
Kivumbini			0	**0**
Total number of beds			**123**	**100.00**

Bondeni maternity, Langalanga health centre and Rhonda maternity had the highest number of beds (46, 33 and 14 beds respectively). All dispensaries had one bed each. The findings mean that limited health care medical equipment within the level 1 public PHC facilities in Nakuru town translate to fewer inpatient services. Level II public PHC facilities in the study have the most number of beds than level I public PHC facilities. Thus there is need to expand the bed capacity of the level I facilities in Nakuru town.

Table 4.28 shows that Biashara ward has the highest percentage of beds at 65.05% while Shabab and Menengai wards have the least percentage number of beds at 0.81%. On the other hand, Kaptembwa, Kivumbini and Flamingo wards have no public PHC facilities hence

no beds. This implies that the capacity to handle patients in the public PHC facilities at Biashara wards is highest while lowest in Shabab and Menengai wards. In addition, households in wards with no public PHC are likely to seek alternative medical resources and services from private healthcare facilities or access and utilize the public PHC facilities from the neighbouring wards with beds.

4.6.3 Medical Personnel in Public Primary Healthcare Facilities in Nakuru Town

Availability of qualified medical personnel is very essential in the provision of primary health care services. Level I public primary health care facilities are supposed to be served by nurses while level II public primary health care facilities should be served by nurses, clinical officers, laboratory technicians and pharmacists. This study sought to find the number of medical staff within public PHC facilities in Nakuru Town. Table 4.29 shows the distribution of the medical personnel in wards within Nakuru town.

Table 4.28: Distribution of Nurses in Public PHC Facilities in Nakuru Town

Administrative ward	Nurses	Population	Ratio
Rhoda	15	92,642	6176.1
Kaptembwo	0	264,984	264,984
London	10	88,826	8882.6
Menengai	1	124,017	124,017
Biashara	43	77,493	1802.2
Flamingo	0	121,870	121,870
Kapkures	7	33,733	4819
Barut	4	25,541	6385.3
Nakuru East	21	573,144	27292.6
Shaabab	11	67,756	6159.6
Kivumbini	0	133,317	133,317
Total	**114**	**1,603,325**	**10020.7**

Nurses are the majority of the medical personnel within all the public PHC facilities in Nakuru town (Table 4.29). In some wards, the public PHC facilities had no nurses especially

Flamingo and Kivumbini. The findings show that Nakuru town has significant shortfalls of nurse's workforce. In addition, the distribution of the nurses is not balanced across the wards.

Table 4.29: Distribution of Clinical Officers in Public PHC Facilities in Nakuru Town

Administrative ward	Clinical Officers	Population	Ratio
Rhoda	3	92,642	30880.6
Kaptembwo	0	264,984	264,984
London	2	88,826	44413
Menengai	0	124,017	124,017
Biashara	5	77,493	15498.6
Flamingo	0	121,870	121,870
Kapkures	3	33,733	11244.3
Barut	0	25,541	25,541
Nakuru East	3	573,144	191048
Shaabab	0	67,756	67,756
Kivumbini	0	133,317	133,317
Total	**16**	**1,603,325**	**10020.7**

Clinical officers Table 4.30; were only available at level II public health care facilities in the study area. Most of the wards in Nakuru Town their health care facilities have no Clinical Officers namely; Kaptembwo, Menengai, Flamingo, Barut, Shaabab and Kivumbini, while Rhoda, London, Bishara, Kapkures and Nakuru East had clinical officers. Hence, the study finding shows that the distribution of clinical officers is uneven among the wards and also are few in Number compared to the population.

According to the KNBS (2017), Nakuru Town has a population of 1,603,325 people. The study found out that from the fourteen public health facilities (dispensaries and health centres) in Nakuru town there are 130 health personnel including clinical officers and nurses.

According to GoK (2014), 0.25 medical officers are expected to offer PHC services to a population of 10,000. This is lower compared to the WHO norm of 3.0 medical officers per 10,000 people (WHO, 2014). In addition, the distribution of health workers to population is about 14 per 100,000 people at the community level, and 13.5 health workers per 100,000 people at the primary care level (GoK, 2014).

Nakuru town with a population of 1,603,325 people has healthcare personnel to population ratio of 1 to 10020 people. This implies that the number of health personnel in Nakuru town falls below the threshold of 3 health personnel per 10,000 people (WHO, 2014) and 0.25 medical officers per 10000 people in Kenya (GoK, 2014).

This study therefore imply that households in wards with no health care workers but high population are more disadvantaged in access to public health care services. This is against the logic that more health care facilities should be in areas that have more population.

4.6.4 Strategies to improve Access to and Utilization of Primary Health Care Services

In this study, we asked the households heads to list strategies they recommend to improve access and utilization of public primary health care facilities in Nakuru Town. Figure 4.3 presents suggested strategies on how to improve access and utilization of public Primary Health Care services. The strategies included addition of health care facilities, increase staff, improve infrastructure, lower cost of insurance for health care, provide drugs especially in government facilities, increase medical equipment and lower the cost of drugs. Provision of drugs was the top most important strategy that respondents suggest as a means to improve utilization of health care facility. This is followed by a suggestion to lower the cost of the drugs at 21.3%. According to KIPPRA (2018), accessibility and sufficient supply of drugs is important in the consumption and utilization of healthcare facilities since their prices are subsidized and the likelihood of purchasing drugs at higher cost in the private chemists are reduced. On the other hand, lowering the cost of insurance is the least frequent strategy that was suggested to improve health care services in Nakuru town. The finding on insurance concurred with this study finding on health insurance as a factor influencing access and utilization of public PHC facilities (section 4.49) which found out that most of the households did not have insurance covers. This study finding concurs with the study done by Kazungu and Barasa (2017) which found out that the number of Kenyans with health insurance cover is very low.

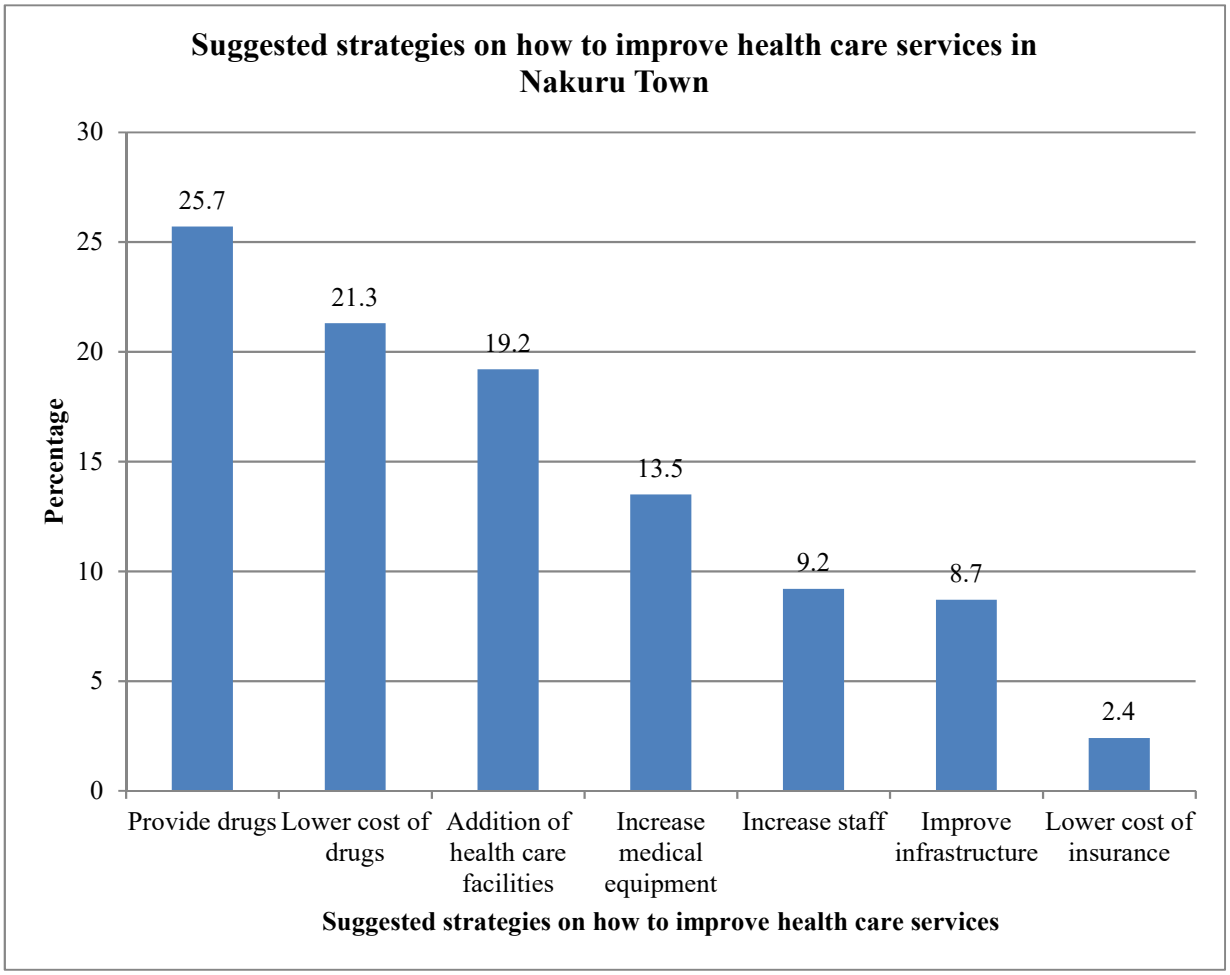


Figure 4.3: Suggested strategies to improve Healthcare services in Nakuru town

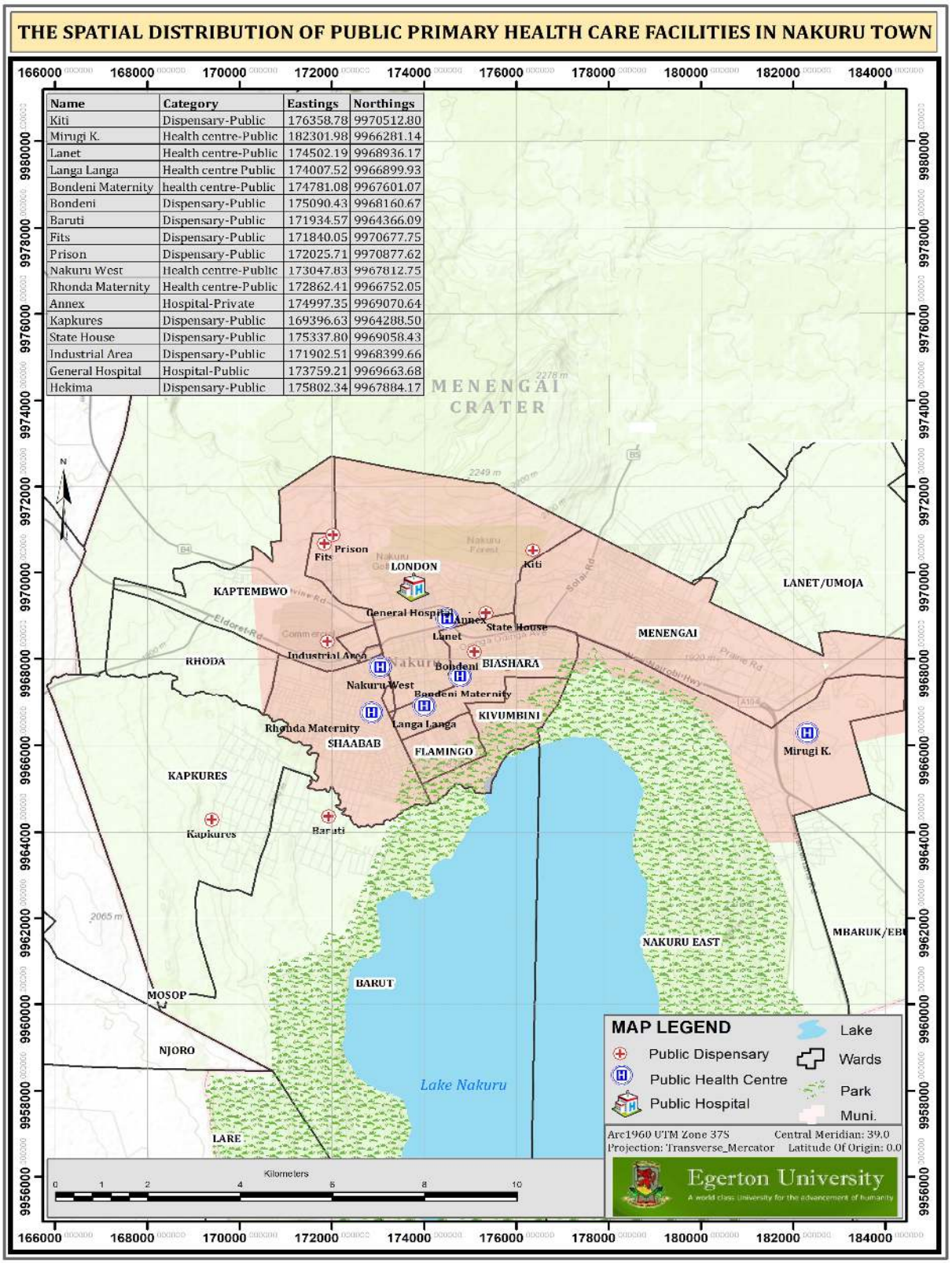
4.7 Spatial Distribution of Public Primary Healthcare Facilities in relation to Population Distribution

The fourth objective of this study was to examine spatial distribution of public primary healthcare facilities in relation to population distribution in Nakuru town. The study was concern with public level I and II health facilities (dispensaries and health centres) in the study area. Within the study area there are 4 public level I health facilities including FITC dispensary, Prisons dispensary, Bondeni dispensary and Kiti. On the other hand, there are 10 public level II health facilities including Industrial area, Barut, Lanet, Kapkures, Langalanga, Nakuru West, Mirugi Kariuki, Rhonda maternity and Bondeni maternity. In Kenya, public PHC facilities are unevenly distributed (KIPPRA, 2018; KNBS, 2013). The 14 public PHC facilities in Nakuru town are distributed across the 11 wards in two sub-Counties of Nakuru East and Nakuru West. A population of 1,603,325 directly and indirectly access and utilize the public PHC facilities located within the study area (KNBS, 2019, Nakuru County Integrated Development 2018-2022).

The location and number of public primary healthcare facilities is supposed to influence by population density and spatial coverage of an area. This is to ensure that people get proper services and that the facilities are not over stretch to meet the demands of the people (Van Berg, 2016). One level I public primary health care facility is recommended to serve a population of 10,000 while one level II public PHC facility is recommended to serve a population of 100,000 within an area (WHO, 2004). The location of health care facilities is important in offering the various health services. It is worth noting that in Nakuru, the administrative areas with highest population densities are currently underserved by PHC facilities.

4.7.1 Spatial Distribution of Public Primary Health Care Facilities in Nakuru Town

In Nakuru town public primary health care facilities are not evenly distributed, as some wards have no Dispensaries and Health Centres (KNBS, 2013). On the other hand, some wards have both level I and level II public PHC facilities while others have only level I or level II public PHC facilities. Figure 4.4 presents the spatial distribution of public Level I and II health care facilities in Nakuru town.



Name	Category	Eastings	Northings
Kiti	Dispensary-Public	176358.78	9970512.80
Mirugi K.	Health centre-Public	182301.98	9966281.14
Lanet	Health centre-Public	174502.19	9968936.17
Langa Langa	Health centre Public	174007.52	9966899.93
Bondeni Maternity	health centre-Public	174781.08	9967601.07
Bondeni	Dispensary-Public	175090.43	9968160.67
Baruti	Dispensary-Public	171934.57	9964366.09
Fits	Dispensary-Public	171840.05	9970677.75
Prison	Dispensary-Public	172025.71	9970877.62
Nakuru West	Health centre-Public	173047.83	9967812.75
Rhonda Maternity	Health centre-Public	172862.41	9966752.05
Annex	Hospital-Private	174997.35	9969070.64
Kapkures	Dispensary-Public	169396.63	9964288.50
State House	Dispensary-Public	175337.80	9969058.43
Industrial Area	Dispensary-Public	171902.51	9968399.66
General Hospital	Hospital-Public	173759.21	9969663.68
Hekima	Dispensary-Public	175802.34	9967884.17

Figure 4.4: Spatial Distribution of Public Primary Health Care Facilities in Nakuru Town

Source: GIS

Figure 4.4 shows that London, Menengai and Biashara wards of Nakuru Town have the highest number of the public primary health care facilities (three each). In London ward, there is two level I public PHC facility (FITS and Prisons) and one Level II public PHC facilities(Industrial area), Menengai ward has only level I public PHC facilities including (KITI, statehouse and Mirugi Kariuki) while Biashara ward has one Level I (Bondeni dispensary) and two Level II public PHC facilities (Bondeni Maternity and Langalanga Health centre). Nakuru East, Rhonda, Kapkures, Shabaab and Barut wards have one public primary health care facility each. All of them have one Level II public PHC facilities and no Level II public PHC facilities. Kaptembwa, Flamingo and Kivumbini wards have no level I and level II public health care facilities. The number and location of public PHC facilities among the 11 wards further demonstrated the persistence of inequalities in healthcare facilities distribution in the town. This was also reported in a study done by KNBS, 2013 that indicated that some wards in Nakuru town had no health care facilities and the distribution of the facilities was uneven. This is in agreement with Thiede *et al*. (2007), findings that health care facilities are skewed towards urban areas and more to the core than the periphery and slums.

4.7.2 Distribution of Public Primary Health PHC facilities to Population Density in Nakuru town

Each urban level I public health facility is expected to cover a population of 10,000 people and the expectation is that people should be within 0-2 kilometres of walking distance to the nearest health centre (WHO, 2004; WHO, 2016). Ideally, health facilities should be located near people for easy access and utilization of their services. The distribution pattern of health care facilities reflects the utilization rate in urban areas (WHO, 2014). Table 4.31 shows the distribution of population density and the number of public PHC facilities in Nakuru town.

Table 4.30: Distribution of Public PHC facilities to Population Density in Nakuru town

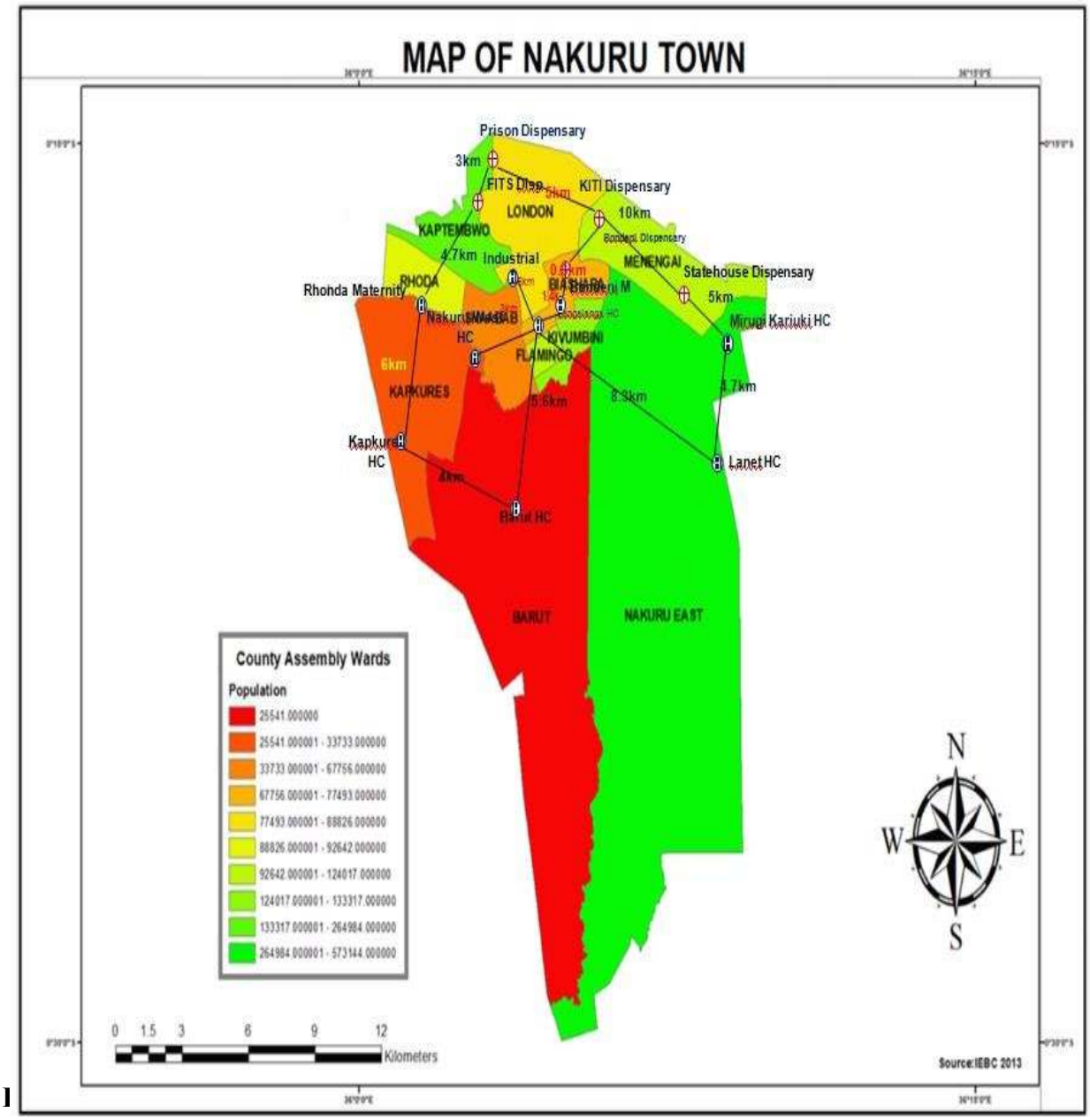
Administrative ward	No. of Public health facilities	AREA IN KM^2	Population	Population Density Per KM^2
Rhoda	1	1.1	92,642	84220
Kaptembwo	0	5.1	264,984	51957.6
London	3	20.9	88,826	4250
Menengai	2	26.2	124,017	4733.5
Biashara	3	19.6	77,493	3953.7
Flamingo	0	2.6	121,870	46873.1
Kapkures	1	26	33,733	1297.4
Barut	1	195.5	25,541	130.6
Nakuru East	2	23.3	573,144	24598.5
Shaabab	1	2.4	67,756	28231.7
Kivumbini	0	25.9	133,317	5147.4
Total	**14**		**1,603,325**	**255393.5**

Table 4.31 shows that there is uneven distribution of public PHC facilities to the population density within the study area. Worse, Kaptembwo, Flamingo and Kivumbini wards with the highest population density in Nakuru town has no public PHC facilities. The study findings also show that Barut with the largest area of 195.5 ^{KM2} has 1 PHC facility. This shows that the Nakuru County Government used population as a yardstick to allocate the PHC facilities. Hence, there is need for the County Government of Nakuru to build more PHC facilities in areas with none and also add more PHC facilities in areas with high population density.

4.7.3 Population Distribution and access to Public Primary Health Care Facilities in Nakuru Town

The ease of access to public primary health care facilities is an important aspect of health care delivery system (Mc Laffrty, 2003). In this study, the spatial spread of public primary health care facilities within Nakuru town is as shown in figure 4.5. Straight-line distance between public primary health care facilities was used to determine the spatial accessibility of the primary health care facilities in Nakuru town. Road measurements between the health care facilities were used to compute the spatial spread and accessibility. The GIS technique used assumed that the respondents used in the study were evenly distributed within

the wards in Nakuru town and that the population seek services from the facilities nearest to their area of resident (Brabyn & Skelly, 2002).



in Nakuru Town

Source: GIS

Figure 4.5 shows that most of the public PHC facilities are not centrally located within the wards hence it is difficult for the population from the furthest ends within the wards to access and utilize the health service from the facilities. The study findings contradicts the national norms that require each person to live within 5 km radius of a health facility to ensure access to basic health services (KIPPRA, 2018). Therefore, most households take different time

reach the public health care facilities. This implies that those who reside close to the public health care facilities take shorter time, travel a shorter distance to access, and utilize them.

The number of public health care facilities varies from 0 to 3 within the wards in Nakuru town (figure 4.6) and do not correspond with the population variations in the wards. The finding on the spatial spread of public PHC facilities and population distribution in the wards in Nakuru town differs with KIPPRA (2018) noted that World Health Organization recommends one health centre per 100,000 people and one dispensary per 10,000 people. This implies that the population of Nakuru town is underserved with public primary health care facilities.

The distance between public PHC facilities within wards and the study area are not equal as some of the facilities are nearer to each other compared to others. In addition, most of the public PHC facilities are located at the border of the wards. The distribution pattern of health facilities reflects their utilization rate within the urban areas (WHO, 2013). Thus, from the finding of the study the population from various wards within the study area can access and utilize facilities closer to them. This situation is facilitated by the fact that distance is a very important factor in the use of health facilities (Fukuda-Parr & Yamin, 2013). This implies that the population in some parts in the study area have to walk for long distances to access and utilize the facilities. Further, the findings imply that access and utilization of the public primary health care facility by households is not easy for the low-income earners who are the majority.

Nakuru East, Kaptembwo, Kivumbini and Flamingo wards have the highest population within the study area but with few (2) or no (0) public primary health care facilities. This means that for the residents of the wards to access and utilize the public PHC facilities in Nakuru town they have to travel to other wards.

CHAPTER FIVE
SUMMARY FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

The general objective of the study is to improve households' access and utilization of public PHC facilities in Nakuru town by suggesting appropriate measures. To achieve this objective, this study was guided by the following specific research objectives: to determine variations in levels of household's access and utilization of PHC facilities; to identify the factors influencing household's access and utilization of PHC facilities; to assess the availability of human and medical resources in the PHC facilities and analyze spatial distribution of primary healthcare facilities in relation to population in the study area. In the sections below, we present summary of findings and recommendations that arise from this study.

5.1 Summary of the Findings

5.1.1 Variation in levels of households' Utilization of Primary Healthcare Facilities in Nakuru Town

The study reveals that most of the households in the study area utilized health centres for public primary health care services. However, there exist variations in the level of utilization where some households use the facilities more frequently than the rest. The study has shown that the socioeconomic and demographic characteristics of the household head play a key role in determining household utilization of primary health care facilities in Nakuru Town. Female-headed households utilize health centres and dispensaries most at 28.5% and 11.75% respectively. Age of the household head equally plays a role in determining utilization, those whose age group was in 27 – 35 years old visited the PHC facilities more frequently. Female-headed households visited their preferred healthcare facility at least once for the last six months. Most households with low-income earning heads with monthly income of between Kshs. 10,001 – Kshs. 20,000 visited health centres (21.75%) and dispensaries (8.75%). On education, we found out that households whose heads have attained secondary level of schooling were the most likely to utilize PHC facilities health centres (24.25%) and dispensaries (10.0%). An important revelation of this study is that very few households utilize traditional medicine. Occupation of the head of the household plays a role in determining utilization of health facilities in Nakuru. Households whose heads main occupation is business were the more likely to utilize PHC facilities compared to those engaged in informal work. . On the other hand, hhouseholds with 0 – 3 members visited the preferred healthcare facilities more than households with more members. In addition, the findings of the study revealed that

there was relationship between monthly income and level of education of households and the type of health facilities visited.

5.1.2 Factors Influencing Urban Variations of Household's Utilization of primary healthcare facilities in Nakuru Town

The households were of the opinion that cost of health care service, availability of drugs, distance to health care facility, value of health care service, waiting time, age appropriate service, culture and religion were the factors that influenced utilization of public PHC facilities in the study area. The cost of healthcare services (79.25%) was the most factors that influence the reason for choosing healthcare facility visited while religious (17.25%) and cultural views (22%) were the least factors the respondents selected to determine their choice of health care facilities they utilize in Nakuru town. Availability of drugs within the public health care facilities (70.5%) and distance to health facility (68.75%) were selected as the second third reasons for choosing the public primary health care facilities.

42.8% of the respondents live less than two kilometres from the nearest health care facility. This was confirmed by a high chi-square value of 77.279 at a significance level of p = 0.00. There was a relationship between means of transport to the public PHC and the number of household visit was significant at a p value of 0.002 confidence level. Further public transport was the most preferred means of accessing primary public health care facilities (40.3% and used to access the facilities most twice (11.5%). Most male prefer walking and using public transport to the primary health care facilities while female respondents prefer using motor cycle and public transport. 46.6% of the respondents indicated that doctor's fee was expensive, 43.3% of them respondent that medication costs were normal range while the total cost of accessing and utilising health care facilities and services to be expensive as indicated by most respondents (42%).

Multivariate ogistic regression results revealed that the major correlates of utilization of public PHC among households in Nakuru Town are; age of household ($P<0.5$); household of income ($P<0.01$); gender of household head ($P<0.01$); household heads' of schooling ($P<0.5$); households head's occupation ($P<0.01$) and household monthly income ($P<0.01$) were important factors that influence access and utilization of public PHC facilities in Nakuru Town.

5.1.3 Human and Medical Resources in the utilization of Public Primary Healthcare Facilities in Nakuru town

Public primary health care workforce in all the public PHC facilities Nakuru town consisted of 18 clinical offices, 113 nurses, 16 laboratory technicians and 13 pharmacists. The public PHC facilities in Menengai ward and Shabab ward had no clinical officers, Barut ward had no laboratory technicians while pharmacists were not present in Rhonda ward and Barut wards. There are no medical doctors within the 14 public PHC facilities in Nakuru town.

The basic equipment for provision of public primary health care services in Nakuru town included Microscope, Glucometer, Thermometers, HIV test kit, Malaria test kit, Height scale, Stethoscope, Sterilizing equipment, Weight scale, Emergency tray, HB and blood Pressure machine and Ampupe bag. Glucometer and ampupe bag were not mentioned to be available in some of the PHC facilities in Nakuru town including Industrial Area dispensary, Mirugi Kariuki health centre, Nakuru west, Bondeni, Kiti, FITS, Kapkures and Statehouse dispensary. Level II public PHC facilities including Bondeni maternity, Langalanga Health Centre, Rhonda Maternity and Lanet Health Centre public PHC facilities in Nakuru town were found to have all laboratory equipment. On the other hand most level II public PHC facilities including Kapkures, Barut, Nakuru west had no well-equipped and functioning laboratory equipment. All the level I public PHC facilities had no laboratory. Provision of drugs (25.7%) was recommended by the respondents as the most required strategy to improve health care facilities in Nakuru town.

5.1.4 Spatial Location of Primary Healthcare Facilities in Relation to Population in Nakuru Town

14 public primary health care facilities in Nakuru town provide medical services to the population of 1,603,325 people. London ward has a general hospital and teaching hospital facility. Menengai ward and Nakuru East ward have two public primary health care facilities while Rhonda ward, Kapkures ward, Shabaab and Barut ward have one public health care facility. Kaptembwo ward, Flamingo ward and Kivumbini ward had no public primary health care facilities. Health facilities in the study areas are unevenly distributed.

5.2 Conclusions

Since the number of visits is highest at health centres and lowest to medicine men and women in the study findings, it implies that the level of utilization of public primary health care facilities is high among the population in Nakuru town. Most households with heads

having secondary and tertiary level of education utilize dispensaries and health centres compared to other calibres of education. This indicates that the more educated an individual is, the more informed he or she become aware of the importance of accessing and utilizing primary health care facility services.

The factors that determine households' utilization of primary healthcare facility were background characteristics of the respondents (age, gender, education and average monthly income), cost of healthcare services, presence of insurance cover, distance to the nearest health facility, means of transport, travel costs and quality of services offered. Cost of the health services included doctor's fee, cost of medication and transport fee. In this study, the level of households' utilisation of primary health care facilities was high where distance was short. In addition, access and utilization of primary health care facilities was high where the clients had medical insurance cover and where the quality of services at the public health care facility was perceived to be excellent. Cultural and religious beliefs did not play a major role in the access and utilisation of the primary healthcare facilities. The factors that influence access to and utilization of primary healthcare facilities include gender, age, average monthly income and type of facility attended by respondents. This indicates that the sick people in Nakuru town access and utilize primary health care facilities for their medical services based on the physical conditions, financial conditions, culture, his or her health status and socio-economic characteristics.

The population to medical work force at the public health care facilities in Nakuru town is low. This was revealed in all cadres of health personnel (clinical officers, nurses and lab technicians). The low ratio of healthcare personnel in the study area implies that Nakuru town falls below the threshold of health personnel required per 10,000 people by World Health Organization.

The low number of public primary health care facilities among the eleven wards further demonstrates the persistence of inequalities in healthcare facilities distribution in the town. Thus, the disparity in the distribution of healthcare facilities could generate corresponding disparities in the access and utilization of the primary health care facilities by the population within the town. From the result of the study, the relationship between the population and number of healthcare facilities showed that some wards and by extension, households are more vulnerable than others. This implies that some wards and households are in disadvantaged positions while others are advantageous in terms of number of primary health care infrastructures. The consequence is that many individuals and households in the most vulnerable communities cannot attain minimum standards of living due to very poor access to

supportive health care facilities. Thus, the town presents a discernible imbalance in the relationship between the population of wards and number of healthcare facilities.

This study mainly relied on Andersen Model of healthcare utilization. Reference to this model, logistic regression analysis revealed that socio-economic factors of household heads influenced access and utilization of public PHC facilities. Thus, the theory provided a guide for understanding the different factors that inhibit or promote healthcare access for consumers and improved healthcare use.

5.3 Recommendations

5.3.1 Policy Recommendations

i. There is need to improve access of public primary health care facilities within Nakuru town. This can be done through the increasing the number of public primary health care facilities in all the wards.

ii. The County Government of Nakuru should increase distribution of essential drugs including malaria drugs and anti-biotics and ensure that they are available in the health facilities, subsidize other drugs especially to the vulnerable groups such as pregnant mothers, children and old people and provide free laboratory testing services. This will encourage more access and utilization of public PHC facilities in Nakuru town. In addition, they should use mobile clinics to reach the underserved wards especially those with no public primary health care facilities such as Kaptembwo, Flamingo and Kivumbini.

iii. More staff including nurses and clinical officers at the health centre and dispensaries should be employed by the County Government of Nakuru to improve patient staff ratio that is currently below the recommended ratio by WHO.

iv. The County Government of Nakuru in collaboration with the national government should adopt the population threshold as a yardstick for healthcare facility distribution as this is the only approach to ensure equity and social justice in the distribution of public primary health care facilities. This will help in ensuring there is construction of public PHC facilities within Kaptembwo, Kivumbini and Flamingo wards with no PHC facilities.

5.3.2 Recommendations for further Research

This study aimed at investigating and documenting households' access and utilization of public primary health care facilities in Nakuru town. Based on the findings, we recommend the following: -

i. Further research on an assessment of impact of health care on household expenditure in urban areas.
ii. Research on the impact of cost sharing in health care services on vulnerable populations.
iii. There is also need for a comparative analysis of quality of health care services between private and public health care facilities.
iv. Research on the determinants of the utilization of traditional medicine in Nakuru Town.
v. A study on the availability of the essential drugs based on the epidemiology of Nakuru Town.

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APPENDICES

Appendix I: Questionnaire for household

My name is Samuel Mokaya, a graduate student from Geography Department in Egerton University, Pursuing Doctor of Philosophy Degree in Geography. I am involved in conducting a research study whose main purpose is to help me understand household's level of access to health care facilities in Nakuru town. This questionnaire contains a number of questions that will assist me to gain understanding. It is my sincere hope and request that you will kindly provide the necessary answers to the respective questions here presented. May I take this opportunity to assure you that any information you volunteer will be treated with utmost confidentiality and be used for academic purposes only. I seek your permission to gather the following information from you which will be used for the study purpose only.

Questionnaire No.:……. Ward:……. Date:…….

Please tick the appropriate response or give a brief comment where applicable.

PART A: Background Information

1. Gender of the respondent.
   Male ☐ Female ☐
2. Age of respondents. …….
3. Education level of respondent.
   ☐ No formal education ☐ Secondary
   ☐ Primary ☐ Tertiary ☐ University
4. Household composition, indicate the number_____
5. Religion of household.
   ☐ Protestant ☐ Catholic ☐ Muslim ☐ Other
6. Occupation of the respondent.
   (a) Business ☐
   (b) Juakali ☐
   (c) Farming ☐
   (d) Formal employment ☐
   Other (Specify)…….

7. What is the respondent's average monthly income?

☐ Below 10,000 ☐ 10,001-20,000 ☐ 20,001-30,000
☐ 30,001-40,000 ☐ 40,001-50,000 ☐ 50,001-100,000
☐ Above 100,000

PART B: General Information on Access to PHC facilities

1. Which health facility do your households' members visit when sick?

☐ Health Centre ☐ Dispensary
☐ Traditional Medicine man/woman ☐ Private/Clinic

Others Specify …….

2. How many times have you visited a health facility in the last six months?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ >5

3. What was the reason why you choose the mentioned healthcare institutions?

Reason for choosing the healthcare facility	Yes	No
Short waiting time		
Availability of drugs		
Better quality care services		
Located near to my home		
Low price		
The facility has equipments		
NHIF limitations		

Others; specify …….

4. Do you have any cultural or religious preference to visit certain PHC facility?

☐ Yes ☐ No

If Yes, What are the religious or cultural preferences …… …

5. What is the distance to the health facility your visit?

☐ Less than 2 Km ☐ 2-4 Km ☐ 5-7 Km ☐ 8-10 Km ☐ 11 Km+

Other (Specify)…….

6. What means of transport do you use to reach the healthcare facilities?

☐ By walking ☐ By motorcycle ☐ By public transport

☐ By taxi ☐ Own Car

7. What does your household think about costs in accessing healthcare?

(a) Doctor's fee

☐ Very inexpensive ☐ Inexpensive ☐ Expensive

☐ Very Expensive ☐ Normal

(b) Medication costs

☐ Very inexpensive ☐ Inexpensive ☐ Expensive

☐ Very Expensive ☐ Normal

(c) Travel cost to get healthcare.

☐ Very inexpensive ☐ Inexpensive ☐ Expensive

☐ Very Expensive ☐ Normal

(d) Total cost

☐ Very inexpensive ☐ Inexpensive ☐ Expensive

☐ Very Expensive ☐ Normal

8. Does your household have a health insurance?

☐ Yes ☐ No

(a) If yes, who provides it?

☐ Government ☐ Private organization

Other……..

(b) If no, Why?.....

(c) What is the cost of health insurance?

☐ Very inexpensive ☐ Inexpensive ☐ Normal

☐ Expensive ☐ Very expensive

(d) Does the insurance cover all healthcare expenses?

☐ Yes ☐ No

9. Does the following factors influence access and utilization of public primary healthcare facilities?

	Tick as appropriate	
Factor	Yes	No
1. Long distance to health care facilities		
2. High cost of healthcare services		
3. Religious beliefs		
4. Culture		
5. Long time of waiting		
6. In-availability of drugs		
7. Age-appropriate services		
8. Poor quality of healthcare services		

10. How do you rate the healthcare services provided in the health facility you seek treatment?

	Tick as appropriate			
Service	Excellent	Good	Fair	Bad
Health education				
HIV screening				
TB diagnosis				
Malaria treatment				
Nutritional care				
Immunization				
Infant & childcare				
Post natal care				
Delivery care				
Antenatal				
Diagnosis				
Referral				
Dispense drugs				
Prescribe Treatment				
Counsel patients				
Treat ailments				

PART C: Health care utilization

1. Problems you face in the healthcare facility you seek treatment.

	Tick as appropriate	
Factor	Yes	No
1. Medicine unavailable		
2. Staff are unqualified		
3. More expensive services		
4. Long waiting time		
5. Unfriendly staff		
6. No. privacy		
7. Dirty facility		
8. Other		

2. Reasons for not seeking healthcare services from the PHC facilities.

Reason	Yes	No
High cost of services		
Self-medication		
Poor quality services		
Religious views		
Fear of discovering serious illness		
Long distance to the health facility		

Others; specify ……..

3. How can you rate the healthcare facility you seek treatment?

	Tick as appropriate			
Factor	Excellent	Good	Fair	Bad
1. Inadequate of drugs				
2. Attitude of health workers				
3. Absence of health workers				
4. Delays in provision of care				
5. Long queue				
6. Friendly environment				
7. Clean environment				

4. What is the level of satisfaction with the way health care is provided in the health facility you seek treatment?

   ☐ Satisfied ☐ Dissatisfied ☐ Don't know

5. How can you rate the quality of treatment by healthcare staff?

   Very good ☐ Good ☐ Average ☐ Poor ☐ Very Poor

6. Which of these factors is more important for you to get better healthcare?

Factor	Please rank your preference from 1-6
(i) Reduced travel time	
(ii) Reduced waiting time	
(iii) Reduced costs	
(iv) Cultural/religious factors	
(v) Improved quality of services	
(vi) Friendliness of facility personnel	

7. What are your perceptions of government contributions to delivery of health services in your locality?

   ☐ Adequate ☐ Inadequate ☐ Don't know

8. In you opinion what strategies can you recommend to improve access and utilization of health care facilities?…….

Thank you for your participation.

Appendix II: Healthcare Evaluation Schedule

I am Samuel Mokaya, a graduate student from Geography Department in Egerton University, Pursuing Doctor of Philosophy Degree in Geography. I am involved in conducting a research study whose main purpose is to help me understand household's level of access to health care facilities in Nakuru town. This questionnaire contains a number of questions that will assist me to gain understanding. It is my sincere hope and request that you will kindly provide the necessary answers to the respective questions here presented. May I take this opportunity to assure you that any information you volunteer will be treated with utmost confidentiality and be used for academic purposes only. I seek your permission to gather the following information from you which will be used for the study purpose only.

Healthcare facility:…… Ward:……. Date:…….

PART I: GENERAL INFORMATION

1. Who is the owner of the health facility? .....
2. What type of facility?

☐ Dispensary	☐ Health Centre	☐ Clinic
☐ Hospital	☐ Pharmacy	☐ Other

3. What is the number of health workers in the facility?

   a) Doctors ..... b) Clinical Officers.....

   c) Nurses..... d) Lab-technicians.....

   e) Pharmaceutical Technicians f) Supportive staff.....

4. What is the number of beds in the facility? .....
5. What is the average number of outpatients per day? .....
6. What is the average number of admissions per day? .....
7. Does the facility have a laboratory? .....
8. What are the diseases mainly treated? .....

   .....

   .....

9. Does the facility have a medical drug store? .....

10. Is the facility accessible by road?.....

11. Is the health facility covered by health insurance?.....

12. Does the facility have enough water?.....

13. Does the facility have a toilet? .....

PART II: OBSERVATION SCHEDULE

Instruction to the Investigator/Interviewer: Make appropriate observations and record the observations in the questions below.

1. What is the amount of patients in waiting lobby? .....
2. Does the health facility havewater storage capacity?.....
3. Is the health facility connected to electricity? .....
4. Does the health facility have a maternal facility? .....
5. Does the health facility have staff houses?.....
6. Does the health facility have healthcare inputs such as ARVs, Immunization, T.B, Malaria treatment, health technologies etc.....

PART III: Mapping of healthcare facilities.

1. Use of longitudes and latitudes to map all healthcare PHC facilities in Nakuru town.
2. Use of GPS at the study location.

Appendix III: Key Informant Questionnaire

I am Samuel Mokaya, a graduate student from Geography Department in Egerton University, Pursuing Doctor of Philosophy Degree in Geography. I am involved in conducting a research study whose main purpose is to help me understand household's level of access to health care facilities in Nakuru town. This question`1aire contains a number of questions that will assist me to gain understanding. It is my sincere hope and request that you will kindly provide the necessary answers to the respective questions here presented. May I take this opportunity to assure you that any information you volunteer will be treated with utmost confidentiality and be used for academic purposes only. I seek your permission to gather the following information from you which will be used for the study purpose only.

Interview Schedule No.:…… Ward:……. Date:…….

The key informants

(i) Health facility personnel

Name.....Position.....

1. What is the number of medical doctors in your facility?

   Male _____

   Female _____

2. What is the number of nurses, clinical offices or lab technicians?

Nurses		Clinical offices		Lab technicians	
Male	Female	Male	Female	Male	Female
....	....	....	....	....	....

3. What is the number of patients' bed? _____
4. Does this facility have all laboratory and specific equipments required for primary healthcare:

   ☐ Yes ☐ No

5. What is the total number of patient attendance in a week? _____
6. Does this facility provide emergency service?

   ☐ Yes ☐ No

7. Is there any subsidized rate of treatment for special group of people?.....

8. What challenges do you face while delivering health care services?

_____

_____

9. In your opinion what are the best strategies that can be implemented in order to improve access and utilization of healthcare facility?_____

_____

10. Reasons for lack of prompt services.

Reason	Yes	No
Shortage of staff		
Shortage of equipment		
Shortage of drugs		

Others;

specify.....

Thank you for participation.

Appendix IV: Patients Interview Schedule

I am Samuel Mokaya, a graduate student from Geography Department in Egerton University, Pursuing Doctor of Philosophy Degree in Geography. I am involved in conducting a research study whose main purpose is to help me understand household's level of access to health care facilities in Nakuru town. This questionnaire contains a number of questions that will assist me to gain understanding. It is my sincere hope and request that you will kindly provide the necessary answers to the respective questions here presented. May I take this opportunity to assure you that any information you volunteer will be treated with utmost confidentiality and be used for academic purposes only?I seek your permission to gather the following information from you which will be used for the study purpose only.

Interview Schedule No.:…… Ward:……. Date:…….

1. Does this health facility me*et al*l your medical need?

   ☐ Yes ☐ No

   If No, Explain _____

2. Is the facility nearest to your house?

   ☐ Yes ☐ No

   If No, why didn't you go to the nearest _____

   _____

3. Did you participate in the location of this health facility? _____

   ___

4. Which health services do you think are provided in the health facility?_____

   _____

5. How do you rate the services offered in the health facility? _____

   _____

6. Does the health facility me*et al*l your health needs? _____
7. How can you describe the following health care services offered in the health facility?
   (a) Maternal healthcare services _____
   (b) Child immunization_____
   (c) Medical provision for the elderly_____
8. Which services needs improvement in the facility_____
9. Which mode of transport did you use to reach the facility? _____

   _____

10. What do you think about the distance to the facility? _____

_____

11. What are the common health problems to you? _____

_____

12. For how long do you wait to get the services? _____

_____

13. What do you think about the cost of healthcare services in this facility? _____

_____

14. How is the personal treatment from all facility personnel? _____

_____

15. Which factors are more important for you to get better healthcare? _____

_____

16. How do you think access to healthcare can be improved? _____

_____

Thank you for participation.

Appendix V: Research Permit

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone:+254-20-2213471,
2241349,3310571,2219420
Fax:+254-20-318245,318249
Email: dg@nacosti.go.ke
Website : www.nacosti.go.ke
When replying please quote

NACOSTI, Upper Kabete
Off Waiyaki Way
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No. **NACOSTI/P/18/4252/26426**

Date: **27th November, 2018**

Samwel Bogonko Mokaya
Egerton University
P.O. Box 536-20115
NJORO

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Assessment of households' access and utilization of primary healthcare facilities in Nakuru Town - Kenya"*** I am pleased to inform you that you have been authorized to undertake research in **Nakuru County** for the period ending **26th November, 2019.**

You are advised to report to **the County Commissioner and the County Director of Education, Nakuru County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

DR. STEPHEN K. KIBIRU, PhD.
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Nakuru County.

The County Director of Education
Nakuru County.

THIS IS TO CERTIFY THAT:
MR. SAMWEL BOGONKO MOKAYA
of EGERTON UNIVERSITY, 1238-20100
nakuru,has been permitted to conduct
research in *Nakuru County*

on the topic: *ASSESSMENT OF HOUSEHOLDS' ACCESS AND UTILIZATION OF PRIMARY HEALTHCARE FACILITIES IN NAKURU TOWN - KENYA*

for the period ending:
26th November,2019

Permit No : NACOSTI/P/18/4252/26426
Date Of Issue : 27th November,2018
Fee Recieved :Ksh 2000

.....
Applicant's Signature

.....
Director General
National Commission for Science,
Technology & Innovation

THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013

The Grant of Research Licenses is guided by the Science, Technology and Innovation (Research Licensing) Regulations, 2014.

CONDITIONS

1. The License is valid for the proposed research, location and specified period.
2. The License and any rights thereunder are non-transferable.
3. The Licensee shall inform the County Governor before commencement of the research.
4. Excavation, filming and collection of specimens are subject to further necessary clearance from relevant Government Agencies.
5. The License does not give authority to transfer research materials.
6. NACOSTI may monitor and evaluate the licensed research project.
7. The Licensee shall submit one hard copy and upload a soft copy of their final report within one year of completion of the research.
8. NACOSTI reserves the right to modify the conditions of the License including cancellation without prior notice.

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TEL: 020 400 7000, 0713 788787, 0735 404245
Email: dg@nacosti.go.ke, registry@nacosti.go.ke
Website: www.nacosti.go.ke

REPUBLIC OF KENYA

NACOSTI

National Commission for Science, Technology and Innovation

RESEARCH LICENSE

Serial No.A 22068

CONDITIONS: see back page

Appendix VI: Research Authorization from the Department of Public Health

DEPARTMENT OF HEALTH SERVICES
NAKURU COUNTY

Email:cohealth.nakuru@gmail.com
When replying please quote:

OFFICE OF THE CHIEF OFFICER HEALTH
NAKURU COUNTY
P.O BOX 2600-20100
NAKURU

Ref No. NCG/CDMS/GEN.VOL.1/262

5th December, 2018

SAMWEL BOGONKO MOKAYA
EGERTON UNIVERSITY
P.O. BOX 536-20115
NJORO

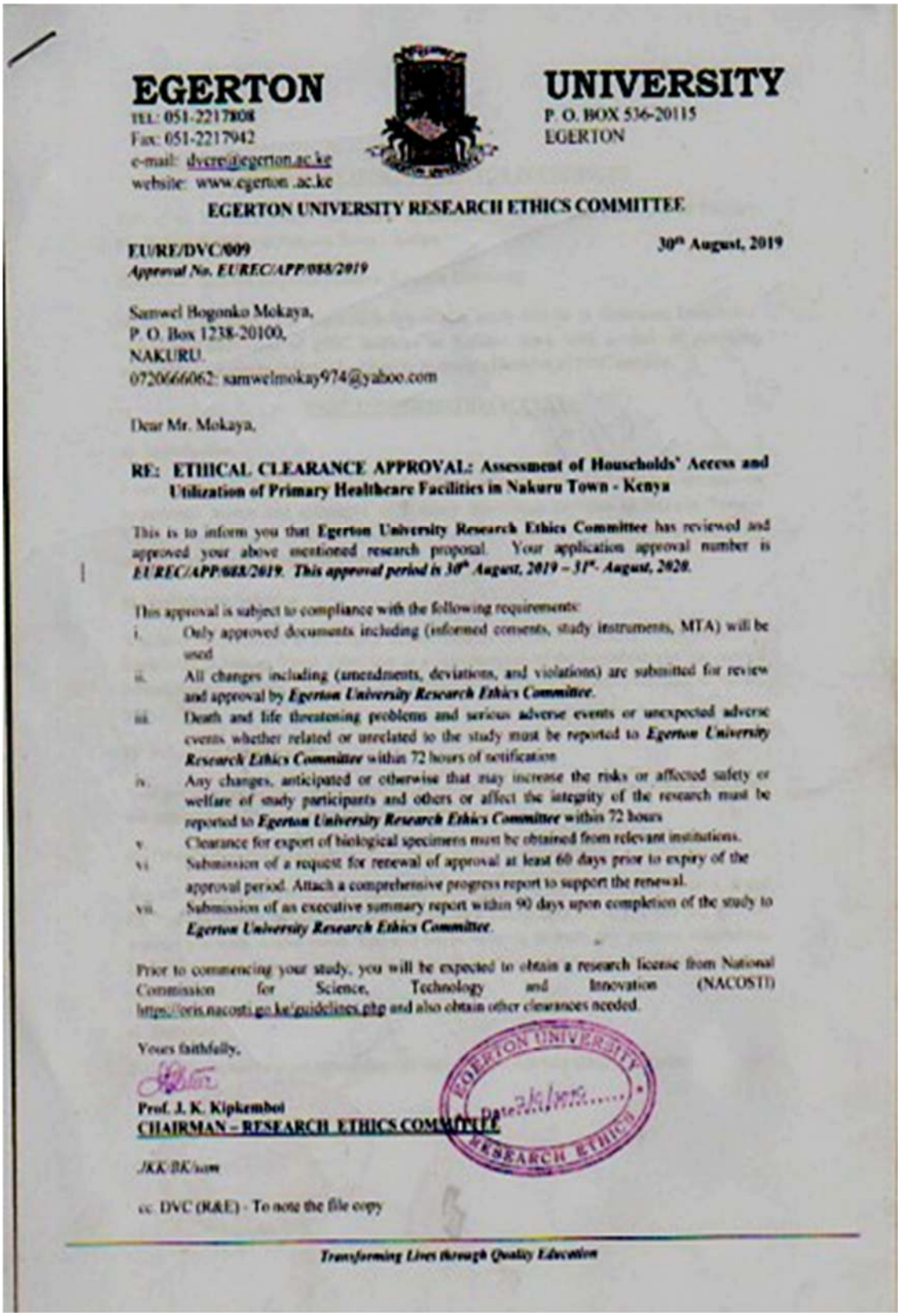
RE: RESEARCH AUTHORIZATION

This letter serves as an authorization from the Department of Health Services Nakuru for you to conduct research on **"Assessment of households' access and utilization of primary healthcare facilities in Nakuru Town – Kenya".**

The County acknowledges receipt of clearance letter from NACOSTI and therefore authorizes the study to proceed. The study is in line with the County Research priorities in the County research agenda and therefore the researcher is expected to present and submit the final report to the County Research and Development Unit.

E. KIPTOO
FOR/COUNTY DIRECTOR ADMINISTRATION AND PLANNING
NAKURU

Appendix VII: Ethical Clearance Approval



EGERTON UNIVERSITY

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Fax: 051-2217942
e-mail: dvcre@egerton.ac.ke
website: www.egerton.ac.ke

P. O. BOX 536-20115
EGERTON

EGERTON UNIVERSITY RESEARCH ETHICS COMMITTEE

EUIRE/DVC/009 **30th August, 2019**
Approval No. EUREC/APP/088/2019

Samwel Bogonko Mokaya,
P. O. Box 1238-20100,
NAKURU.
0720666062: samwelmokay974@yahoo.com

Dear Mr. Mokaya,

RE: ETHICAL CLEARANCE APPROVAL: Assessment of Households' Access and Utilization of Primary Healthcare Facilities in Nakuru Town - Kenya

This is to inform you that **Egerton University Research Ethics Committee** has reviewed and approved your above mentioned research proposal. Your application approval number is ***EUREC/APP/088/2019. This approval period is 30th August, 2019 – 31st August, 2020.***

This approval is subject to compliance with the following requirements:

i. Only approved documents including (informed consents, study instruments, MTA) will be used
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by ***Egerton University Research Ethics Committee.***
iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to ***Egerton University Research Ethics Committee*** within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to ***Egerton University Research Ethics Committee*** within 72 hours
v. Clearance for export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days upon completion of the study to ***Egerton University Research Ethics Committee.***

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://oris.nacosti.go.ke/guidelines.php and also obtain other clearances needed.

Yours faithfully,

Prof. J. K. Kipkemboi
CHAIRMAN – RESEARCH ETHICS COMMITTEE

EGERTON UNIVERSITY RESEARCH ETHICS

JKK/BK/sam

cc: DVC (R&E) - To note the file copy

Transforming Lives through Quality Education

Appendix VIII: Medical Equipment at Public Primary Health Care Facilities in Nakuru Town

Health facilities	Medical Equipment											
	Microscope	Glucometer	Thermometers	HIV test kit	Malaria test kit	Height scale	Stethoscope	Sterilizing equipment	Weight scale	Emergency tray	HB and blood Pressure machine	Ampupe bag
Bondeni maternity	1	1	1	1	1	1	1	1	1	1	1	1
Langalanga	1	1	1	1	1	1	1	1	1	1	1	-
Industrial area	1	-	1	1	1	1	1	1	1	1	1	-
Mirugi	1	-	1	1	1	1	1	1	1	1	1	-
Nakuru west health centre	1	-	1	1	1	1	1	1	1	1	1	-
Bondeni	1	-	1	1	1	1	1	1	1	1	1	-
Rhonda maternity	1	1	1	1	1	1	1	1	1	1	1	1
Kiti	1	-	1	1	1	1	1	1	1	1	1	-
Prisons	1	1	1	1	1	1	1	1	1	1	1	1
Baruti health centre	1	1	1	1	1	1	1	1	1	1	1	1
Lanet	1	1	1	1	1	1	1	1	1	1	1	1
FITC - london	1	-	1	1	1	1	1	1	1	1	1	1
Kapkures	1	-	1	1	1	1	1	1	1	1	1	1
Statehouse	1	-	1	1	1	1	1	1	1	1	1	1

Source: Research data, 2018.

Appendix X: Snapshots of the Abstract Pages of Publications

www.ijird.com July, 2020 Vol 9 Issue 7

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH & DEVELOPMENT

ISSN 2278 – 0211 (Online)

Factors Influencing Urban Variations of Household's Utilization of Public Primary Healthcare Facilities in Nakuru Town, Kenya

Samwel Bogonko Mokaya
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Kennedy N. Ondimu
Lecturer, Department of Geography, Egerton University, Kenya
Wilkister N. Moturi
Lecturer, Department of Environmental, Science, Egerton University, Kenya

Abstract:
Utilization of public health care (PHC) facilities incorporates three major components including people, service and mode of transport linking them. The difference in components influencing the households' utilization of PHC facilities varies across the world. This paper investigates the factors influencing urban variations of households' utilization of public primary health care facilities. This study was carried out in Nakuru Town. The study adopted mixed method research that involved quantitative and qualitative approaches. These included: a descriptive cross-sectional household survey and a health facility evaluation survey. The results indicate that the major factors influencing households' utilization of public PHC facilities were cost of healthcare services (79.25%), availability of drugs within the public health care facilities (70.5%) and distance to health facility (68.75%). This paper shows that households in Nakuru town utilize public primary health care facilities for their medical services based on the physical conditions, financial conditions, health status and socio-economic characteristics. The paper thus recommends for the County Government of Nakuru to increase the number of public PHCs, improve the supply of essential drugs and also to use mobile clinics to reach the underserved areas within the town.

Keywords: *Variations, households, utilization, primary healthcare, primary health care facilities*

IOSR Journal of Humanities And Social Science (IOSR-JHSS)
Volume 25, Issue 7, Series 5 (July. 2020) 01-10
e-ISSN: 2279-0837, p-ISSN: 2279-0845.
www.iosrjournals.org

Households' utilization of Public Primary Healthcare Facilities in Nakuru Town, Kenya

Samwel Bogonko Mokaya[1], Kennedy N. Ondimu[2], Wilkister N. Moturi[3]
[1,2](Department of Geography/ Egerton University, Kenya)
[3](Department of Environmental Science/ Egerton University, Kenya)

Abstract:
Background: Urban areas globally are known to offer many opportunities to urban dwellers. However, they also concentrate health risks and hazards. Primary Healthcare (PHC) is an approach used to offer the first contact healthcare services. Studies have revealed low utilization of PHC services in urban Kenya. This has led to high burden of preventable diseases. This paper set out to assess the households' utilization of PHC facilities in Nakuru town.
Materials and Methods: The study adopted mixed method research that involved quantitative and qualitative approaches. These included: a descriptive cross-sectional household survey and a health facility evaluation survey. A sample of 400 households was selected from the eleven wards in Nakuru town. Data was collected through household sample survey by use of questionnaire, healthcare facility questionnaire, interviews with key informants, interviews with patients seeking healthcare and observation.
Results: The results indicate that the level of utilization of public primary health care facilities is highest at health centres and lowest to medicine men and women. In regard to the socio-economic characteristics of the respondents, there was relationship between monthly income and level of education of households and the type of health facilities visited by households ($p=0.000$) while there was no relationship between age and gender with the type of health facility visited by the households ($p=0.478$ and $p = 0.372$).
Conclusion and Recommendation: The study finding implies that the level of utilization of public primary health care facilities is high among the population in Nakuru town. Thus this paper recommends that there is need to improve utilization of public primary health care facilities among the households of Nakuru town. This should be done through increasing the number of health personnel, establishing more public primary health care facilities, and increasing the supply of drugs.
Key Word: Households; Utilization; Public Primary Health Care; Health Care facilities.