

**INFLUENCE OF STRUCTURAL ARRANGEMENT ON PROVISION OF  
QUALITY PRIMARY CARE HEALTH SERVICES IN PUBLIC HEALTH  
CENTERS IN NAKURU COUNTY, KENYA**

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FOR THE DEGREE OF MASTER OF SCIENCE IN HEALTH SYSTEMS  
MANAGEMENT OF KENYA METHODIST UNIVERSITY**

**AUGUST, 2019**

**DECLARATION**

“This Thesis is my original work and has not been presented for a degree or any other award in any other university”.

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## **DEDICATION**

I dedicated this project to my parents, wife and children who encouraged me to pursue my dreams and have been supportive throughout my research studies.

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## ABSTRACT

The Alma Ata Declaration of 1978 emphasized the importance of primary care as an approach to achieve health for all. Kenya has gradually expanded primary care health service delivery to increase access and comprehensiveness of healthcare services. It has equipped referral facilities with modern equipment, while primary care health facilities continued to struggle with limited resources. As a consequence, this gap has become a big impediment to Kenya's quest to achieve universal health coverage. Structural arrangement has been cited as the major contributing factor to quality health services delivery. This study examined relationship between structural arrangements and provision of quality primary care health service in public health centers. The objectives was to assess whether infrastructural resources, financial resources, staffing and governance influence provision of quality primary care services in public health centers in Nakuru County. Cross-sectional study design with mixed data collection methods was adopted for this study. A total of 110 respondents from 33 public health centers in Nakuru County were included in the study sample. The respondents were Clinical officers, Nurses, Pharmaceutical Technologist and Laboratory Technologists. Data entry and analysis was done using SPSS Version 20. Descriptive analysis was used to profile the characteristic of the respondents. Mean, Standard deviation, correlation and regression was used to determine the relationships. The findings showed that modern equipment and adequate supply of essential commodities was associated with high quality primary care health service delivery ( $r=0.453$ ,  $p<0.01$ ). Sufficient funds and effective management of resources significantly determined quality of primary care health service ( $r=0.365$ ,  $p<0.01$ ). Health worker skills, experience and training were statistically associated with quality primary care service ( $r=0.567$ ,  $p<0.01$ ). Transparency and accountability were strongly and positively associated with improved quality of primary care service at the public health centers ( $r=0.613$ ,  $p<0.01$ ). Regression analysis showed financial resource ( $\beta= 0.32$ ) and governance ( $\beta= 2.49$ ) significantly improved quality of primary care health service delivery. Study concludes good structural arrangements lead to good processes and ultimately good health outcome. The study recommends that county government of Nakuru should i) supply adequate equipment to perform the necessary work, ii) provide sufficient allocation and timely release of funds to health centers, iii) provide career progression and continuous professional development among its health workforce, and iv) institute staff retention measures and frequent auditing of health centers assets and liabilities and provide a report to the public.

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## ABBREVIATIONS AND ACRONYMS

<b>EHR</b>	Electronic Health Record
<b>GOK</b>	Government of Kenya
<b>ICT</b>	Information Communication Technology
<b>KEPH</b>	Kenya Essential Package for Health
<b>KMHFL</b>	Kenya Master Health Facility List
<b>MDGs</b>	Millennium Development Goals
<b>MOH</b>	Ministry of Health
<b>NHIF</b>	National Hospital Insurance Fund
<b>PCP</b>	Primary Care Providers
<b>SDGs</b>	Sustainable Development Goals
<b>WHO</b>	World Health Organization

## **DEFINITION OF KEY TERMS**

<b>Accountability</b>	Obligation that health providers and managers have to give a satisfactory explanation over the exercise of power, authority and resources entrusted in them on behalf of the public.
<b>Governances</b>	Process involving balancing competing needs and demand by involving all interested parties in an effort to achieve health for all.
<b>Infrastructural resource</b>	Physical items such as rooms, equipment, medicine and machines that aid in diagnosing and treatment.
<b>Paramedics</b>	The clinical officers, Nurses, Laboratory and pharmaceutical Technologists.
<b>Primary care Quality</b>	Care provided in a way health provider perceive as accessible to the patients, comprehensive, there is continuity in care and community needs are taken to consideration during service provision.
<b>Primary care health services</b>	The essential health services provided by a nurse or clinician to patients at health centers or dispensaries, that meet the health needs and problems of the patient near their locality (Starfield, 1998).
<b>Staffing</b>	To select, develop, maintain and utilize the skills and experience of health worker to achieve healthcare goals.
<b>Structural arrangements</b>	Characteristics of the health facility which provide healthcare including; physical properties (medicine and equipment), staffing (number, type, skill and experience), financial resources (sources and management) and governance.

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Background to the Study**

Health system comprises organizations, people and actions whose primary intention is to promote, restore or maintain health. The goal is to improve health through provision of service in an equitable manner which is responsive, cost-effective and efficient use of available resources. World Health Organization “Framework for Action” describe six health system building block that make up an entire system, the building blocks are service delivery, health workforce, health information, health financing and leadership and governance. Service delivery include providing quality healthcare service which is safe, effective and personalized care to those who need at the right time and ensuring resources are well utilized (World Health Organization [WHO], 2007).

World Health Organization Sustainable Development Goal (SDG, 2015) number three, states that to attain healthy lives and promotion of well-being, proper structural arrangements must be set up in primary care system. Structural arrangement are the characteristics of health center which support provision of health service, these include physical properties such as equipment, the facility staffs, financial resources and governance. Quality care is regarded as providing care in a way that is integrated, accessible, comprehensive and provided by clinician who is able to deal with the healthcare needs of the patient and involve family in care and treatment (Donaldson, Karl, Yordy & Vanselow, 1996; WHO, 2008a).

There has been commitment worldwide to make primary care a foundation of healthcare systems, this is due to the increasing data relating primary care to improved health

outcomes, reduced health disparities and reduced healthcare costs (Macinko,Oliveira,Turci,Guanais, Bonolo& Lima-Costa,2011; Kringos, Groenewegen, Wienke& Hutchinson, 2010;Lee, 2007; Starfield, Shi,.&Macinko, 2005) demonstrated a country whose health system is based on primary care structure then to have better health outcomes. It was associated with low mortality and morbidity rates especially on chronic diseases.

Health systems focused on primary care has demonstrated cost saving strategy. Studies comparing primary care with cost effectiveness have shown good system based on primary is cost effective healthcare and in most cases better outcomes (Starfield, Shi, Politezer & Regan, 2002). Its benefit is described by its role in delivering better preventive care and promotional services thus reduce the need and utilization of costly hospital services(Starfield et al., 2005). In the past, provision of primary care service did not have a clear way of measuring performance because it lacked indicators to primary care practice (Starfield, 1998).Also available evidence on quality standards were focused on hospital care leaving primary care poorly measured yet it is the first point of contact between health system and the people and more health services are being utilized (Jha, Orav, Zheng & Epstein, 2008). It is also evident that hospital care have good measures of clinical aspects of care compared to the less available measures of interpersonal aspects of care in primary care settings (Starfield, 2009). As a result of this inequity, institutions and researchers have done a significant efforts to conceptualize primary care and its unique characteristics (WHO, 2008a;Donaldson et al., 1996). Other studies have correlated the achievement of core characteristics of primary care to better health outcomes (Kringos, et al, 2010; WHO, 2008b; Starfield et al, 2005).

Kenya has agreed to support primary care strategic approach to healthcare system as declared by (WHO, 1978). The Alma-Ata Declaration 1978 emphasized the importance of primary health care as a key policy to achieve universal health care by 2000, Kenya has gradually expanded primary care delivery to increase availability, accessibility and comprehensive of health care services comprising preventive and curative health services. This was made possible through effective policies, administration and political commitment in decentralization of health services to improve access(MOH, 2015).Kenya’s health care system is provided by over 4,800 health facilities spread across the country, the facilities consists of National referral hospitals, County referral hospitals, Sub-county hospitals, health centres, and dispensaries as shown in Table 1.1.

**Table 1.1: Current situation of health facilities in Kenya**

<b>Tier of care</b>	<b>Level of care</b>	<b>Description</b>
Community	Level 1	Comprise community units (level 1) in the County.
Primary care	Level 2	Comprise all dispensaries (level 2) and health centres (level 3), including those managed by non-state actors.
Secondary referral	Level 3	Comprise all level 4 (primary) and level 5 (secondary) hospitals.
Tertiary referral	Level 4	Comprised of all tertiary (level 6) referral hospitals, National reference laboratories and services, Government owned entities, Blood transfusion services, Research and training institutions providing highly specialized services.

*Source: Kenya Health Sector Strategic Plan III (2012-2017)*

Health centres and dispensaries are first point of contact between patient and health system. However, little is known about the quality of primary care in Kenya, particularly from the perspective of health providers. Nakuru County has integrated its service as you



go down the healthcare service structure from the County referral to Sub-county and finally dispensaries. Ambulatory services are delivered through health centres and dispensaries tailored to local community needs. Table 1.2 shows distribution of health facilities in Nakuru County.

**Table 1.2; Health facilities in Nakuru County**

	<b>Hospitals</b>	<b>Sub County Hospitals</b>	<b>Health centers</b>	<b>Dispensaries</b>	<b>Nursing Homes</b>	<b>Maternity Homes</b>	<b>Private Clinics</b>	<b>VCT Stand Alone</b>
Public	1	6	40	145	1			1
Private	15				11	12	118	1
NGO								4
FBO								4
<b>Total</b>	<b>15</b>	<b>6</b>	<b>40</b>	<b>145</b>	<b>12</b>	<b>12</b>	<b>118</b>	<b>10</b>

*Source: Nakuru County registry 2017*

### **1.2 Statement of the Problem**

According to Abuja declaration 2001, Countries made commitment to earmark 15% of their National budget to health sector, Kenya has not met the target, and the poor allocation has compromised access to quality healthcare service. Kenya health policy emphasizes provision of primary care service to achieve health for all. However, while increasing demands and workload, it is bound to challenge the existing structural capacity which can affect facilities ability to offer quality primary care service. Health centers have seen long waiting times and overcrowding, this causes dissatisfaction among patients who seek for care at the facility. A dissatisfied patient is likely to seek alternative costly healthcare, this may fragment health care system and lead to costly healthcare (Macinko et al., 2011). Poor services at the health center result to

underutilization of facility and over-use of referral hospitals, patients will bypass the primary care facilities to higher level facilities for diseases that can be treated and managed at health centers, as a result overcrowding of referral hospital or emergency room reserved for patients with critical problems (Kontopantelis, 2010). A study by Ndeti, Mutiso, Khasakhala and Kokonya (2007) on status of health workforce found primary health care facilities understaffed while county hospitals were overstaffed. They noted that the imbalance was attributed to health workers migrating to higher level health facilities from primary care facilities. This indicates a gap in the service delivery at the primary care facilities. Therefore, this research sought to produce relevant evidence through a study on the relationship between structural arrangement (infrastructure, staffing, finance and governance) and quality primary care services provision at health centres.

### **1.3 Purpose of the Study**

The purpose of this study was to investigate the relationship between structural arrangements and provision of quality primary care health service in health centers in Nakuru County with focus on infrastructural resources, financial resources, staffing and governance in health centers.

### **1.4 Objectives**

#### **1.4.1 General Objective**

To determine the relationship between structural arrangements and delivery of quality primary care health service in public health centers in Nakuru County.

### **1.4.2 Specific Research Objectives**

- i. To assess whether infrastructural resources influence provision of quality primary care health service in public health centers in Nakuru County.
- ii. To establish the influence of financial resources on provision of quality primary care health service in public health centers in Nakuru County.
- iii. To determine whether staffing influence provision of quality primary care health service in public health centers in Nakuru County.
- iv. To assess whether governance influences provision of quality primary care health services in public health centers in Nakuru County.

### **1.5 Research Questions**

The study sought to answer the following questions.

- i. How does an infrastructural resource influence provision of quality primary care health services in public health centers in Nakuru County?
- ii. To what extent does availability of financial resources influence provision of quality primary care health services in public health centers in Nakuru County?
- iii. How does staffing influence provision of quality primary care health services in public health centers in Nakuru County?
- iv. How does governance influence provision of quality primary care health services in public health centers in Nakuru County?

### **1.6 Justification of the Study**

The importance of health sector is well articulated in sustainable development goals (SDG, 2015). Sustainable development goal three pertains to health improvement for all.

The Abuja declaration of 2001 commits countries to allocate 15% of their national budget to health sector, Kenya has not met this commitment as it currently allocates at 7.1% to health sector. Kenya healthcare system is under pressure greatly attributed to burden of diseases as HIV/AIDS and other non-communicable diseases, shortage of health staff, poor infrastructure, use of out-of-pocket payment and poor leadership and governance of health facilities (MOH, 2015). The importance of healthcare as an indicator for development has been recognized in Kenya's Vision 2030 and this is evident in many health reforms scheduled to be implemented under the big four agenda on Universal health coverage. Health care service delivery and quality are both high priority strategies to alleviate the current health burden facing the country. The choice of Nakuru County as a case study was informed by the fact that the county has large number of health centers and a good transport network that facilitate data collection.

## **1.7 Limitation and Delimitation of the Study**

### **1.7.1 Limitation of the Study**

The research focused on health centers because they are the first point of contact between patient and healthcare provider. The researcher anticipated to carry out the research in all 40 health centers, but at the time of data collection 5 health centers were upgraded to sub-county hospital forcing the researcher to exclude from the study. At the time of introducing the study to participants, some participants expressed fear of victimization by the County government; the researcher overcame by assuring them of confidentiality and not writing their names on the questionnaire. It was also difficult finding all cadres, some health centers are run by nurses alone while others do not have pharmaceutical technologist or laboratory technologist, the researcher had to administer questionnaire to the available cadre only. It is hope that the finding of this study are

adequate to address structural factors affecting provision of primary care in public health centers thus they can be generalized to other health centers in the country.

### **1.7.2 Delimitation of the Study**

Health centers in Nakuru County were chosen, Nakuru host both rural and urban health facilities with good transport network making it easy to obtain relevant information. Patient perspective was not sought in the study. The study examined structural elements that influence the provision of quality primary care in Nakuru County including staffing, financial resources, medical equipment and supplies and leadership and Governance. Processes and outcome of care was not covered.

### **1.8 Significance of the study**

The findings of this study will shed more light on factors catalyzing improvement of quality primary care service in health centers and reduce by pass effect to higher level facilities. It will also improve morale and job satisfaction among health staffs. A motivated staff is better disposed to provide quality service and ultimately better health outcome and cost-effective care. The researcher collected primary data whose findings is expected to assist in improving healthcare policies that would strengthen primary care and eliminate barriers that hinder provision of quality primary care service.

Nakuru provincial general hospital (PGH) and sub-county referral hospitals are faced with problem of large number of patients seeking primary care services rather than handling referral cases, failure to strengthen primary care by addressing structural factors influencing bypass effect will lead to patients receiving poor healthcare services at both levels of care. Therefore, the finding and recommendation of this study will enlighten the

County Government; the National Government through respective ministries to come up with a strategy of alleviating the challenges facing primary care delivery and ensure quality health is maintained at all levels at all cost. Private sector and professional bodies will stand to benefit as they will be able to identify structural elements influencing provision of quality primary care service. Finally, it provides reference material to organization and scholars who will want to carry out further research.

### **1.9 Assumption of the study**

The study took into consideration the following assumptions that were considered to be true, logical and reasonable (Polit & Beck, 2012). That the information obtained from the respondent can be generalized, the research instrument was accurate in collecting data, finally the respondents were honest and unbiased in the information they provided.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter will discuss the theories and empirical reviews underlying quality primary care service, as well as literature reviewed on the provision of quality of health care service and factors that have an influence on quality of healthcare. These factors are demographic factors (age, gender, years of study, location of health facility, ownership of the facility, employment terms and type of respondent); structural arrangement of the health center (infrastructural elements, financial resources, staffing and governance).

#### **2.2 Structural Arrangement Factors**

##### **2.2.1 Infrastructural Resources**

WHO, 2010 states that to achieve universal coverage, a country need to have an effective, efficient and well organized system of care, such system needs a vigorous health infrastructure in terms of physical facilities, medical equipment, medical supplies, communication and ICT. Low income countries are incapable of equipping their health facilities and providing quality care due to scare resource and misappropriation of funds through corruption, as a result many countries have decentralized health service to maximize the available resources and improve access , comprehensiveness and quality of primary care services provided (World Bank, 2012). A country that recognizes the importance of a good healthcare system tends to have a health population and high economic growth (Andaleeb, 2000). The use of Information technology (IT) has been seen as an important element of Primary Care, A system-wide information systems permit tracking patients across health care levels, generate patient-specific information to support disease management and provide health providers with clinical guidelines to

enhance patient care (CommonwealthFund, 2006). An electronic health record (EHR) supports information sharing among providers; hence enable the clinician to access patient medical history easily, it also allow information to be stored for future use. IT also allows for the collection of information based on needs and outcomes so that providers, organizations and governments can better plan, manage and evaluate the performance of the health care system (Lamarche, Beaulier& Pineault 2003).

Review of literature showed that decision-support systems in health facility result in improved drug-dosing, enhanced preventive care practices and improved management of a diverse group of medical conditions (Mitchell& Sullivan, 2001). It improved healthcare processes through reminders, increased the prescribing of generic drugs and resulted in fewer unnecessary tests. Other studies have shown that computerized decision-support systems resulted in fewer errors and improved compliance with guidelines as well as a reduction in costs and shorter lengths of hospital stay (Kaushal, Shojania, & Bates, 2003).

Organization of Kenya healthcare system includes the national teaching hospital, County hospitals, health centers, and dispensaries. It is organized in hierarchy; at the lowest level we have community health service while Kenyatta National Hospital (KNH) at the top. Delivery of healthcare is based on the Kenya Essential Package for Health. Concerns have however been raised that health centers are not providing full package of care services and its investment does not match the resource allocation(MOH, 2015). Health facilities has struggled with shortage of equipment though government recently purchased modern equipment, there are concerns among health provider that the investment lack proper coordination and maintenance of existing equipment resulting to



frequent breakdowns. Allocation of infrastructure is poorly distributed with some areas facing shortage while others excess (Wamai, 2004). Shortage of infrastructure has negatively impact on primary care and its ability to provide quality service, the situation need to be addressed urgently failure to which patients are left to seek expensive care.

### **2.2.2 Financial Resource**

To produce quality output health facilities need adequate finance to acquire the necessary input needed to improve population health, increase employment and sustain the needs of local community. Improved access to funds helps health facilities advance and meet the growing patient needs. However health facilities continue to obtain inadequate capital for financing and managing health facilities.

In Kenya, use of line item budget is common in hospitals, frequently based on the past expenses with limited provision for price change. The strategy provide superior financial control and is less costly in terms of management (Smee, 2002). On the other hand, it can enable inequities and cannot support the emerging demands and priorities of the health facility (Peters, Elmendorf, Kandola, &Chellaraj, 2000). In addition, line item budget have low motivations to maximize on the use of input or quantity of primary care provided by health centers (Smee, 2002). The use of line item reduce flexibility on use of available funds and efforts to respond to emerging issues in the health center (Krůtilová & Hazuchová (2019)). Additionally use of centralized budget perpetuates inefficiency by preventing facility managers from optimal deployment of resource to improve quality of service (Peters et al., 2000).

Poor management of funds in health organization causes limitations and becomes an obstruction to the operations of the health organization that contribute to service delivery (Adams & Colebourne, 1989). Adams & Colebourne recommended that a better strategy to funding service organizations include community participation and health facilities should distinguish good costing that improve quality and bad costing that causes bureaucracy and hence poor healthcare service delivery (Sun & Shibo, 2005). A good system of accounting including monitoring, auditing and accounting should be put in place to ensure the allocated money are used for the intended purposes (Oliveira-Cruz, Hanson & Mills, 2003). Low and medium developing countries such as Kenya has been seen not have the financial and technical capacity to effectively exercise oversight and control functions nor track and report on allocation, disbursement and use of financial resources (Smee, 2002). In developing countries lack of goodwill from politicians, fraud, abuse and corruption occur in every development being rolled out by the government this result in purchase of substandard goods and services impacting negatively on quality of care (Peters et al., 2000).

Health facilities in Kenya are in need of funding to rehabilitate, redesign, equip and staff their facilities to ensure effective and efficient service delivery to Kenyans, Low funding for health care providers including Community Health Workers (CHWs) program in Kenya has negatively affected the delivery of health services especially at the primary health care facilities (World Bank, 2012).

The model of financing health in Kenya has changed over time since independence in 1963. In developing countries policies on financing healthcare have gone through various phases. First, use of free services, secondly policy on user fees while ensuring

ease of access to services and finally stressing association between healthcare and development, one of the objectives of the Millennium Development Goals (MDGs) (Muiya& Kamau,2013).

The Sessional Paper No.10 on African Socialism of 1965 stressed the need for proper planning by Government to provide social welfare services on a large scale through a National Health Insurance. User fee charges of Kshs. 5 by health facility were removed. NHIF was then established in 1966 Sessional Paper No.10 of 1965 to offer a contribution to hospital based cover for civil servants working in private and public sector Kshs.1000 (Deloitte, 2011). Voluntary membership came into existence in 1972 to include self-employed citizens. There after the government financed the health sector through budgetary allocations. Nevertheless, excise duty is unpredictable sources of health finance, because of macro-economic conditions.

### **2.2.3 Staffing**

In healthcare system, Human resource is an essential pillar. The availability of enough trained and well-motivated human resource can show the difference between a functional and non-functional health system. The pillar is one of the most expensive pillars in health care and very critical for the running of the facility, Health providers make proper diagnosis leading to early detection and treatment of diseases and finally well-being of the patient (WHO, 2008b).

Skilled health workers are important in producing quality health outcomes as a result improvement takes place and hence growth of the organization. Therefore there is need to selectively hire qualified staff, effective recruitment process and enhance staff retention to empower staff (Brown& Duguid, 1991). In health care, workers are

expected to work in teams and participate in quality improvement teams. Health organization is require to put huge emphasis on effective selection, recruitment and retention of highly skilled and experienced staff who are able to effectively deliver quality care(Brown& Duguid ,1991). Quality services and hospitals growth depends on good human resource strategies (Cohen & Levinthal, 1990; Friedman &Kelman, 2006).

Public health facilities need to create an enabling environment that can attract, employ and retain an adequate number of high-quality nurses. Argote and Ingram (2000) recommended staff should adapt to current trends in healthcare to produce quality health outcome. According to Ennis and Harrington (2001) an organization that has adaptable workers are tolerant of mistakes and observe mistakes as opportunity to learn and productive failures create new insight and understanding on new approach to solving a problem. In health organizations service quality often fails because staff lacks a specific skill levels and experience needed to deliver the service, such skills are continuously learned. Also health facilities that follow quality characteristic issues seriously are able to see and use fresh new information from its surrounding (Gremler, Kevin & Gwinner, 2000).

Public health facilities in Kenya still faces major health workers shortages, despite the large investments rolled out by National and County governments to increase staffing, the number of people seeking healthcare services has increased putting pressure on demand for health care service, Both governments need to allocate more funds to hiring human resource for health(MOH, 2015). The Ministry of health staffing norms and standards shows that specialists train for nine years, general practitioners train for six years, clinical officers (4 years and registered nurses and other occupations for three

years. Community workers form the bulk with least training (Sohnen, Lara, Alec, Omolo & Karau , 2015).

Health staff has noted the negative effects of decentralization of health services including of lack schemes of service, poor recruitment and retention, lack of promotion, delayed salaries, reduced opportunities for continuous professional education, among others. Compared against the World Health Organization's staffing norms and standards there is severe shortage of 83,000 doctors, the majority include registered clinical officers, enrolled nurses, pharmaceutical technologists and patient attendants (Sohnenet al., 2015). The main cause of low number of health centers staff includes lack of opportunities for career advancement, inappropriate infrastructure and poor remuneration.

#### **2.2.4 Governance**

World Health organization has identified six important pillars for a good health system these include; medical products pillar, health management information systems (HMIS), service delivery pillar, human resources for health pillar health, financing and leadership and governance (WHO, 2010). The Leadership and governance building block is mostly challenging to measure resulting to lack of adequate evidence on service delivery and health outcomes. The aspect of governance in primary care includes transparency, accountability, stakeholder engagement and inter-sector collaboration.

Lack of Transparency and accountability has been a major drawback for most private and public facilities, transparency is establishing rules, procedure, processes, and activities by institutions or an individual's in an effort to discloses information to public. Two types of disclosure used by organization are active (proactive disclosure) and

passive (disclosure on demand) (Vian, 2012). Health stakeholders require timely information for making sound decision, therefore health providers and managers must ensure they provide services in an open and transparent manner, in a predictable way and easily understandable before their clients.

Developed countries for long time have appreciated accountability through public participation as way of improving health services. In health, accountability gained momentum from the 1970's as ways of making clients own up to issues affecting their health (Kline, 2018). The overall aim has been to raise the responsiveness, sustainability, and efficiency of health services, particularly in poor setup where governments are facing challenges of high disease burden and shortage of resources (WHO, 2000). The pressure to embrace accountability in health sector has been motivated by factors such as rising dissatisfaction among users with healthcare performance, the acceptance that better accountability is critical for delivery of quality health services and the possibility that change in the knowledge, scope and size of primary care structures lead to efficient use of health resources (Decoster, Appelmans & Hill, 2011). However, in spite of the rising awareness in accountability in health systems and its likeliness to improve service delivery, its definition remained complex, contentious and vague and its application in health research has been low (WHO, 2008a).

In Kenya as elsewhere, governance and accountability is gradually being adopted. Some of the approaches used include decentralization of services and community representation in facility management, other tools adopted by the patients to hold health providers accountable including participation in budgetary process, use of citizen report cards, health service charters, and active involvement in monitoring and evaluation of

community project. If accountability is reinforced, corrupt practices will be eliminated and good governance practice including equity, efficiency, effectiveness and responsibility will be effected (Baez-Camargo& Pamela, 2011).

### **2.3. Provision of Primary Care Health Service Quality**

Traditionally, primary healthcare quality assessment and performance was not being evaluated because of the lack of a well-established description of primary care practice as well as a poor measurement approaches to assess performance of healthcare (Starfield, 1998).Furthermore, evidence-based practices and quality standards was primarily focused on hospital and specialist healthcare leaving quality of primary care, where most contacts between people and health services are in deprived state(Jha, 2008). This was recognized to the availability of good measures of technical features of care in hospitals compared to the poor measures of clinical and interpersonal features of care in primary care facilities(Hogg & Dyke, 2011). Specialist healthcare setting in most cases tend to have clear episode of care, where patient begins with admission and ends with one of two outcomes of care, patient either die or discharged to go home, discharge status is fairly easily described. In primary health care there is lack of clear episode of care with an admission and end points(Starfield, 1998).Patients who are served in primary care facilities spent few hours or stay for minutes and they visit the health center irregularly, this short time of stay and brief clinical contact with health provider makes it difficult to monitor the progression of their situations and to assess how they are responding to treatment. Particularly most of them come with undifferentiated diagnosis and a varied of health problems. Health problems are difficult to measure and clinicians use their best of professional judgment to provide healthcare service to the patient. In an

effort to bridge this gap Barbara Starfield developed a model for primary care quality assessment (Starfield, 1998).

The primary care quality (PCQ) model was derived from the premise that the concept of quality of care is more than the assessment of disease-focused prevention and management of illnesses. But a wider view of quality is particularly important in primary care, which is inherently person-focused and gives more value to interpersonal aspects of care and longitudinal relationships between patients and providers. The model describes four aspects in defining and evaluating primary care quality. These include (1) resource capacity (referred to structure measures), (2) services delivery and (3) clinical performance (also referred to as process measures), and (4) health status assessment (also referred to as outcome measures) (Starfield, 1998).

The Alma Ata declaration of 1978 has seen Kenya expand health centers to provide primary health care, a care considered the foundation of health system providing promotive, preventive and curative services through a network of Dispensaries and Health centers across the country. Services provided include immunizations, diagnostic service, medical and surgical procedures and rehabilitative health services as well as referrals. The quality of primary care is very important, this can be achieved through efficient use of available resources, eradicating medication errors, enhancing appropriate and effective health care and providing responsive services oriented to patient needs (Campbell, Roland & Buetow, 2000).

Structural measurement of healthcare has been used as a method to assess the quality of primary care by evaluating its human resource capacity, infrastructure and information



communication capacities. A study by Yano, Soban, Parkerton and Etzioni (2007) found that primary care practices adapted to local practice and with good clinical support system was more likely to yield positive outcomes as in the case of colorectal cancer screening in 155 primary care centers. Clinical practice with high workload led to fewer screening, this may be explained that clinician with smaller patient workload take more time to manage patient in treatment and care for patient. However other studies showed positive correlation between high workload and the quality of care (Shi, Starfield, Xu, Politezer, & Regan, 2003).

While applying in health care system, the model of healthcare may affect the performance and patient satisfaction. A study carried out to assess patient experience in U.S, established a significant relationship linking facility settings and enhanced primary care characteristics. In the study, the health centers performed better than the managed organization. (Shi et al., 2003). This explains managed organization focused on disease care as compared to primary care which was person focused approach. Another comparative study between public and private, Wong, Kung, Griffiths, Carthy, Wong, Lo and Starfield (2010) found out that private clinic performed better than public casualty outpatient with regards to primary care attributes. The poor healthcare was attributed to public facility serving the poor population as compared to private clinic that were using insurance. Some countries such as Saudi Arabia have set up their system to serves a distinct population in its locality; it enables individual patient record to be kept in the health center for continuity of care and to provide community-oriented health services (NakJin Sung, Sang-Yeon, Wook, Lee, 2010).

## **2.4 Research Gap**

It is commonly agreed health providers have lagged behind in producing positive health outcome (WHO, 2000). Infrastructure is the major driving force to primary care provision (WHO, 2010). Furthermore lack of money has been a major systemic weakness preventing health system from achieving community primary care (Krumholz, Stone, Dalaba, Phillips & Adongo, 2015). Among the measures to improve access to healthcare is to strengthen primary care through better infrastructure, financing, human resource and good governance. Previous studies done in Kenya focused more on universal access and primary health care, little attention on primary care despite proven results that primary care improve access and lower the cost of healthcare. The study therefore attempts to fill the gap by analyzing relationship between health centers structural element and provision of quality primary care service.

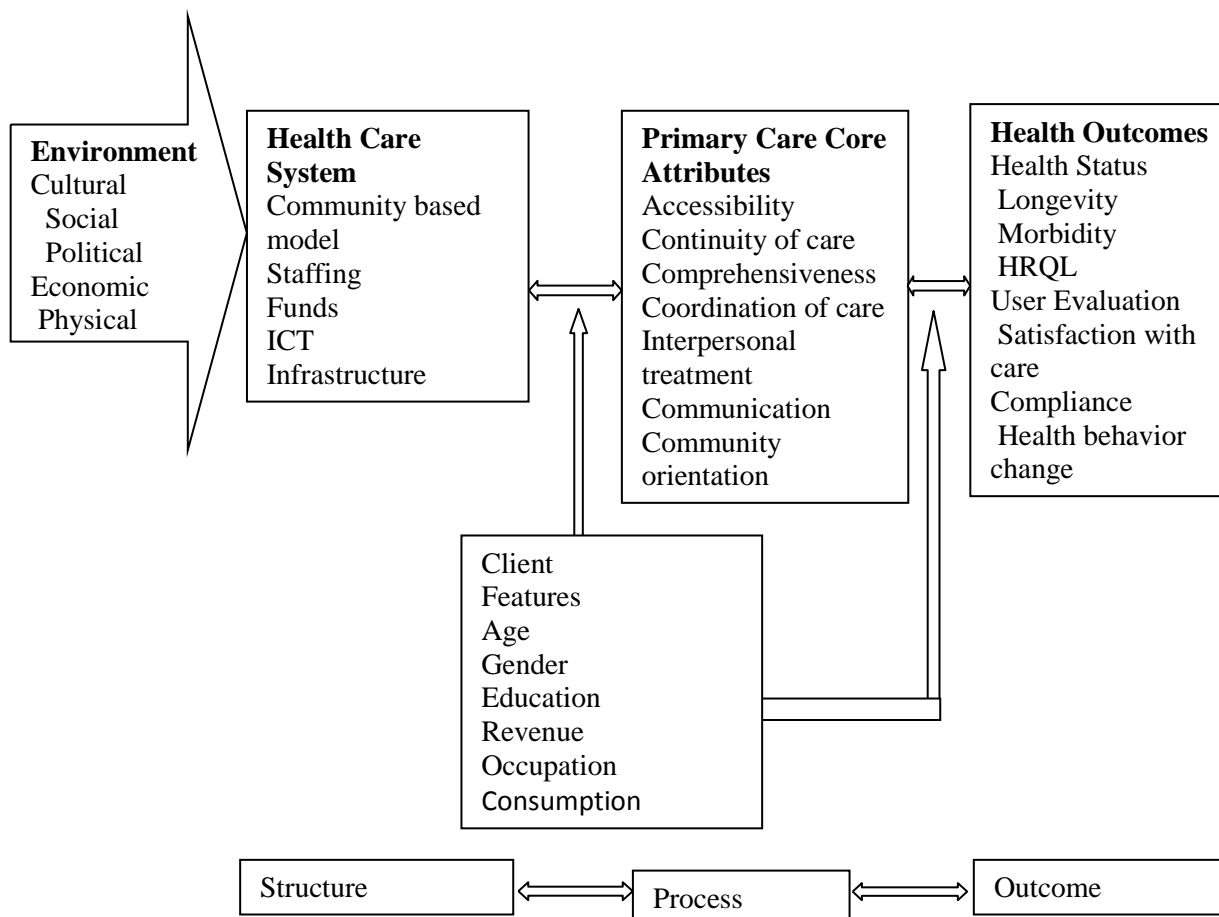
## **2.5 Theoretical Models**

Two theoretical models were used to guide the research, the Donabedian model of quality assessment (Donabedian, 1980) and Primary Care Quality model (PCQ) (Starfield, 1998).

### **Donabedian Model of Quality Assessment**

The structure, process, and outcome model of measuring quality was introduced in 1980 by Donabedian (Donabedian, 1980). Structure elements are the characteristics of the health facility which provide healthcare including physical properties (medicine and equipment), staffing (number, type, skill and experience), financial resources (sources and management), and information communication.

Processes represents events by the clients and health worker while providing or receiving healthcare service, the indicators include accessibility, continuity, comprehensiveness, coordination, interpersonal care, and community orientation. Health outcome reflects the result of healthcare on the well-being of person and community. In Donabedian model (1988) the fundamentals of structural domain, processes of care, and health outcomes are mutually supporting and interlinked. It presumes that better structures promote better processes of care and better process of care lead to effective outcome. Researches studies on quality have classify relationships into three, 1) Relationship between the structure and the outcomes of care, 2) Find out relationship between process of care and outcomes 3) Examine association between structural arrangements and processes of care leading to individual or population health outcome.

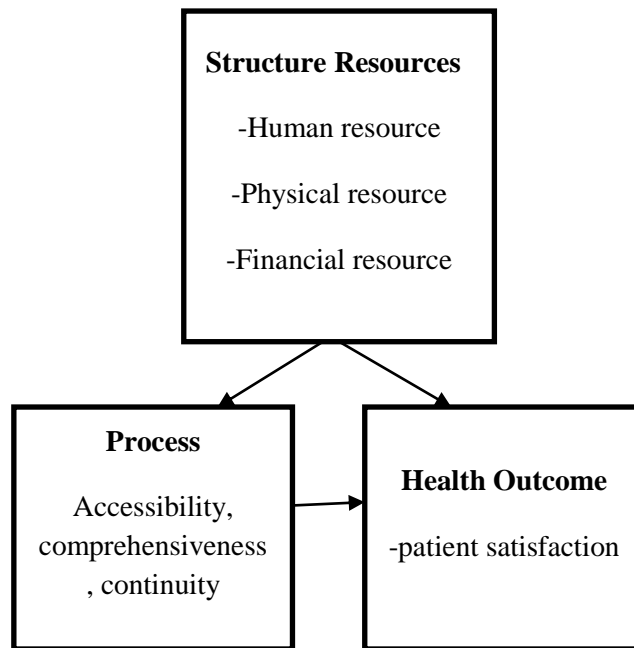


**Figure 2.1: Starfield Primary Care Quality Model**  
(Starfield, 1998)

Previously, primary care was not being assessed for quality because it lacked well established definition of measurement indicators yet it served as entry point to care (Jha et al., 2008). This was attributed to lack of well-defined indicators in primary care compared to hospital care (Hogg & Dyke 2011). In Hospital setup there is a clear start and end from the time patient is admitted to the outcome which is either the patient dies or is discharged (Starfield, 1998). While in primary care a patient visits the health center sporadically making it difficult to monitor the progress of the patient, most patient come with differential diagnosis and many unspecified complaints which cannot be easily measured or based on standard practice. Primary care is individual focused care rather than the traditional disease-focused specialty care, this highlight the importance for primary care quality measurement (Starfield, 1998). To assess quality of primary care

service at the health centers, the study was conceptualized using Starfield primary care quality model.

## 2.6 Theoretical framework



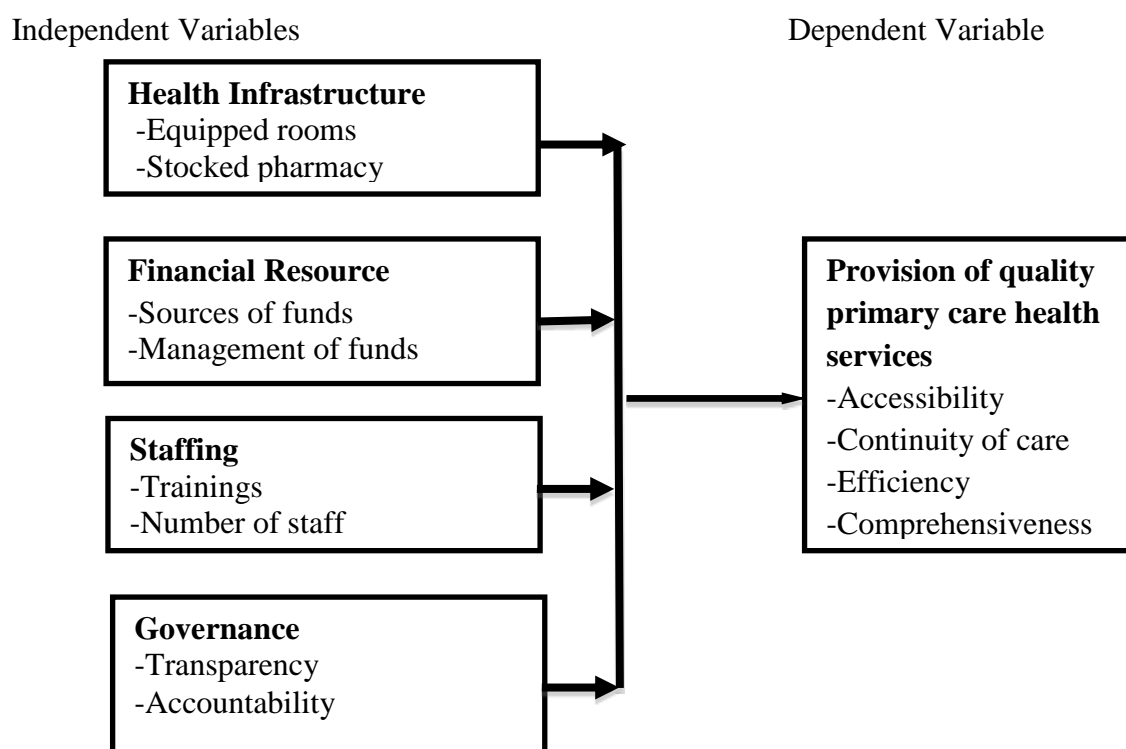
**Figure 2.2: Theoretical framework**

(Stefan, Urban & Ragnar, 2007)

The Proposed framework Structure is related to process and outcome. A framework with relationship between structure, process, and outcome of quality was developed. The framework states, for instance, that the more money for working with quality improvement (structures), the more positive attitude towards such work (process), and the patient satisfaction (outcome).

## 2.7 Conceptual Framework

The Donabedian model provides a conceptual framework for this study. Donabedian developed the care measurement basing on three dimensions- structural domain, process of care and health outcome (Donabedian, 1980). This study will focus on structural domain of Donabedian model. Structure measures include staffing, infrastructure, financial resource and governance of health facilities that direct support the provision of care as well as the physical characteristic of the primary care system. A graphic presentation shows study variables that when put together explain the relationship between study variables (Mugenda, 2003). This study used a Conceptual framework explaining the relationship between health infrastructure, financial resources, staffing capacity and governance and how they relate to provision of quality primary care service in the health sector in Kenya as shown in Figure 2.3.



**Figure 2.3: Conceptual Framework of the study**

## **2.8 Summary of Literature Review**

To achieve health for all, primary facilities requires vigorous health infrastructure in terms of physical facilities, medical equipment, information communication technology and frequent maintenance of existing equipment's. To produce quality healthcare output health facilities need adequate finances to meet rising patient needs. Human resource for health pillar remains the most expensive pillar in healthcare, but critical in producing quality primary care service. Sufficient funds are needed to hire qualified staff, effective recruitment process and enhance retention to empower the staff. Highly skilled and experience staff are effective in delivering quality care. Transparency and accountability contributes to quality care, it make governance practice effective, efficient, responsible and in an equity lens. From the literature review, there is a strong correlation between infrastructural resources, financial resource, staffing and governance and quality care. Literature review reveals that a good structural element lead to good process of care and ultimately good healthcare outcome.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter describes the definition of research design, type of research design, justification for the choice of research design, the identification of the population and target population, sampling technique, research instrument, data collection procedure and data processing and analysis.

#### **3.2 Research Design**

According to Sekaran & Bougie (2016), descriptive studies are designed to collect data that describe attributes of an individual, an institution, events or situations. Descriptive statistics enables data to be presented in a meaningful way, which allow simple interpretation of the data. It also highlights potential relationship between variables. A descriptive, quantitative survey was conducted from January to February 2019 at all public health centers in Nakuru County.

#### **3.3 Study Site**

The area of study was Nakuru County. Nakuru was selected because of high number of primary care facilities (health centers and dispensaries), good means of transport and communication network to enable the researcher access data from the facilities easily. The choice was also based on researchers work experience having worked in Nakuru and understands the county.



### 3.4 Target Population

The study population was the paramedics serving in the public health centers at Nakuru County. These were mainly clinical officers, Nurses, Laboratory Technologist and Pharmaceutical Technologist. The study interviewed health workers providing services at the health center at the time data was being collected. The Nakuru County registry (2017) indicated that health centers were distributed according to sub counties as follows in Table 3.1.

**Table 3.1 Distribution of Health Centers per Sub-County**

<b>Sub-County</b>	<b>Distribution</b>	<b>Number of Health centers</b>
Kuresoi North	Urban	0
	Rural	2
Kuresoi South	Urban	1
	Rural	1
Molo	Urban	0
	Rural	2
Naivasha	Urban	0
	Rural	2
Njoro	Urban	2
	Rural	2
Bahati	Urban	1
	Rural	2
Nakuru Town	Urban	3
	Rural	2
Nakuru North	Urban	1
	Rural	3
Rongai	Urban	2
	Rural	4
Subukia	Urban	1
	Rural	1
Gilgil	Urban	0
	Rural	1
<b>Total number of health centers in Nakuru</b>		<b>33</b>

*Source: Nakuru County registry 2017*

Due to the ongoing restructuring of health facilities during the time of data collection, five health centers was not involved, the health center was upgraded to sub-county hospital. Two Government of Kenya prison health centers declined to give permission to collect data from the health providers. A total of 33 health centers with a staff of 110 were included in the study. The challenge faced during data collection was obtaining all the cadres, some health centers have three health workers on duty that is clinical officer and two nurses and in some only nurses were available.

### **3.5 Sample Size Determination and Sampling Procedure**

The sample size was determined using purposive sampling owing to the low number of health providers in the health centers. A total of 110 health providers were purposively selected to take part in the study. The use of non-probability sampling procedure ensured all the health providers who did not meet the criteria were not interviewed for the study. The procedure was less costly; the researcher did not have to search for respondents. To calculate sample size, the research used 11 sub-counties, within each sub-county 2 clinical officers, 6 nurses, 1 pharmaceutical technologist and 1 laboratory technologist was purposely chosen to participate in the study, giving a study population of 110 respondents. The study population in shown in Table 3.2

**Table 3.2 Study population**

<b>Sample type</b>	<b>Number of respondent per sub county</b>
Clinical officers	11 x 2 (n= 22)
Nurses	11x 6 (n=66)
Laboratory Technologist	11x 1 (n=11)
Pharmaceutical Technologist	11 x 1 (n=11)
<b>Total</b>	<b>110</b>

### **3.6 The Research Instrument**

The study used closed ended questionnaire to obtained primary data. The Secondary data was gathered from report and journals, secondary data provided information on the available evidence on factors influencing provision of quality primary care services and to identify gaps in existing knowledge. The questionnaires were first pre-tested at Wangige health center, Riabai health center and Githunguri health centers in Kiambu County. The questionnaire were administered to total of 10 respondents comprising of two clinical officers, five nurses, two laboratory technologist and one pharmaceutical technologist. The respondent reported they did not face any challenge filling the questionnaires. A five point Likert scale was used to interpret the respondent's level of agreement. According to the scale, those statements that were strongly disagreed were awarded 1, disagree 2, neutral 3, agree 4 and strongly agreed were awarded 5.

### **3.7 Method of Data Collection**

Data was collected from 4<sup>th</sup> January to 15<sup>th</sup>February in all public health centers within Nakuru County as provided by Nakuru Country registry. Self-administered questionnaires were used in all the 33 health centers. The researcher visited respondents at their work station, gave background information about the study explaining the purpose, method, potential benefits or risks, and the will to withdraw from the study any time without any negative consequences. Participants were given opportunity to ask questions and obtain clarification, those who agreed signed a consent note and proceeded to self-administer questionnaire. 6 questionnaires were administered per day with each questionnaire taking 20-30 minutes to answer. The research used questionnaire because it was found to be flexible and enabled the researcher to capture in-depth knowledge of

the respondent, it also promoted cooperation from the respondent and allow for further probing to clarify unclear issues.

### **3.8 Pre-Test of the Instruments**

#### **3.8.1 Validity**

Validity refers to the extent to which an instrument measures what it is supposed to measure and achieve what it is designed to achieve. The questionnaires was given to colleagues and supervisors to go through to assess the appropriateness of the content and to find out if it was going to measure accurately what the researcher wants to know and if it adequately covers the research objectives(Orodho, 2009).

#### **3.8.2 Reliability of the Instruments**

Reliability is a measure of uniformity in producing almost similar results on different but comparable occasions on research instrument. Reliability was tested using Pearson product moment correlation coefficient ( $r$ ). The questionnaire was said to be reliable if the value for  $r$  was closer to 1.0 and obtaining constant responses when tested on same respondent more than once (Mugenda, 2008).

### **3.9 Methods of Data Analysis**

Data analysis is the process of checking, cleaning, structuring and modeling data with the goal of making a meaning out of the data and to support decision-making. Quantitative data collected using closed ended questionnaires was chronologically arranged according to the outline of the questionnaire to ensure the correct code was entered for the right variable. Cleaning and tabulation of the data was done. The tabulated data was analyzed using Statistical package for Social Sciences (SPSS 20). The data was analyzed using

descriptive statistics which include percentages, correlation and regression analysis. Descriptive analysis assisted in better understanding and interpretation of study variables. The statistics used were, Pearson's Rho ( $r$ ), mean, chi square and corresponding p-value. From the scores a p-value below 0.05 the study was concluded as scientifically significant. The mean score above 3.4 indicates agreement while those below 3.4 indicate disagreement in the statement of interest. The data was presented in form of frequency tables for easy observation and to show trends.

### **3.10 Ethical Consideration**

The researcher adhered to ethical requirements, first the research proposal was submitted to Kenya Methodist University Ethics & Research committee and approval to conduct the study was granted (Appendix IIIV). The researcher then submitted a proposal requesting for approval from National Commission for Science, Technology and Innovation (NACOSTI) which was granted on September 2018 (Appendix IX). Authorization from Nakuru County Ethics & Research committee was obtained after the researcher defended the proposal in the committee on December 2018 (Appendix X). A consent note was developed for respondents to read, understand and sign if he/she agrees to participate in the study (Appendix I).

## **CHAPTER FOUR**

### **RESULTS AND DISCUSSIONS**

#### **4.1 Introduction**

This chapter presents the results and discussions of quantitative data analysis of the study. It is divided into two major sections. The first section describes the demographic characteristics of the survey, covering gender of the respondent, professional qualification, employment status, years worked in the facility, the type of health center and who operates the health center. The second section describes the study variable of infrastructure, financial resource, staffing and governance.

#### **4.2 Response Rate and Pre-test Findings**

##### **4.2.1 Response Rate**

The study sampled 110 respondents working in health centers in Nakuru County. However, only 99 respondents agreed to participate in this study giving a response rate of 90% (See Table 4.1). This was sufficient for doing the analysis given it was above 70% which is considered very well (Mugenda, 2003). Data collected from respondents was analyzed using descriptive statistics of frequencies and percentages, pairwise correlation and a regression model. The data was further thematically organized and presented in tables to show the relationships among study variables. Data collected using Likert scale measurement was grouped into two categories of agree or disagree. An item was agree if the average score of the Likert item responses was above 3, and considered disagree if it was 3 or below meaning the responses was either neutral or disagree.

**Table 4.1 Response Rate**

<b>Population Type</b>	<b>Target Population</b>	<b>Response Rate</b>
Clinical officers	22	17
Nurses	66	62
Laboratory Technologist	11	11
Pharmaceutical Technologist	11	9
<b>Total</b>	<b>110</b>	<b>99</b>

**4.2.2 Pre-test Findings**

Table 4.2 shows the finding of the study concerning the reliability analysis. In this study reliability was done using a pre-test with selected sample from 10 health center staff in Kiambu County, the staff include Clinical officers, Nurses, Laboratory technologist and Pharmaceutical technologist. From the finding, the coefficient was 0.83, a figure closer to 1.00 making the instrument reliable.

**Table 4.2 Reliability statistics**

<b>Variable</b>	<b>Cronbach's Alpha</b>	<b>Number of items</b>
Infrastructure resources	0.8992	8
Financial resource	0.8350	9
Staff capacity	0.7526	5
Governance	0.8050	5
Primary care quality	0.8327	5

This study presents respondents' demographics carried out on the following features: gender, title of the respondent, education level of the respondent, number of years worked in the health center, health centers setting type, facility operator, employment

status of workers in the health center and number of health workers providing health service in the centers.

### 4.3 Demographic Characteristics

**Table 4.3 Demographic Characteristics**

<b>Characteristics</b>		<b>Frequency</b>	<b>Percentage</b>
Setting type	Urban	59	59.60
	Rural	18	18.20
	Semi-urban	22	22.20
	<b>Total</b>	<b>99</b>	<b>100</b>
Type of respondent	Clinical officer	17	17.20
	Pharmaceutical technologist	9	9.10
	Nurse	62	62.60
	Lab technologist	11	11.10
	<b>Total</b>	<b>99</b>	<b>100</b>
Who operates facility	Government	96	97.00
	Municipality	2	2.00
	Religious group	1	1.00
	<b>Total</b>	<b>99</b>	<b>100</b>
Level of education	Masters	1	1.00
	Bachelor's degree	16	16.00
	Diploma	78	79.00
	Certificate	4	4.00
	<b>Total</b>	<b>99</b>	<b>100</b>
Gender	Male	35	35.35
	Female	64	64.65
	<b>Total</b>	<b>99</b>	<b>100</b>
Current employment status	Permanent	52	52.50
	Temporary	43	43.40
	Part-time	4	4.10
	<b>Total</b>	<b>99</b>	<b>100</b>
Years worked in the center	< 1 year	21	21.20
	1-2 years	31	31.30
	2-3 years	16	16.20
	>3 years	31	31.30
	<b>Total</b>	<b>99</b>	<b>100</b>



Majority of the health centers 59(59.60%) were in urban set up, 22(22.20%) were in semi-rural and 18(18.20%) were in the rural set up as shown in Table 4.3. This shows that there is low investment in public health center facilities in rural areas. The finding concurs with Koenig, Nancy & Greenberg (2009) who noted the poor state of rural health facilities as a result of inadequate resource leaving the population undeserved. Based on results presented in Table 4.3, more than half 62(62.60%) of the respondents were Nurses. Clinical officers accounted for 17(17.20%) of the respondents, Pharmaceutical Technologist, Laboratory Technologists accounted for 9(9.10%) and 11(11.10%) respectively. This implies that Nurses were the majority of service providers at the health centers. In terms of health centers ownership, an overwhelming 96(97%) of the health centers were being operated by the county government. Only 2(2%) were being operated by the municipality while another 1(1%) of the health centers were being operated by religious group in partnership with county government.

The level of education of the respondent was also assessed to establish how well health workers had the requisite skills required to deal with their day to day requirements on their jobs. As evidenced in Table 4.3, majority 78(79%) of the respondents were diploma holders in diverse fields of study while 16(16%) had attained Bachelor's degree. Another 4(4%) had certificate and only 1(1%) had Masters. With high proportion of health workers having professional qualification is an indication that most of the health service providers have basic competence in their areas of work and therefore could adopt service quality strategies and tools towards provision of quality primary care. From the study the result concurred with Brown & Duguid (1991) who found that skilled clinicians, nurses' and support staff enhanced provision of quality health outcomes and hospital growth. The study also agrees with Cohen & Levinthal (1990) who stated poor health services

are as a result of staff lack of capability to deliver service due to lack of explicit skills and experience which must be continuously learned through professional development courses.

The study aimed to study gender distribution in the health centers. From the finding, a larger proportion of workers were women 64 (64.65%) while 35(35.35%) being male. This shows that the health centers are dominated by females. The study found out that on the current employment status, majority 52(52.50%) of the health service providers were on permanent employment, 43(43.40%) of the respondents were on temporary employment of two year contract, while 4(4.10%) of health service providers were operating on part-time basis, Part time employees are called upon when need arises and not in county payroll but paid by the health center.

A third 31(31.30%) of the health workers who participated had served at the health centers for one to two years and another 31(31.30%) for more than three years while a fifth 21(21.20%) of the health workers had served at the health centers for less than a year. Lastly, 16(16.20%) of the health workers served for two to three years. Having most health workers served for more than a year provides a string base for competence and experiential learning on the local health issues. Further, the health centers can invest on training its staff to enhance competence and skills for effective service delivery.

#### **4.4 Availability of Infrastructure in Primary Care Health Facilities**

On whether there was enough equipment in the health centers to serve all patients, the study found out that most of the equipment including Thermometers, Blood pressure machine and weighing scale for less than 5 year old children were available and functional as shown in Table 4.4.

**Table 4.4: Availability of Medical Equipment in Public Health Centers (n=99)**

Type of Equipment	Yes		No	
	Frequency	Percent	Frequency	Percent
Thermometer	87	88	12	12
Computers	49	49	50	51
Blood Pressure machine	85	87	13	13
Nebulizer	46	46	51	54
Refrigerator	90	93	7	7
Delivery bed	56	57	43	43
Weighing Scale under 5 years	91	92	8	8

Most respondents 50(51%) reported that there was lack of computers at the health centers, use of computers in electronic health record support information sharing and decision support system within the health centers. There was disagreement on the availability of nebulizing machine with some health centers which having a nebulizing machine but not functional. Most respondents agreed that delivery beds were available and believe that their availability positively influences quality care service in the health centers. The finding concurs with earlier finding which asserts that low income countries lack capability to provide sufficient quality and coverage of health services (World Bank 2012). The Ministry of health should work together with county Governments so as to ensure that there is enough equipment in all health centers to enhance provision of quality health care service.

According to Smee, (2000) health workers need to be supported with necessary equipment and tools to be able to provide quality healthcare service, the tools include standard operating procedures, guidelines to support clinicians and nurses as they practice evidence based practice. The study concurs with Koenig et al., (2009) whose

findings revealed that the average age of many healthcare facilities has been increasing with little investment on maintenance or building new facilities; as a result primary care facilities especially in hard-to reach areas have been closed leaving local community to struggle seeking for alternative healthcare which is expensive. Availability of computers in health centers play a critical role, it allows patient tracking, health record safety and provide health providers with updated information on evidenced based medicine. It also allow institutions to plan, manage and evaluate the performance of primary care (Lamarche et al., 2003). Electronic health record (EHR) serve as a backup and information sharing, it assist clinicians and nurses to retrieve patient information with ease, patients does not need to repeat their medical histories, previous diagnosis or undertake same tests every time they visit the health center (CommonwealthFund, 2006).

The study finding corresponds ministry of health concerns on the status of health facilities in Kenya, from the report the ministry lack effective organization and management system to deliver on the Kenya Essential Package for Health (KEPH), the facility investment is not matched with other investment such as equipment and commodities(GOK, 2015). This study has established that infrastructure within health facilities play a critical role in service quality, shortage of infrastructural resources including health facility clinical rooms, basic diagnostic equipment, essential medicine and computers delay treatment and ultimately poor health outcome.

## 4.5 Availability of Financial Resources in Primary Care Health Facilities

### 4.5.1 Source of Funding in Public Health Centers

In terms of the source of funding to meet operating costs, there was an agreement that the health systems budget was majorly from the national government 70(71%) of the respondents agreeing to this) as shown in Table 4.5.

**Table 4.5: Source of Funding in Public Health Centers (n=99)**

Source of Funds	Agree		Disagree	
	Frequency	Percent	Frequency	Percent
Fees charged to patients	27	28	71	72
Health center budget	70	71	29	29
Targeted programs funding	52	53	46	47

The score for Likert scale were then converted to dummy variables of agree or disagree. If the average was above 3 it was considered agreed to the statement while an average equal or less than 3 was considered disagreed to the statement. In addition, targeted programs from the government or development partners was said to provide a considerable amount of funds to support operating costs. On the other hand, there was a disagreement that fees charged to patients constituted a significant part of the operating costs. The finding concurs with Muiya &Kamau, (2013) that fees charge on patients are obstacle to healthcare access and primary care facilities in should continue providing health services for free.

## 4.5.2 Management of Funds in Public Health Centers

Result on management of funds in the health centers are shown in Table 4.6.

**Table 4.6: Management of Funds in Public Health Centers (n=99)**

Financial management	Agree		Disagree	
	Frequency	Percent	Frequency	Percent
Inadequate finance affects reliability in delivery of primary care service	88	89	11	11
Use of fixed budget minimize effectiveness and quality of primary care offered by the health center	81	82	18	18
There is timely disbursement of government funds	45	45	54	55
Allocated funds used for the intended purpose	76	77	23	23

Majority of respondents 88(89%) agreed that inadequate finance affected reliability in delivery of quality primary care service. Further, there was an agreement 81(82%) that use of fixed budget minimized effectiveness and quality of primary care offered by the health centers. Similarly, most respondents 76(77%) agreed that allocated funds were used for the intended purpose. However, respondents generally disagreed 54(55%) on whether there was timely disbursement of government funds for purchase of commodities. This concurred with earlier study which found financial management being an obstacle to other functions of quality service provision (Adams & Colebourne 1989).

Kenya like any other low income countries have continued to use line item budget obtained directly from the government ministry of health in an effort to limit administrative cost and to better control funds, however this method has led to bureaucracy and inflexibility in use of the available funds to optimize on input and meet

the urgent needs of the health providers thereby perpetuating poor quality primary care services at the health centers, finding which concurs (Peters et al., 2000). From the finding the study found out that financial resource and management can be a barrier or enabler of quality primary care service provision. Good financial control and adequate funds to health centers improved quality of service delivered.

#### 4.6 Availability of Human Resources in Public Health Centers

##### 4.6.1 Staffing in Public Health Centers

The study looked into various constructs of health facility staffing. The results are as showed in Table 4.7. Generally, most respondents 90(91%) were in agreement that training plays an important role in delivery of quality primary care. Table 4.7 shows a large proportion of respondents 79(80%) observed that health center management had continuous medical education sessions for its staff; and that scheme of service exists for health workers.

**Table 4.7 Staffing in Public Health Centers**

Staffing	Agree		Disagree	
	Frequency	Percent	Frequency	Percent
The number of staff in the health center is always sufficient to cover the current workload.	26	26	73	74
The health center management has continuous medical education sessions for its staff	79	80	10	20
Whether training play a significant role in delivery of primary care quality	90	91	9	9
Scheme of service exist for health workers	69	70	29	30

On the contrary, there was a disagreement, by 73(74%) of the respondents, that the number of staff in a health center was always sufficient to cover the current workload. This paints a scenario that health facilities are understaffed and often workers were overloaded with work. Shortage of health providers may adversely affect the quality of services rendered at the health facilities. The results coincides Cohen & Levinthal (1990) who stated that health centers must improve its human resource capital to achieve effective health outcome. The secret is to enhance the capacity to attract and employ an adequate number of quality health workers who are critical to producing high quality outcome and quality improvement. Therefore staff in Nakuru county health centers is inadequate and there is need to employ more staff, institute retention mechanism and enhance career progression to motivate health providers and ultimately deliver quality health services.

A study by Friedman & Kelman (2006) reveals that to improve quality of health service, health facilities should be able to attract and employ adequate number of competent workers and ensure the workload is manageable by establishing standard operating procedures and abiding by them. Having relevant training is critical to optimally perform once duties and this was significantly associated with quality service at the health centers. A study Ndeti et al., (2007); Brown & Duguid, (1991) established that inadequate training and limited professional development opportunities was a factor influencing retention of health workers at the primary care facilities. On staffing, the study established that efficiency and effectiveness in quality service provision largely depends on having adequate number of highly trained and skilled health workers who are motivated and able to adapt to changing circumstances occurring within the health sector.



## 4.7 Governance in Public Health Centers

### 4.7.1 Transparency in Public Health Centers

The study sought to find out the level of transparency in delivering quality primary care health in the health centers. The results are shown in Table 4.8. With regard to transparency in delivering quality primary health care in the health centers, there was a strong agreement 87(88%) that transparency was key in improving the governance of health care resources. Further, there was agreement that, the health centers had explicit facility service charter at 89(90%), the facilities have a system where users have full access to necessary information on acts and procedures done 68(69%) and the health centers have systems for recording user's views, suggestion or complaints regarding access to services.

**Table 4.8: Transparency in Public Health Centers (n-99)**

Transparency	Agree		Disagree	
	Frequency	Percent	Frequency	Percent
The health center has explicit facility service charter	89	90	10	10
The health center has a system for recording users views, suggestion or complaints regarding access to services	76	77	23	23
The facility has a system where users have full access to necessary information on acts and procedures done	68	69	31	31
Transparency is key to improve the governance of health care resources	87	88	12	12

It was also generally agreed that the facilities have a system where users have full access to necessary information on acts and procedures 76(77%) and that health center revenue, expenditure and assets/liabilities are audited regularly and report made public. Overall, these perception results indicate that health centers had transparency in their operations. The finding concurs with Decoster et al., (2011) who stated that healthcare consumes a lot of resources and health improvement should be planned with accountability in mind to ensure services are adequately provided.

The finding confirms that use of tools such as citizen service charter, suggestion box lead to effective governance and better service delivery and empowerment of citizens. It also shows that if transparency exist corruption diminishes and positive health outcomes is seen (Baez-Camargo & Pamela, 2011).Vian, (2012) found two types of information disclosure existing within health institution: active and passive disclosure, an active disclosure when information is disclosed without the patient asking for it and a passive disclosure is when information is given out after it is demanded. Survey data supports this assertion with clients accessing full information about the actions and procedures of the health centers through service charters clearly erected at the entrance of health centers in Nakuru County.

#### 4.7.2 Accountability in Public Health Centers

The research found about the level of accountability in health centers. The results are shown in Table 4.9.

**Table 4.9: Accountability at Public Health center**

Accountability	Agree		Disagree	
	Frequency	Percent	Frequency	Percent
The community take part in budgeting and expenditure tracking	72	74	26	25
The facility timely submits data and information to relevant bodies and Authorities	92	94	6	6
The health facility management consist of a community representative	92	93	7	7
The health center provide care to a defined population in its catchment area	63	65	35	35
The finances and other health center resources are well controlled through facility committees	76	77	23	23

In regard to accountability of resources by health facility staff, most respondents were in agreement that the aspects studied had an effect in enhancing the quality of health care as shown in Table 4.9. There was agreement by most respondents 72(74%) that health facility management indeed consisted of a community representative mean. Further, respondents identified timely submission of data and information to the relevant bodies and authorities as an important aspect of accountability 92(94%), followed by involvement of community in budgeting and tracking of expenditure by 92(93%) and good control of finances and other health center resources through facility committees by

73(77%). The aspect of health facility providing care to a distinct population in its locality, though important, was considered the least important in enhancing accountability at the health facility by 63(65%) of the respondents.

The finding disagrees with Smee, (2002) who indicated that most developing lack capability to manage its resource. The results shows accountability exist in the health centers, most of the health centers have community members in facility committees, they have clearly displayed service charter and take part in budgeting process to ensure the health needs of the community is taken care as a result the facility provide services which are responsive and in equitable manner. The study agrees with Baez-Camargo& Pamela (2011) on strengthening accountability for positive health outcome. Therefore accountability is important in ensuring quality health care delivery in Nakuru health centers. This study established that transparency in the health facility improved the quality of primary care service delivery, the use of citizen charter, community participation and active disclosure of information enhanced equity within the health facilities.

#### **4.8 Quality of Primary Care Health Service Delivery**

This study further sought to know the intensity of agreement by the respondent on whether quality attributes exist in the health centers. Table 4.10

**Table 4.10: Quality of Primary Care Health Service Delivery**

Quality of Primary Care Health Service Delivery	Agree		Disagree	
	Frequency	Percent	Frequency	Percent
Does structural element lead to efficient primary care delivery	89	89	10	11
Good organization structures increase appropriateness and effectiveness of care	92	93	6	7
Structural challenges lead to poor accessibility of care	89	89	10	11
Continuity of care is achieved with better structural support	88	90	9	10
Better structures increase responsiveness and orientation to patient needs	89	89	10	11

The results show majority of the respondents 93(93%) replied that good organization structures increase appropriateness and effectiveness of primary care, enhanced continuity of care was considered appropriate and effective by 90(90%), improved structural elements by 89(89%) and increased responsiveness and orientation to patient needs by 89(89%). This implies that county government needs to allocate sufficient finance, increase employee capacity, adopt modern medical equipment and improve governance of the health center to ensure effective and efficient primary care service quality. A study by Yano et al., (2007) found that primary care facilities with good structures and good clinical practice provided quality service than those with limited resources. Furthermore other studies have linked good organizational arrangement with quality of primary care(Sung et al., 2010;Wonget al., 2010).

The study sought to find the average scores of all indicators used to measure the perceptions on the infrastructure, human resources, financial resources, governance in the health center facilities and quality of primary health care. The scores were generated from an average of the perception levels starting 1 strongly disagree to 5 strongly agree. The score averages were then converted to dummy variables of above average or below average. If the average was above 3 it was considered above average while an average equal or less than 3 was considered below average as presented in Table 4.11.

**Table 4.11 Performance scores**

Variable	Above Average		Below Average	
	Frequency	Percent	Frequency	Percent
Infrastructure Score	91	92	8	8
Human Resource Score	81	82	18	18
Financial Resource Score	80	81	19	19
Governance Score	87	88	12	12
Primary Care Quality Score	91	92	8	8

Overall, the primary care quality in the health centers was ranked highly with 92 (92%) of the respondents agreeing that it is above average. For the other performance indicators infrastructure resources was rated highest by 90(92%) of the respondents, then followed by governance by 87(88%) and human resources was the next by 81(82%). Finally, financial resources were rated as the least performing aspect of primary care quality by 81(81%) of the respondents.

#### 4.9 Relationship between Structural Factors and Quality of Primary Care Health Service Delivery

**Table 4.12 Relationship between Structural Factors and Quality of Primary Care Health Service Delivery**

Variables		Primary Care Quality		Chi-value	P-value
		Below average (n=7)	Above average (n=92)		
Infrastructure Score	Below average	25	6	3.535	0.060
	Above average	75	94		
Human Resource Score	Below average	50	15	6.252	0.012
	Above average	50	85		
Financial Resource Score	Below average	62	15	11.023	0.001
	Above average	38	85		
Governance Score	Below average	50	9	12.226	0.001
	Above average	50	91		

The finding in Table 4.12 shows there is a significant relationship between primary care quality and the selected indicators of performance. A higher proportion of a certain indicator being above average resulted in a high significant relationship between the indicator and primary care quality. This implies that the selected indicators significantly influenced the primary care quality in the health facilities. The relationship between governance and financial resources and the quality of primary care were both significant at 1% significance level. Human resource and infrastructure resources also had a significant relationship with quality of primary care at 5% and 10% significant levels respectively.

#### 4.10 Bivariate Linear Correlation of Structural Arrangement and Provision of Quality Primary Care Service

A Bivariate linear correlation analysis was done to determine the relationship between the each structural factor and its influence on provision of quality of health services. The results are shown in Table 4.13.

**Table 4.13: Bivariate Linear Correlation: Structural Arrangement and Provision of Services**

		Primary care Quality	Infrastructure	Human Resource	Financial Resource	Governance
Primary Care Quality	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	99				
Infrastructure	Pearson Correlation	0.453	1			
	Sig. (2-tailed)	0.000				
	N	99	99			
Human Resource	Pearson Correlation	0.365	0.462	1		
	Sig. (2-tailed)	0.000	0.000			
	N	99	99	99		
Financial Resource	Pearson Correlation	0.576	0.647	0.439	1	
	Sig. (2-tailed)	0.000	0.000	0.00		
	N	99	99	99	99	
Governance	Pearson Correlation	0.613	0.477	0.522	0.649	1
	Sig. (2-tailed)	0.000	0.000	0.00	0.00	
	N	99	99	99	99	99

\* Strong and significant positive correlation ( $p < 0.5$ )

To determine whether each of the independent variable in this study (X) that is infrastructure resource, financial factors, Staffing, and governance factors influences the provision of quality primary care services (Y), a bivariate linear analysis was carried out



between structural arrangements and quality of primary care service. The linear correlation analysis for all study variables and noted that there exist moderate positive and significant correlation between primary care quality service and infrastructure ( $r=0.453$ ,  $p<0.01$ ).

This infers that an increase in infrastructure will lead to improvement in the primary care provided. This is because infrastructural resources like information and communication technology (ICT) facilities and modern medical equipment can contribute significantly to improving the quality of the service provided. The study also found a moderate and significant positive correlation between primary care quality and human resources ( $r=0.365$ ,  $p<0.01$ ). This indicates an increase in a unit of human resources will lead to improvement in the quality of the primary care provided. This is because more human resources will reduce workload per health worker hence the workers will concentrated in fewer duties that they are more specialized in. Further, they will be working for fewer hours thus increasing the quality of the output they provide.

On the other hand, a strong and significant positive correlation between primary care quality and financial resources ( $r=0.567$ ,  $p<0.01$ ). It shows that an increase of financial resources will lead to improvement of primary care quality. Further, the study established a strong and significant positive correlation between primary quality care and governance ( $r=0.613$ ,  $p<0.01$ ). This shows that better governance leads to improved management, efficiency and transparency in coordination of the factors that lead to quality primary care.

#### 4.11 Combined Relationship between Structural Arrangement and Provision of Quality Primary care Health Services

**Table 4.14: Multiple Regression Analysis**

	<b>Coefficient</b>	<b>Standard Error</b>	<b>t-values</b>	<b>P-value</b>
Constant	-4.151	1.013	-4.100	0.001
Infrastructure	0.076	0.084	0.910	0.367
Financial resource	0.320	0.135	2.370	0.021
Staff capacity	0.153	0.128	1.190	0.238
Governance	2.490	0.438	5.680	0.001

A multiple regression analysis was applied to determine structural elements affecting provision of primary care quality in public health centers in Kenya.

$$Y = \alpha + \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$$

Where:

Y= Dependable variable, Provision of quality primary care service

$\alpha$  = Constant

$\beta$ = Coefficient of the factors

$X_1$ = Infrastructure

$X_2$ = Financial resources

$X_3$ = Staff capacity

$X_4$ = Governance

$\varepsilon$ = Error Term

Where  $x_1$  =Infrastructure,  $x_2$ = Financial resource,  $x_3$ = Staff capacityand $x_4$ =Governance

The values 0.076, 0.320, 0.153 and 2.490 are coefficients. When all variables were put in the same equation and magnitude compared to find out which one had more effect on

delivery of primary care quality. The large betas were associated with low p-values. The coefficient shows the predictor variables of constant, staffing, financial resource, infrastructure and Governance. The constant variable -4.151 represent the constant which predict value of primary care quality when all other variable affecting primary care quality was constant at Zero (0). From the regression shown in Table 4.14, the study found that provision of primary care quality service in health centers would be at -4.151 holding infrastructure, financial resource, staffing and governance constant at Zero (0).

Improved investment in financial resources ( $X_2$ )  $\beta=0.320$ ;  $P<0.021$  and Governance ( $X_4$ )  $\beta=2.490$ ;  $P<0.001$  would result to an increase in quality of provision of primary care health services in public health centers. This shows that in a combined relationship only financial resources and governance have positive significant relationship with provision of quality primary care health services with  $P<0.021$  and  $P<0.001$  respectively at 95% confidence level. The finding concurs with Adams & Colebourne (1989) who found there is need to improve financial management in our health organization and eradicate barriers that hinder primary care service provision.

## **CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Introduction**

This chapter presents the summary of findings, conclusion and recommendations from the study. Further areas of research are also highlighted.

### **5.2 Summary of the findings**

#### **5.2.1 Demographic Characteristics**

The study was carried out on health centers within Nakuru County. The study found that 59 (59.60%) of the health centers were in the urban set up, 22(22.20%) in semi-rural set up and 18(18.20%) were in the rural set up. Majority of the respondents at 62 (62.60%) were nurses, 17 (17.20%) were clinical officers, pharmaceutical officers and laboratory technologists accounted for 9 (9.10%) and 11(11.10%) respectively, on the other hand, 99 (97%) of the health centers were being operated by the government, 2(2%) were being operated by municipality and 1(1%) was being operated by religious groups. In terms of education, majority were diploma holders 78(79%). Most facilities had female workers 64(64.65%) than male counterpart 35(35.35%). The study also found most of the employees are on permanent employment 52(52.50%), while 43(43.40%) are on 2 year renewable contract. Finally on demographic finding most of the health worker have been working in the health facilities for more than one year.

The study finding established demographic factors affect delivery of quality service, the gender, level of education and years worked at the health center contributed to high skilled workforce with expertise who nature work experience among the new staff. Staffs who served more than 2 years are competent and well adapted to handle local health issues.

### **5.2.2 Availability of Infrastructural Resources in Public health centers**

From the study, most respondents agreed adoption of modern equipment and adequate medical supplies led to improved quality of primary care ( $r=0.453$ ,  $p<0.01$ ). Infrastructural resources including appropriate work space like rooms and buildings, essential medicine and maintenance of available equipment are key in providing quality primary care. This finding concurs with WHO (2010) that infrastructure is the major driving force to primary care provision. Other studies have shown that computerized decision-support systems resulted in fewer errors and improved compliance with guidelines (Kaushal et al., 2003).

### **5.2.3 Availability of Financial Resources in Public Health centers**

The study established that financial resource is a critical component of service delivery, inadequate funds and poor financial management affect other functions of healthcare that contribute to quality service. ( $r=0.576$ ,  $p<0.01$ ). Regression model further identifies an increase in financial resources improve the provision of quality care by 0.320 units.

### **5.2.4 Level of Staffing Capacity in Public Health centers**

The study established that use of fixed budget ensured good expenditure control and less administrative work though it offers little incentive to health workers to maximize the effectiveness of healthcare delivery. Poor financial management affects other functions of healthcare that contribute to quality service delivery. County Government should improve source of funding primary care services and proper management of the available funds through strategic planning, costing and quality control. Accountability using monitoring, auditing and accounting should be implemented to ensure that the allocated funds are used for the intended purpose in order to improve efficiency in delivery of

quality service to the public. From the finding the study established inadequate funds affect reliability in delivery of primary care quality ( $r=0.320$ ,  $p=0.021$ ). This finding concurs with earlier by Isik, Bolukbasi & Hayriye (2007) whose finding pointed out that financial difficulty of health services can significantly affect quality and amount of services and can lead to different methods of practice. The government should build the capacity of clinical officers, nurses and other health providers to have specific skills and experience needed to provide quality care. The finding concurs with Argote & Ingram (2000) that there is need for selective employment of qualified and high skilled workforce for provision of quality healthcare. The finding also established that lack of scheme of service for health workers led to lack of clear job description and poor demarcation of duties and responsibilities within the career structure which ensure proper deployment and utilization of health providers towards delivering quality healthcare service. Government should ensure scheme of service is available for appropriate career planning and succession management.

#### **5.2.5 Availability of Governance Structures in Public Health centers**

The most important aspect of governance was transparency which was considered key in improving the governance of health care resources, followed by the availability of explicit facility service charter for the health centers and availability of a system for recording users' views, suggestion or complaints regarding access to services at the health center. In addition, this study established a strong positive correlation between primary quality care and governance ( $r=0.613$ ,  $p<0.01$ ) which shows that an increase in governance would significantly improve the primary care quality service. The study's regression model further identified that when all other factors are kept constant,

governance (coefficient = 2.49) would result to significant improvement in the primary care quality.

The study also established that accountability through public participation improved delivery of quality service, it led to responsive, sustainable and efficient service delivery. The finding concurs with Decoster and Hill, (2011) who stated health reforms must consider accountability. Decoster and Hill observed that accountability ensured governing actions are fair, inclusive and trustworthy; it makes the health center processes legitimate, open, transparent and responsive to the needs of the citizens. Similar findings were reported by Baez-Camargo & Pamela, (2011) who stated strengthening facility accountability eliminate corruption and improve governance outcome.

This study established existence of a positive relationship between structural arrangement and provision of quality primary care service in the health centers, it clearly indicated that better infrastructure, and adequate financial resource, increase employee capacity and good governance positively affect delivery of quality primary care service. The finding concurs with (Sohnen et al., 2015) healthcare financing as critical to other key functions therefore there is need to adequate fund health care.

### **5.3 Conclusion**

The study sought to find out the relationship between structural arrangement and provision of quality primary care service in public health centers in Nakuru County. Several studies have been conducted focusing on provision of quality health service in hospital where there are well established measures of quality. However most studies

have not focused on primary care facilities despite the critical role they play being first point of contact by patient with healthcare system.

The study attempted to find out whether structural arrangement (infrastructure, financing, staffing and governance) relate to provision of quality primary care services in public health centers in Nakuru. From the finding, the following conclusions were made. The study reveals that adoption of modern equipment, adequate supply of essential medicine and use of information technology facilitate service assessment; improve access and ultimately positive patient outcome. It therefore implies that County and National government needs to invest in health infrastructure to enhance quality primary care service.

The study further shows that adequate funds significantly determine whether quality service will be provided or not, funds promote other functions that contribute to quality service. It can be concluded that improved financial allocation and effective management, reduce bureaucracy therefore more attainment of equipment, consistent supply of medicine and employment of more competent staff. Finally the study affirms that financial management through a strategic planning, costing, quality control, and continued solvency as well as keeping outsider's confidence is significant to improving quality of primary care service. Financial management on the other hand using monitoring, auditing and accounting mechanism to ensure the allocated funds are used for the intended purpose improved quality service in the health centers. However fixed budget brings inequalities and fail to respond to current emerging trends.



Having relevant training, attraction and retention of health workers and creating opportunities for professional growth was significantly associated with quality primary care service at the health centers. The study further concludes scheme of service for each cadre need to be developed to clearly indicate duties and responsibilities of each health worker.

On the last variable, the study concluded that good governance improve quality of primary care provision. Transparency through community participation, public expenditure tracing, citizen report card, service charter, community monitoring and social audit make the health center operation transparent, predictable and understandable before patient and stakeholders. Transparency and accountability by all stakeholders in health centers will improve provision of primary care quality services since facility actions will be fair, inclusive and trustworthy.

From the finding, most health centers have inadequate diagnostic equipment and in some the equipment has broken down, the study recommend Nakuru County to purchase modern equipment's and ensure proper maintenance of the existing equipment. They can also adopt modern technology by installing computers in each health centers to improve information management and better access to information which will improve primary care services and reduce bypass to referral hospitals, thus proper utilization of health centers and reserve hospitals for referral cases only.

In order to address the shortages in the allocation of funds for the facilitation of primary care quality services, the study recommend that County government should increase the amount of funding to health centers, timely disbursement of funds in order to promote

other functions of healthcare delivery. It is also important to improve its financial management by eliminating use of fixed budget that promote bureaucracy and enhance flexibility in use of resources to maximize on input and ultimately better health outcome at primary care.

To address the challenge of inadequate staff, the following recommendations should be considered; Effective recruitment of more staffs to reduce the workload ratio and monitor staff to ensure they meet performance standard, there should be more training for the new employees and Continuous professional development meetings to equip staff with skills needed to provide quality service. The study also recommend county to ensure scheme of service for each carders working in the health center is developed to define responsibilities and roles of each cadre clearly.

From the finding there was agreement that transparency and accountability was important in service provision. Transparency from both the healthcare providers and county management should be enhanced. Health centers revenues, expenditures and assets/liabilities should be audited regularly and the report made public, this will promote openness and equity leading to ownership and quality primary care services within the health centers. Study also recommends the county to ensure all health centers have active health center committee with representation from the community.

Finally this study is expected to improve policy on primary care service delivery at health centers as the country expands primary care facilities in an effort to achieve universal health coverage.

#### **5.4 Recommendation**

The study recommended that county government of Nakuru should

- i) Supply adequate equipment to perform the necessary work.
- ii) Provide sufficient allocation and timely release of funds to health centers.
- iii) Provide career progression and continuous professional development among its health workforce
- iv) Institute staff retention measures and frequent auditing of health centers assets and liabilities and provide a report to the public.

#### **5.5 Suggestions for further research**

Further areas include an in-depth analysis on factors affecting operation of infrastructural resources and how they facilitate quality primary care and a comparative study of quality primary care service offered at health centers and hospital.

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## **APPENDICES**

### **Appendix I: Informed consent**

#### **Procedure to be followed**

Participation in this study will require that I ask you some questions and also access all the hospital's department to address the six pillars of the health system. I will record the information from you in a questionnaire check list. You have the right to refuse participation in this study. You will not be penalized nor victimized for not joining the study and your decision will not be used against you nor affect you at your place of employment.

Please remember that participation in the study is voluntary.

#### **Discomforts and risks**

Some of the questions you will be asked are on intimate subject and may be embarrassing or make you uncomfortable. If this happens; you may refuse to answer if you choose. You may also stop the interview at any time. The interview may take about 40 minutes to complete.

#### **Benefits**

If you participate in this study you will help us to strengthen the health systems in Kenya and other Low-in- come countries in Africa. As a result, countries, communities and individuals will benefit from improved quality of healthcare services. This study is critical to strengthening the health systems as it will generate new knowledge in this area that will inform decision makers to make decisions that are research based.

#### **Rewards**

There is no reward for anyone who chooses to participate in the study.

**Confidentiality**

The interviews will be conducted in a private setting within the hospital. Your name will not be recorded on the questionnaire and the questionnaires will be kept in a safe place at the University.

**Contact Information**

If you have any questions you may contact the following supervisor: Dr. Wanja Mwaura. Head of Department of Health Systems Management of Kenya Methodist University, Nairobi campus. [wanjamwaura@gmail.com](mailto:wanjamwaura@gmail.com) +254726-678020

**Participant’s Statement**

The above statement regarding my participation in the study is clear to me. I have been given a chance to ask questions and my questions have been answered to my satisfaction. My participation in this study is entirely voluntary. I understand that my records will be kept private and that I can leave the study at any time. I understand that I will not be victimized at my place of work whether I decide to leave the study or not and my decision will not affect the way I am treated at my work place.

Name of Participant..... Date.....

Signature.....

**Investigator’s Statement**

I, the undersigned, have explained to the volunteer in a language s/he understands the procedures to be followed in the study and the risks and the benefits involved.

Name of Interviewer.....Date.....

Interviewer Signature.....

## **Appendix II: Introduction letter**

Dear Sir/Madam,

My Name is Amos Kipngetich Kandagor, a post graduate student in the school of health sciences, Kenya Methodist University pursuing Masters of Science in Health Systems Management. I am currently undertaking a study on *Relationship between Structural Arrangement and provision of quality primary care service in Kenya*, A case of Health centers in Nakuru County. This is a partial fulfillment of my Masters in Health System Management.

Kindly, the research will involve you filling in a questionnaire that will ask for your social demographic characteristic as well as a section asking questions on structural arrangements of your health center. You are being invited to participate in this research because of your current position in the health center. I request for your participation to make the study successful. The data will strictly be used for academic purposes.

Your cooperation will be highly appreciated.

Thank You,

Sincerely,

Amos K. Kandagor

### Appendix III: Questionnaire

#### PART A: IDENTIFICATION OF THE ORGANIZATION

(Please complete the blank space)

Enter the following information about the health center

Health center name \_\_\_\_\_ Date: \_\_\_\_\_

Sub-county: \_\_\_\_\_

(Please complete by ticking appropriately)

Setting type (location) of your health facility:

1 Rural  1      Urban  2      Semi-Urban  3

2. Indicate the position you hold in the organization

Clinical Officer  1

Lab Technologist  2

Pharmaceutical Techno  3

Nurse  4

3. Facility operated by:

Government  1

Municipality  2

NGO  3

Religious group  4

4. Kindly indicate your highest level of education

Primary  1      Secondary  2

Tertiary  3      University  4

5. Indicate your age based on the category:

20-30  1      30-40  2      40-50  3      50 and above  4

6. Gender: Male  1      Female  2

7. Your current employment terms at this health center?

Permanent  1      Temporary  2

Part-time  3      Others (Specify) -----  4

8. How many years have you been working in this health center

- < 1 year 1            1-2 years 2  
2-3 years 3            3> years 4

9. How long has this health center been in operation?

- Less than 1 year                             1 to 4 years   
5 to 9 years                             More than 10 years

## **PART B: STRUCTURAL ARRANGEMENT**

Note: This questionnaire will not provide the information about patients' perspective of primary care services, such as time that doctors spend with patients at each visit, patient's perception of quality of services, etc.

### **1. Infrastructural resources**

1.1 Please indicate whether or not the following equipment is available and functional in this health center. Please **Tick** appropriately in the box according to the code definitions **SD**=strongly disagree, **D**=disagree, **N**=neutral, **A**=agree, **SA**=strongly agree

<b>Equipment</b>	<b>Yes</b>	<b>No</b>
Thermometer	<input type="checkbox"/>	<input type="checkbox"/>
Stethoscope (s)	<input type="checkbox"/>	<input type="checkbox"/>
Computers	<input type="checkbox"/>	<input type="checkbox"/>
Nebulizer	<input type="checkbox"/>	<input type="checkbox"/>
Blood Pressure machine	<input type="checkbox"/>	<input type="checkbox"/>
Weighing scale for under 5 year	<input type="checkbox"/>	<input type="checkbox"/>
Refrigerator	<input type="checkbox"/>	<input type="checkbox"/>
Delivery bed	<input type="checkbox"/>	<input type="checkbox"/>

## 2. Financial Resources

2.1 Rate the following sources of financing health center operating costs. Indicate with a **Tick** () in the appropriate answer box.

Source of funding	SD	D	N	A	SA
a) Fees charged to patient	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Health system budget (Health center)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Infrastructure operating grant or government program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Targeted program/activity funding?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Targeted staffing funding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2.2 Please indicate your response to each of the following statement regarding management of funds at your health center. Indicate with a **Tick** () in the appropriate answer box

Specific statement	SD	D	N	A	SA
a) Inadequate finance affects reliability in delivery of primary care service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Use of fixed budget minimize effectiveness and quality of primary care offered by the health center	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Allocated funds are used for the intended purpose	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Reduced waste and enhanced cost effective interventions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### 3. Organization of Human Resources

3.1 Please chose the range of health workers providing primary care service in your health center per cadre.

Cadre	1-2	2-3	3-4	4-5	>6
Clinical officers					
Nurses					
Laboratory Technologist					
Pharmacist/Pharmaceutical Technologist					

3.2 Please indicate your response to each of the following statement regarding staffing.

Tick in the appropriate answer box, according to the code definitions **SD**=strongly disagree, **D**=disagree, **N**=neutral, **A**=agree, **SA**=strongly agree

Statement	SD	D	N	A	SA
a) The number of staff in the health center are always sufficient to cover the current workload.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) The staff available are always able to provide required health services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) The health center management has continuous medical education sessions for its staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Teamwork exists in the health center.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Training play a significant role in delivery of primary care quality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Scheme of service exist for health workers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) There is a good working condition for staff in the health center.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



#### 4. Governance

##### 4.1 Transparency

Using the scale below, indicate your level of agreement with the following statements.

Specific statement	SD	D	N	A	SA
a) The health center revenue, expenditure and assets/liabilities are audited regularly and report made public.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b)There health center has explicit facility service charter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c)The health center has a system for recording users views, suggestion or complaints regarding access to services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d)The facility has a system where users have full access to necessary information on acts and procedures done	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e)Transparency is key to improve the governance of health care resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

##### 4.2 Accountability

Using the scale below, indicate your level of agreement with the following statements.

Specific statement	SD	D	N	A	SA
a) The community take part in budgeting and expenditure tracking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) The facility timely submit data and information to relevant bodies and Authorities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c)The health facility management consist of a community representative	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) The health center provide care to a defined population in its catchment area	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e)The finances and other health center resources are well controlled through facility committees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## 5. Primary care Quality

Using the scale below, indicate your level of agreement with the following statements.

<b>Primary care Quality</b>	<b>SD</b>	<b>D</b>	<b>N</b>	<b>A</b>	<b>SA</b>
a) Better structural element lead to efficient primary care delivery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Good organization structures increase appropriateness and effectiveness of care	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Structural challenges lead to poor accessibility of care	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Continuity of care is achieved with better structural support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Better structures increase responsiveness and orientation to patient needs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

End of the survey

Thank you for your collaboration.

**Appendix IV: List of Health Centers in Nakuru County**

<b>Code</b>	<b>Name</b>	<b>Type</b>	<b>Sub-County</b>	<b>Division</b>	<b>Ward</b>
14836	Keringet Health Centre (Kuresoi)	Health Centre	Kuresoi North	Keringet	Keringet
20299	Kimeswon Health Centre	Health Centre	Kuresoi North	Kuresoi	Kiptororo
14924	Kiptagich Model Health centre	Health Centre	Kuresoi South	Olenguruone	Kiptagich
14559	Ikumbi Health Centre	Health Centre	Kuresoi South	Keringet	Tamoyota
15156	Mau Narok Health Centre	Health Centre	Molo	Mau-Narok	Mau-Narok
15013	Lare Health Centre	Health Centre	Molo	Lare	Lare
15183	Metta Dispensary	Health Centre	Njoro	Mau-Narok	Mau-Narok
15358	Njoro Health Centre	Health Centre	Njoro	Njoro	Njoro
16407	Sururu Health Centre (CDF)	Health Centre	Njoro	Mau-Narok	Sururu
16397	Gatimu Dispensary	Dispensary	Njoro	Mau-Narok	Mau-Narok
15108	Mai Mahiu Health Centre	Health Centre	Naivasha	Mai Mahiu	Mai Mahiu
15106	Maiela Health Centre	Health Centre	Naivasha	Kongoni	Maiela
15406	Ol-Jorai Dispensary	Health Centre	Gilgil	Elementaita	Kiambogo
20138	Menengai Health Centre	Health Centre	Nakuru	Lanet	Menengai
15008	Lanet Health Centre	Health Centre	Nakuru	Municipality	Lanet
15009	LangaLanga Health Centre	Health Centre	Nakuru	Municipality	Lake Nakuru
15365	Nku West Health Centre	Health Centre	Nakuru	Municipality	Kaptembwo
14498	Fitc Dispensary	Health Centre	Nakuru	Municipality	Nakuru Town
14265	Bondeni Maternity	Health Centre	Nakuru	Municipality	Lake Nakuru

15006	Lalwet Dispensary	Health Centre	Nakuru	Baruti	Municipality
14606	Kabarak Health Centre	Health Centre	Rongai	Rongai	Lengenet
15495	Rongai Health Centre	Health Centre	Rongai	Rongai	Rongai
15200	MogotioRhdc	Health Centre	Rongai	Rongai	Makongeni
15114	MajiTamu Health Centre	Health Centre	Rongai	Mbogoine	Solai
15027	Lengenet Dispensary	Health Centre	Rongai	Rongai	Lengenet
15763	Upper Solai Health Centre	Health Centre	Rongai	Mbogoine	Solai
14424	Dundori Health Centre	Health Centre	Nakuru Town	Dundori	Dundori
14954	Kiwamu Dispensary	Health Centre	Nakuru North	Dundori	Kabatini
14458	Engashura Health Centre	Health Centre	Nakuru North	Bahati	Bahati
14610	Kabatini Health Centre	Health Centre	Nakuru North	Bahati	Bahati
14223	Bahati Dispensary	Health Centre	Nakuru North	Bahati	
15678	Subukia Health Centre	Health Centre	Subukia	Subukia	Waseges
14611	Kabazi Health Centre	Health Centre	Subukia	Kabazi	Kabazi

Source: Nakuru County registry 2017

## **Appendix V: Overall scoring system for structural indicators of performance**

The indicators of performance were health infrastructure, financial resources, staffing and governance

A) The infrastructure resource score will be computed using the following twenty three (23) elements

1. Availability of thermometer and functionality Stethoscope (s) (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
2. Computers (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
3. Nebulizer (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
4. Blood Pressure machine (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
5. Weighing scale for under 5 year (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
6. Refrigerator (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
7. Delivery bed (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)

The overall score will be generated by aggregating the scores. The maximum attainable total score is 35. A percentage score will be generated and categorized as follows: < 50% low infrastructure; 50-69% moderate infrastructure; 70-100% good infrastructure.

B) The financing resource score will be computed using the following nine (9) elements

1. Fees charged to patient (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
2. Health system budget(Health center) (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
3. Infrastructure operating grant or government program (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
4. Targeted program/activity funding? (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
5. Targeted staffing funding (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
6. Inadequate finance affects reliability in delivery of primary care service (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
7. Use of fixed budget minimize effectiveness and quality of primary care offered by the health center (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
8. Allocated funds are used for the intended purpose(Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
9. Reduced waste and enhanced cost effective interventions (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)

The overall score will be generated by aggregating the scores. The maximum attainable total score is 45. A percentage score will be generated and categorized as follows: < 50% low financing; 50-69% moderate financing; 70-100% good financing.

C) The health staffing score will be computed using the following seven (7) elements;

1. The number of staff in the health center are always sufficient to cover the current workload (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
2. The staff available are always able to provide required health services (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
3. The health center management has continuous medical education sessions for its staff (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
4. Teamwork exists in the health center (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
5. Training play a significant role in delivery of primary care quality (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
6. Scheme of service exist for health workers (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
7. There is a good working condition for staff in the health center. (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)

The overall score will be generated by aggregating the scores. The maximum attainable total score is 35. A percentage score will be generated and categorized as follows: < 50% low staffing; 50-69% moderate staffing; 70-100% good staffing.

D) The governance score will be computed using the following nine (9) elements

- 1.The health center revenue, expenditure and assets/liabilities are audited regularly and report made public.(Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
- 2.There health center has explicit facility service charter (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)

3. The health center has a system for recording users views, suggestion or complaints regarding access to services (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
4. The facility has a system where users have full access to necessary information on acts and procedures done (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
5. Transparency is key to improve the governance of health care resources (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
6. The community take part in budgeting and expenditure tracking (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
7. The facility timely submit data and information to relevant bodies and Authorities (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
8. The health facility management consist of a community representative (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
9. The health center provide care to a defined population in its catchment area (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
10. The finances and other health center resources are well controlled through facility committees(Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)

The overall score will be generated by aggregating the scores. The maximum attainable total score is 50. A percentage score will be generated and categorized as follows: < 50% low governance; 50-69% moderate governance; 70-100% good governance.



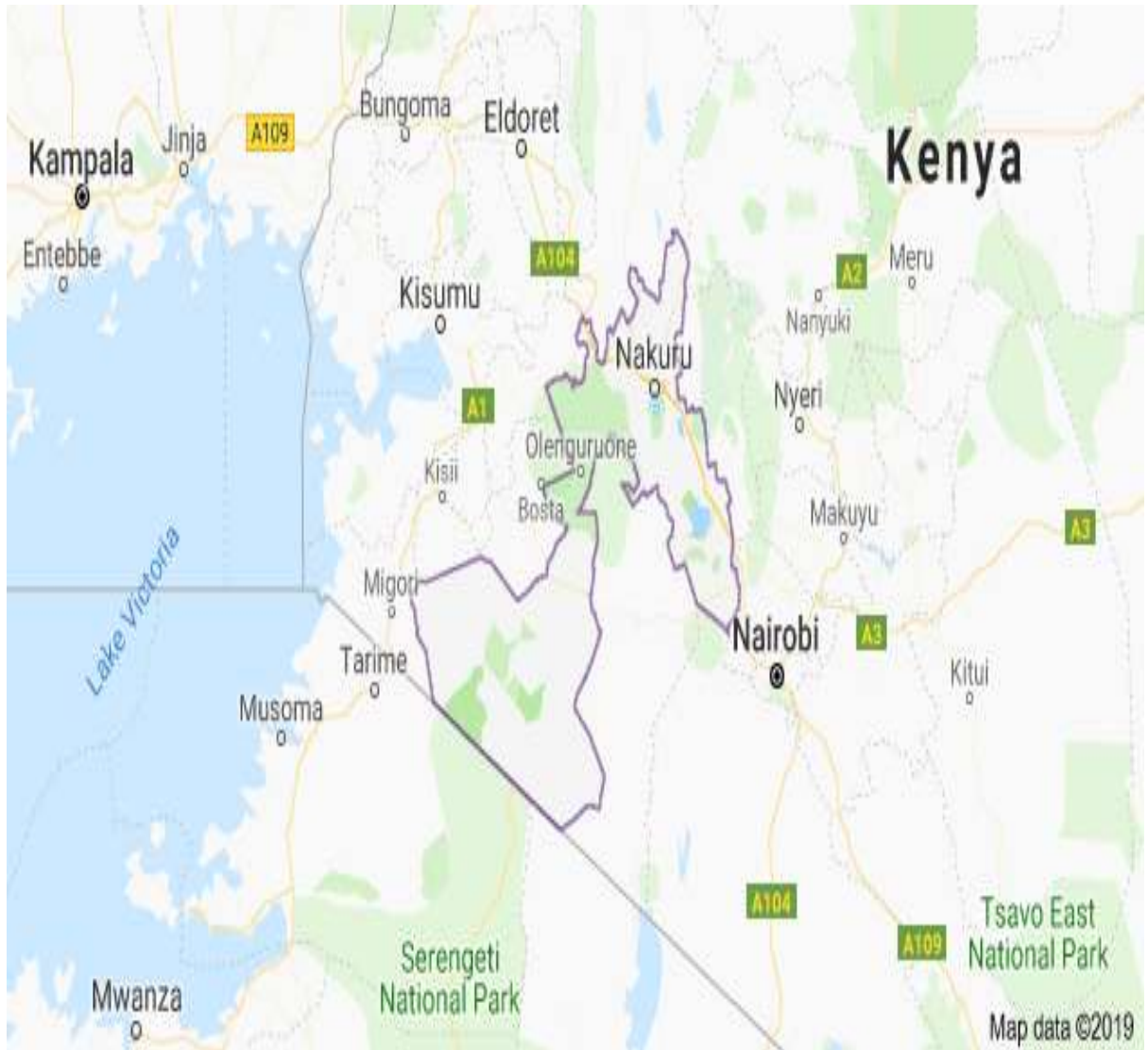
## **Appendix VI: Overall scoring system for primary care quality (dependent variable)**

The primary care quality score will be computed using the following five (5) elements

1. Better structural element lead to efficient primary care delivery (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
2. Good organization structures increase appropriateness and effectiveness of care (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
3. Structural challenges lead to poor accessibility of care (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
4. Continuity of care is achieved with better structural support (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)
5. Better structures increase responsiveness and orientation to patient needs (Strongly disagree= 1; Disagree 2; Neutral=3; Agree = 4; Strongly agree =5)

The overall score will be generated by aggregating the scores. The maximum attainable total score is 25. A mean score will be generated and will be categorized as follows: below the mean will be in-adequate primary care quality and above the mean will be adequate primary care quality.

**Appendix VII: Map of Nakuru County**



## Appendix VIII: Approval from Kenya Methodist University



# KENYA METHODIST UNIVERSITY

P. O. BOX 267 MERU - 60200, KENYA  
TEL: 254-064-30301/31229/30367/31171

FAX: 254-64-30162  
EMAIL: [info@kemu.ac.ke](mailto:info@kemu.ac.ke)

3<sup>RD</sup> JULY 2018

Amos Kipngetich Kandagor  
HSM-3-4486-3/2014

Dear Amos,

**RE: ETHICAL CLEARANCE OF A MASTERS' RESEARCH THESIS**

Your request for ethical clearance for your Masters' Research Thesis titled "Relationship between Structural Arrangement and Provision of Primary Care Quality: A Case of Health Centers in Nakuru County" has been provisionally granted to you in accordance with the content of your project proposal subject to tabling it in the full Board of Scientific and Ethics Review Committee (SERC) for ratification.

As Principal Investigator, you are responsible for fulfilling the following requirements of approval:

1. All co-investigators must be kept informed of the status of the project.
2. Changes, amendments, and addenda to the protocol or the consent form must be submitted to the SERC for re-review and approval **prior** to the activation of the changes. The Proposal number assigned to the project should be cited in any correspondence.
3. Adverse events should be reported to the SERC. New information that becomes available which could change the risk: benefit ratio must be submitted promptly for SERC review. The SERC and outside agencies must review the information to determine if the protocol should be modified, discontinued, or continued as originally approved.
4. Only approved consent forms are to be used in the enrollment of participants. All consent forms signed by subjects and/or witnesses should be retained on file. The SERC may conduct audits of all study records, and consent documentation may be part of such audits.

**Appendix IX: National Commission for Science, Technology and Innovation  
Approval**



**NATIONAL COMMISSION FOR SCIENCE,  
TECHNOLOGY AND INNOVATION**

Telephone: +254-20-2213471,  
2241349, 3310571, 2219420  
Fax: +254-20-318245, 318249  
Email: [dg@nacosti.go.ke](mailto:dg@nacosti.go.ke)  
Website: [www.nacosti.go.ke](http://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/18/63869/24215**

Date: **17<sup>th</sup> September, 2018**

Amos Kipngetchi Kandagor  
Kenya Methodist University  
P.O. Box 267- 60200  
**MERU.**

**RE: RESEARCH AUTHORIZATION**

Following your application for authority to carry out research on "*Relationship between structural arrangement and provision of primary care quality: A case of health centers in Nakuru County,*" I am pleased to inform you that you have been authorized to undertake research in Nakuru County for the period ending **5<sup>th</sup> September, 2019.**

You are advised to report to **the County Commissioner, the County Director of Education and the County Director of Health Services, 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.



**THE PRESIDENCY**  
MINISTRY OF INTERIOR AND  
CO-ORDINATION OF NATIONAL GOVERNMENT

Telegrams: "DISTRICTER", Nakuru  
Telephone: Nakuru 051-2212515  
When replying please quote

COUNTY COMMISSIONER  
NAKURU COUNTY  
P.O. BOX 81  
NAKURU

Ref. No. **CC.JR.EDU 12/1/2 VOL.III/(153)**

**24<sup>th</sup> September, 2018**

**TO WHOM IT MAY CONCERN**

**RE: RESEARCH AUTHORIZATION – AMOS KIPNGETICH KANDAGOR**

The above named student has been given permission to carry out research on "**Relationship between structural arrangement and provision of primary care quality: A case of the health centers in Nakuru County**" for the period ending **5<sup>th</sup> September, 2019**.

Please accord him all the necessary support to facilitate the success of his research.

**Patrick Omuse**  
**For: COUNTY COMMISSIONER**  
**NAKURU COUNTY**

**Appendix X: Nakuru County Approval**

**MINISTRY OF EDUCATION  
STATE DEPARTMENT OF EARLY LEARNING OF BASIC EDUCATION**

Telegrams: "EDUCATION",  
Telephone: 051-2216917  
When replying please quote  
Email: cdenakurucounty@gmail.com  
Ref. CDE/NKU/GEN/4/1/21 VOL.VIII/24



COUNTY DIRECTOR OF EDUCATION  
NAKURU COUNTY  
P. O. BOX 259,  
NAKURU.

25<sup>th</sup> September, 2018

TO WHOM IT MAY CONCERN

**RE: RESEARCH AUTHORIZATION – AMOS KIPNGETICH KANDAGOR**  
**PERMIT NO. NACOSTI/P/18/63869/24215**

Reference is made to letter NACOSTI/P/18/63869/24215  
17<sup>th</sup> September, 2018.

Authority is hereby granted to the above named to carry out research on  
*"Relationship between structural arrangement and provision of primary  
care quality: a case of health centers in Nakuru County"* for a period ending  
5<sup>th</sup> September, 2019.

Kindly accord him the necessary assistance.

A handwritten signature in blue ink, appearing to read 'Joyce Sankok'.

**JOYCE SANKOK**  
**FOR: COUNTY DIRECTOR OF EDUCATION**  
**NAKURU**

Copy to:

✓ Kenya Methodist University  
P.O Box 267-60200  
**MERU**



**DEPARTMENT OF HEALTH SERVICES  
NAKURU COUNTY**



Email: [cohealth.nakuru@gmail.com](mailto: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.1/260

1<sup>st</sup> October, 2018

**SUB COUNTY MEDICAL OFFICER OF HEALTH**

- Molo
- Kuresoi South
- Kuresoi North
- Njero
- Gilgil
- Naivasha
- Rongai
- Subukia
- Bahati
- Nakuru East
- Nakuru West



**RE: RESEARCH AUTHORIZATION – AMOS KIPNGETICH KANDAGOR**

This letter serves as an authorization from the Department of Health Services Nakuru for Amos Kipngetich Kandagor to conduct research on **"Relationship between structural arrangement and provision of primary care quality: A case of health centers in Nakuru County"**.

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**