PATIENT LEVEL OF SATISFACTION WITH PERCEIVED HEALTH SERVICE QUALITY IN NYANDARUA COUNTY REFERRAL HOSPITAL

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JULY, 2018
DECLARATION

Student’s Declaration

This thesis is my original work and has not, been presented to any other college, university, and institution or examination body.

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Declaration by the Supervisors

This thesis is submitted with our approval as Kenyatta university supervisors.

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DEDICATION

I dedicate this thesis to my loving family for their continual support during thesis development.
ACKNOWLEDGEMENT

I take this opportunity to express my gratitude to almighty God for good health, care and protection throughout the entire thesis development.

I wish to extend my deep gratitude to Dr. George Otieno and Dr. Julius Korir, my research supervisors, for their exemplary guidance and constant encouragement towards completion of this thesis.

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DEFINITIONS OF OPERATIONAL TERMS

**Quality**-Refers to the degree to which a set of inherent characteristics fulfills requirements. In this definition, degree refers to a level to which a product or service satisfies. So, depending upon the level of satisfaction, a product may be termed as good or bad quality product (Parasuraman et al., 1985).

**Perceived quality**-Refers to the Consumer's opinion of a product's (or a brand's) ability to fulfill his or her expectations. It may have little or nothing to do with the actual excellence of the product, and is based on the firm's (or brand's) current public image, consumer's experience with the firm's other products, and the influence of the opinion leaders, consumer's peer group, and others (Parasuraman et al., 1990).

**Patient satisfaction**s-Refers to a measure of how products and services supplied by a company meet or surpass customer expectation; the total perceived benefits a customer expects from a company's product or service (Nwankwo et al., 2010).

**Customer experience**-Refers to the interaction between an organization and a customer over the duration of their relationship. This interaction includes a customer's attraction, awareness, discovery, cultivation, advocacy and purchase and use of a service (Brown, 2007).
# ABBREVIATIONS AND ACRONYMS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
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<tbody>
<tr>
<td>BPM</td>
<td>Business Process Management</td>
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<td>CSI</td>
<td>Customer Satisfaction Index</td>
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<td>FP</td>
<td>Family Planning</td>
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<td>HIV</td>
<td>Human Immuno-deficiency Virus</td>
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<td>KII</td>
<td>Key Informant Interview</td>
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<td>KNH</td>
<td>Kenyatta National Hospital</td>
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<td>KQMH</td>
<td>Kenya Quality Model of Health</td>
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<td>KUERC</td>
<td>Kenyatta University Ethical Review Committee</td>
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<tr>
<td>NACOSTI</td>
<td>National Commission for Science, Technology and Innovation</td>
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<tr>
<td>PCA</td>
<td>Principal Component Analysis</td>
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<td>ROK</td>
<td>Republic of Kenya</td>
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<tr>
<td>SEM</td>
<td>Structured Equation Modeling</td>
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<tr>
<td>SPAs</td>
<td>Service Provision Assessments</td>
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<tr>
<td>TB</td>
<td>Tuberculosis</td>
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<td>UK</td>
<td>United Kingdom</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
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Perceived health services quality and patient satisfaction are two important health indicators for measuring health system performance. Meeting the needs of the patient and maintaining acceptable healthcare standards are imperative to achieving high quality health care which makes the patient to be the center of healthcare’s quality agenda. While perceived quality of health services affects utilization of services, there is still a gap in literature on the level of customer satisfaction in the public health sector of Kenya, particularly with the implementation of devolution of health services to the counties. Therefore, the general objective of this study was to investigate patient level of satisfaction with perceived health services quality in Nyandarua County Referral Hospital, Kenya. The specific objectives of the study were: (1) To determine the level of patient satisfaction with health service delivery in Nyandarua Referral County Hospital; (2) To find out patients perceptions on quality of health service in Nyandarua County Referral Hospital; and (3) To determine health system factors predicting perceived quality of health service delivery in Nyandarua County Referral Hospital. This study used a descriptive cross-sectional study design employing both quantitative and qualitative techniques. Data were collected from 334 outpatients using systematic sampling technique where an exit interview was conducted on every 12th patient. In addition, simple random sampling was done to select 55 inpatients using a daily discharge register. Purposive sampling design was used to select at least 20 key informants for the study who included Sub-County Health Management Team, facility in-charges and heads of departments in Nyandarua County Referral Hospital. Quantitative data were analyzed using SPSS Version 20 while qualitative data were analyzed thematically using Nvivo. The results indicated patient satisfaction with perceived quality of services of 56%. Specifically, staff competence in handling patient problems, health staff friendliness, availability of prescribed drugs in the hospital pharmacy, patient privacy during treatment and patient waiting time were important aspects in influencing patient satisfaction. In conclusion, patient satisfaction rated lowest on empathy, responsiveness and reliability on services offered. Thus, there is need to improve reliability, responsiveness and empathy of the services to improve perceived quality of services and patient satisfaction at the facility.
CHAPTER ONE
INTRODUCTION

1.1 Background of the Study
Healthcare is the fastest growing service in both developed and developing countries (Dey et al., 2006). In the recent years, health systems have changed the way of thinking and delivering care: patients have become the center of the overall process and new organizational models are being applied in order to provide patient-oriented services. The mission of health systems has expanded to meet the population’s health needs and expectations regarding how patient should be treated by providers. Strategies focused on service quality have been developed since the year 2000s (WHO, 2000). In this context, patient’s feedback has become an important source to evaluate the capability of health systems in order to respond to patients’ needs.

Understanding satisfaction and service quality have, for some considerable time, been recognized as critical to developing service improvement strategies. Since 1990s, health care systems have adopted multidimensional systems to evaluate the results achieved including also indicators related to patient experience and satisfaction with service quality. Improving quality in health facilities is a strategy used in developing countries to reduce communicable diseases, which contributes significantly to attainment of strategic goals of the health system (Girma et al., 2008). Patients are now regarded as healthcare customers, recognizing that individuals consciously make the choice to purchase the services and providers that best meet their healthcare needs (Wadhwa, 2002). Related to this, healthcare quality and patient satisfaction are two important health outcome and quality measure (Zineldin, 2006).
Literature identifies patient satisfaction as a super-ordinate construct and considered perceived service quality as an antecedent of satisfaction (Badri et al., 2007). Past studies have observed a causal relationship between perceived service quality and patient satisfaction (Woodside et al., 1989; Choi et al., 2004). According to Caha (2012), service quality in a hospital is a strong influencer of customer satisfaction and positive attitude that the clients of that hospital have towards the hospital. This positive attitude towards the hospital, its staff and its competence influences its success in the society. Improvement of competence of hospital staff, hospital costs in relation to value received and quality of health facilities in the hospital are all factors that are considered by clients to gauge their satisfaction with the hospital. Objective measure of service quality may be different from customer perception which makes customer perception to be the right indicator overriding objective measures. Every service organization therefore should use customer perception as its measure to establish the quality level it provides in the market (Caha, 2012).

Patient’s satisfaction is influenced by a number of factors and according to Peprah (2014), the following factors play a critical role in the satisfaction of patients; the attitudes of nurses toward patients, the capacity to deliver prompt service without wasting time, ability to disseminate information to patients and the availability of up-to-date equipment. Others include the hospital’s ability to render reliable service, the patience of the doctor to clearly explain what was wrong with patients before giving treatment, providing patients with detail information about their medication, and attractiveness and cleanliness of the hospital.

Meeting the needs of the patient and creating healthcare standards are imperative to achieving high quality services (Ramachandran and Cram, 2005). This makes a
patient to be the center of healthcare’s quality agenda (Badri et al., 2007). Customers determine the perceived or cognitive value of service based on their experience with the service delivered. Patients’ expectations, service delivery process and service outcome have an impact on perceived health service quality. However, the Kenyan public health sector, like other developing countries, is plagued by uneven demand and negative service-quality perceptions. The situation is compounded by absent essential medications, long journeys to service delivery points and long wait times.

Health system factors play an important role in shaping clients’ preconceived negative attitudes and dissatisfaction with healthcare services, providers and healthcare itself hence the need to evaluate the quality of care has to be evaluated also through the patient’s eyes. Therefore, the study aimed at determining patients’ satisfaction with quality of health service delivery in Nyandarua County Referral Hospital using SERVQUAL model which focuses on five key quality dimensions which are: Tangibility, Reliability, Responsiveness, Assurance and Empathy.

1.2 Statement of the Problem
Poor customer service decreases patient satisfaction and increases inefficiency (Girma et al., 2008). In KNH, the largest referral hospital in Kenya, over 50% of patients rated the quality of the health services provided as poor (Wanjau and Wangari, 2012). Poor health service perceptions by clients has been linked to some patients bypassing public hospitals for an alternative provider and spreading negative word of mouth which affects potential clients and growth of the facility (Nwankwo et al., 2011). A study by Nyongesha et al. (2013) indicated that close to 50% of clients preferred
public service mainly due to lower costs and not good quality of services in the facilities.

To ride off the negative quality perceptions in the public health sector, many reforms in health care such as devolution, COK 2010, Kenya’s Health Policy (2012 - 2030), SDGs have been done to improve health systems and quality outcomes (Maina, 2014). However, few studies have been done to demonstrate potential quality improvement outcomes related to the reforms. Therefore, the study provided key insight on quality perception and opportunities for policy and programmatic interventions aimed at improving patient satisfaction

1.3 Justification of the Study
The study outcomes are useful to the hospital management and other key stakeholders in informing tailored policy initiatives and programmatic intervention at both the facility and community level aimed at providing solutions to challenges and setbacks facing improved quality of service delivery and attainment of higher satisfaction levels. The study results contributes to the key prioritizes improving service quality and patient satisfaction remains in Kenyan health sector developmental and investment plans such as Kenya Health Policy, 2012-2030, Vision 2030 and Medium term plans and Kenya Quality Model for Health (KQMH). The study generated useful knowledge and provides documentation for future reference

1.4 Research Questions
The study was guided by three (3) key research questions:
1. What is the level of patient satisfaction with health services delivery in Nyandarua County Referral Hospital?

2. What are the patient perceptions on quality of health service delivery in Nyandarua County Referral Hospital?

3. What are the health systems factors predicting satisfaction with perceived quality of health service delivery in Nyandarua County Referral Hospital?

1.5 Null Hypothesis
Health system factors do not predict level of patient satisfaction with perceived quality of service in Nyandarua County Referral Hospital.

1.6 Study Objectives

1.6.1 General Objective
To investigate the patient level of satisfaction with perceived health services quality in Nyandarua County Referral Hospital.

1.6.2 Specific Research Objectives
1. To determine the level of patient satisfaction with health services delivery in Nyandarua County Referral Hospitals;

2. To find out patients perceptions on quality of health service delivery in Nyandarua County Referral Hospital;

3. To determine health system factors predicting satisfaction with perceived quality of health service delivery in Nyandarua County Referral Hospital.
1.7 Scope and Delimitation of the study

The study was carried out in Nyandarua County Referral Hospital which is a public health facility. This helped overcome the time and resource constraints associated with a larger study scope. The study findings were generalized to public hospitals only.

1.8 Conceptual Model

The conceptual model below illustrates the relationship between variables to be studied. This study adopted a SERVQUAL quality model (Parasuraman et al., 1988) which identifies the gap between perception and expectation of customers for evaluating the superiority of the service quality on the basis of five attributes: (1) Tangibles (Physical facilities, equipment and personnel’s image in a hospital), (2) Reliability (Providing the service properly in a time and manner promised), (3) Responsiveness (Being willing to assist the patient, and providing the service as soon as possible), (4) Assurance (Staff having adequate knowledge and building adequate trust in patient) and (5) Empathy (Personnel’s putting themselves into the place of patients and understanding their needs) as shown in Figure 1.1.
Quality

Dimensions

- Tangibles
- Reliability
- Responsiveness
- Assurance
- Emphathy

Health System factors

Expectation (Expected Service)

Perception (Perceived Service)

Perceived Service Quality

Level of satisfaction

Source: Adapted from Parasuraman et al., 1988

Figure 0.1: Conceptual Model of the study
CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction
This chapter discusses past literature which related to the study. The chapter presents reviews on patient satisfaction, perceptions on quality of health services and factors influencing patient satisfaction. The chapter ends with a summary on literature reviewed, gaps and trends based on the findings of the literature review.

2.2 Theoretical Literature Review

2.2.1 Theoretical construct of Perceived health service quality
Healthcare service delivery requires high consumer involvement in the consumption process. According to Lengnick-Hall (1995), the traditional health sector views of technical quality and patient satisfaction were inadequate to manage the complex relationships between the healthcare provider and the patient. Importantly, effective healthcare relies significantly on the co-contribution of the patient to the service delivery process. Past studies have argued that compliance with medical advice and treatment regimens is directly related to the perceived quality of the service and the subsequent resulting health outcome (Sandoval, Brown, Sullivan, and Green, 2006).

Over the past few decades in the health services sector, a lot of research has been undertaken to evaluate the consumer’s perception of service quality, and a number of service models have been developed, with the gap model (Parasuraman et al., 1985) and its accompanying SERVQUAL (Parasuraman et al., 1988) having offered significant advances to the understanding and measurement of perceived service quality.
In the year 2001, Brady and Cronin advanced the multidimensional hierarchical conceptualization offered by Dabholkar et al., (1996) by combining the SERVQUAL model with the three factor model of Rust and Oliver, and proposed a hierarchical multidimensional model of service quality. Dabholkar et al. (2007) proposed service quality to be a multidimensional, higher order construct, with four overarching dimensions (interpersonal quality, technical quality, environment quality and administrative quality) and nine sub-dimensions. They suggest that consumers assess service quality at a global level, a dimensional level and at a sub-dimensional level, with each level influencing perceptions at the level above.

Dagger et al. (2007) who did a study on private oncology patients established that their model reflects the private patient’s service quality perceptions, and they have developed and tested a scale for measuring perceived private healthcare service quality. Yet this work has had little impact, as the study and measurement of patient satisfaction continues to be the key target for consumer research in the health sector. Brown (2007) highlighted that the patient is becoming an ever more silent partner in the health care system, as their views of quality have largely been sidelined by the number of attempts to exclusively determine patient satisfaction with health care. Research that focuses on strengthening our understanding of the meaning, measurement, and management of perceived service quality from the patient’s perspective in healthcare is now arguably paramount.
2.2.2 Application of patient satisfaction in healthcare

The desired need for the measurement of patient satisfaction has been largely driven by the underlying politics of “new public management” (Hood, 1995) and the concomitant rise in the health consumer movement, with patient satisfaction being one of the articulated goals of healthcare delivery. With the advent of the patient rights movement (Williams, 1994), the debate over the relationship between patient satisfaction as a valuation of the process of care versus the standard of technical care was well established. As a result, the use of patient satisfaction measures in the health sector became increasingly widespread. For example, assessing patient satisfaction has been mandatory for French hospitals since 1998, which is used to improve the hospital environment, patient amenities and facilities in a consumerist sense, but not necessarily to improve care (Boyer et al., 2006).

Whilst there are numerous specific patient satisfaction studies published in peer reviewed journals, there is a smaller body of work which critically reviews the literature and analyses the construct and its use. This work highlights agreement that patient satisfaction suffers from inadequate conceptualization of the construct, a situation that has not changed significantly since the 1970s, and there is no agreed definition (Hawthorne, 2006). Currently, there exist numerous studies investigating methodological issues and those investigating determinants of satisfaction. There is a general agreement that the definitive conceptualization of satisfaction with healthcare has still not been achieved and that understanding the process by which a patient becomes satisfied or dissatisfied remains unanswered. They suggest that satisfaction is a relative concept and that it only implies adequate service.
Researchers point out that patient satisfaction is a cognitive evaluation of the service that is emotionally affected, and it is therefore an individual subjective perception. It is also agreed that there is consistent evidence across settings that the most important determinants of satisfaction are the interpersonal relationships and their related aspects of care. What is agreed is that satisfaction has become an endpoint in outcomes research and the benchmarking of services. Patient satisfaction has therefore been seen as a part of health outcome quality which also encompasses the clinical results, economic measures and health related quality of life.

2.2.3 Measurement of health service quality
Many researchers measure the service quality dimensions by using SERQUAL model which is the most popular and strong tool, also called gap model. SERQUAL model was created by Parasuraman et al. (1985) for the very first time and there were 97 attributes put into ten dimensions. Through these dimensions, one can measure the customer satisfaction level regarding the quality of service of an organization. The findings became more interesting because of further investigation and concluded that, among these 10 dimensions, some were correlated. To identify and prioritize performance improvements that are required or to ensure that patients' needs and expectations are being met, both perceptions and expectations of service are needed to be measured (Parasuraman et al., 1985; Parasuraman et al., 1988).

Hart (1996) upholds that the use of service quality dimensions provides both a structure for designing a service quality measurement instrument and a framework for prioritizing results and findings. Parasuraman et al., (1988) designed the SERVQUAL instrument to specifically measure functional service quality using both the gap concept and service quality dimensions. The SERVQUAL instrument, in its original
form, contains twenty-two pairs of Likert scale statements structured around five service quality dimensions: These dimensions are: (i) Tangibles: describes the appearance of physical facilities, personnel and equipment; (2) Reliability: deals with the ability to perform the promised service dependably and accurately; (3) Responsiveness: considers the willingness to help customers and provide prompt service; (4) Assurance: talks about the knowledge and courtesy of employees and their ability to inspire trust and confidence, and (5) Empathy: ability to provide caring and individualized attention to customers. Each of the questionnaire statement appears twice; one measures customer expectations and the other measures the perceived level of service provided by an individual organization in that industry. The twenty-two pairs of statements are designed to fit into the five dimensions of service quality. The scale for measuring is made up of a 5-point scale starting from "strongly agree" (5) to "strongly disagree" (1) accompanies each statement. The "strongly agree" end of the scale is designed to correlate with high expectations and high perceptions (Parasuraman et al., 1988).

According to the model, service quality occurs when expectations are met (or exceeded) and a service gap materializes if expectations are not fulfilled. The gap score for each statement is computed as the perception score minus the expectation score. The presence of a positive gap score means that expectations have been met or exceeded and a negative score also implies that expectations are not being met. Gap scores for each individual statement can be analyzed and aggregated to give an overall gap score for each dimension. Gap scores can be analyzed for individual statements and can be aggregated to give an overall gap score for each dimension. This helps an
organization to assess where key gaps in performance, from the perspective of the customer, are occurring. From the above five dimensions perspective the aggregated sum of difference between perceptions and expectations global perceive quality construct is formed (Laroche et al., 2004). By these dimensions, quality of service can be improved and the customer satisfaction level can be increased.

2.3 Empirical Literature Review

2.3.1 Patient Satisfaction
Patient/client satisfaction measurement in health care provides important assessment of quality of healthcare indicators which are not adequately captured by other health service statistics such as patient data, waiting times, consultation times and proximity.

Bazant and Koenig (2009) conducted a study in Nairobi, Kenya with an aim of quantifying women’s satisfaction with delivery care in informal settlement. The study also purposed to determine characteristics of women and delivery in health care associated with satisfaction. Study variables included access to the facilities, provider empathy and location of facility in relation to the outcome variable which was patient satisfaction. The study methodology adopted a household survey design to collect the data.

Kumar et al., (2008) conducted a study whose aim was to further investigate the linkages between business process management (BPM) and customer satisfaction in an organization. The study also aimed to challenge the dominance of the customer contact perspectives on service processes and to propose a more systemic focus on the totality of service design in a manner that improves customer satisfaction. This study
was conducted in randomly selected facilities in United Kingdom (UK). Study variables included process management, technical service quality and customer satisfaction. The sought assessed how process management impacted technical service quality perception and overall customer satisfaction. Longitudinal data from the study was analyzed using structured equation modeling (SEM) tool which provide a more robust statistical approach for confirming/refuting the constructs found in the earlier documented research.

The study results confirmed that process management is a critical driver of technical service quality. This suggests that facilities with reliability/dependability issues in their service delivery should not emphasize customer satisfaction programmes based on SERVQUAL intangibles until substantial improvements in process design have been achieved. The study also confirmed that customers, as an integral part of the health service process, are a critical element in enhancing perceived service quality. The study also found that health service quality perceptions are formed during the production, delivery and consumption process. Patients’ favorable and unfavorable experience, as well as their positive and negative emotions may have an important impact on perceived quality of care delivered.

Despite the debate about the opportunity to consider patients as customers, the study found customers to be the main actors of their care pathway. Satisfaction level indicates how comfortable one is in utilization of the services. Dissatisfied patients tend to launch complaints to the establishment or seek redress from it more often and dissuade others from seeking health care services from the system if the systems do not favor them. Studies that help to capture the dissatisfaction before patients turn away from seeking healthcare services are very important.
Nwankwo et al., (2010) carried out a study in London whose purpose was to explore patients’ satisfaction with access to treatment in both the public and private healthcare sectors in London. The study used a cross-sectional study design employing both qualitative and quantitative methods of data collection were used to determine levels of patient satisfaction. A semi-structured face-to-face non-probability quota sampling and a probability sample drawn from multistage cluster sampling methods were employed.

The study assessed how access, users experience and service climate factors (e.g. getting attention from doctors, time taken to get appointments, access to core treatment and opening hours) influenced patient satisfaction. Principal factor analysis was used to identify factors which had greater impact on the satisfaction levels of the patients. According to the study findings, healthcare users experience unsatisfactory outcomes in relation to service climate factors (e.g. getting attention from doctors, time taken to get appointments, access to core treatment and opening hours) were the most significant factors which influenced satisfaction scores of the patient.

Santouridis and Trivellas (2010) carried out a study whose aim was to investigate crucial factors that lead to customer loyalty in the mobile telephony sector in Greece, namely service quality and customer satisfaction. In addition, the study sought to examine the mediation effect of customer satisfaction on the service quality and customer loyalty relationship. The methodology adopted in this study incorporated
use of field surveys (research). The study used questionnaire which targeted a sample residential non-business mobile phone users in Greece using simple random sampling approach. The study examined how timely, accessible, appropriate health interventions, continuous and effective health services influenced health care quality and hence patient satisfaction. Patient satisfaction index was calculated using patient satisfaction scores assigned to each question. Regression analysis was used to predict how the study variables influenced satisfaction index.

The study findings revealed that the extent to which health service users are satisfied with their local providers is a key factor underpinning their health behavior and health care utilization. Results indicated that timely, accessible, appropriate health interventions, continuous and effective health services are important components of health care quality and hence patient satisfaction. The study also found that Customer service, pricing structure and billing system are the service quality dimensions are key elements which helps improve customer satisfaction, which in turn has a significant positive impact on patient satisfaction level. Thus, a healthcare provider’s reputation for its commitment to quality and patient-centered customer service stands as one of the main criteria for individuals in choosing a healthcare service provider and thus in improving health care service delivery, customer satisfaction become crucial.

Hutchinson et al. (2011) carried out a study whose purpose was to quantify differences in the quality of family planning (FP) services at public and private providers in three representative sub-Saharan African countries, to assess how these quality differentials impact upon FP clients' satisfaction, and to suggest how quality improvements can improve contraceptive continuation rates. The study variables used
included client satisfaction scores (outcome variable), waiting times and availability of supplies. This study was done in three countries: Tanzania, Kenya and Ghana. The study methodology used multi-stage cluster sampling design to select and study respondents. Indices of technical, structural and process measures of quality were constructed from Service Provision Assessments (SPAs) conducted in Tanzania (2006), Kenya (2004) and Ghana (2002) using direct observation of facility attributes and client-provider interactions. Data analysis involved used of marginal effects from multivariate regressions controlling for client characteristics and the multi-stage cluster sample design was used to assess the relative importance of different measures of structural and process quality at public and private facilities on client satisfaction.

Study results indicated that private health facilities had higher process quality than public facilities but not necessarily higher technical quality in the three countries, though these differentials were considerably larger at lower level facilities (clinics, health centers, dispensaries) than at hospitals. Family planning client satisfaction, however, appeared to be considerably higher at private facilities - both hospitals and clinics – which could be most likely be attributed to both process and structural factors such as shorter waiting times and fewer stock outs of methods and supplies. According to the study, due to increased levels of competition and the emphasis on consumerism, patient satisfaction has become an important measurement for monitoring health care performance of health plans.

Nezenega et al. (2013) also conducted a study in Southern Ethiopia whose aim was to investigate patient satisfaction and adherence to tuberculosis treatment. The study adopted a facility-based cross-sectional design. Professional care, time spent with health care provider, accessibility, technical competency, convenience (cleanliness)
and consultation and relational empathy were independent predictors of overall patient satisfaction. Systematic random sampling was used to select a sample of 531 respondents on anti-TB treatment from 11 health centers and 1 hospital in South Ethiopia for data collection using pre-tested structured questionnaires. The sample size to each facility was allocated using probability proportional to size allocation. Confirmatory factor analysis was done to identify factors that explain most of the variance observed in most of the manifested variables. Bivariate and Multivariate analysis were computed to analyze the data.

The study revealed that 90% of the study participants were satisfied with TB treatment service. However, 26% of respondents had poor adherence to their TB treatment. The study also revealed that patient perception on professional care, time spent with health care provider, accessibility, technical competency, convenience (cleanliness) and consultation and relational empathy significant elements which explain overall patient satisfaction. In multivariate analysis occupational status, area of residence, perceived time spent with health care provider, perceived accessibility, perceived waiting time, perceived professional care and over all patient satisfaction were significantly associated with adherence to TB treatment.

2.3.2 Patient perceptions on quality of services
Perception is viewed in this study as the act of apprehending by means of the senses or of the mind, the view of something or event or procedure. Health care systems today are technically proficient. Strong emphasis is placed on patient service with organized efforts to understand measure and meet the needs of clients served. Evidence of this phenomenon is found in the numerous publications that focus on
patient satisfaction as a key outcome measure of the health care. Patient perception of quality is therefore the perception of patient needs and expectations being met.

Argentero et al. (2008) carried out a study with an aim of assessing patient satisfaction with perceived quality of health care among haemodialyzed patients which was conducted across northern Italy. The study used a cross-sectional study of the relationship between burnout in nephrologists and nurses and patient perceived quality of care. The study involved 68 Nephrologists, 334 nurses and 695 haemodialyzed patients who were randomly selected from 10 dialysis centers across northern Italy. The study outcome variable which was patient perception and satisfaction with quality of care was assessed by means of a multi-choice questionnaire that incorporated 4 patient dimensions: completeness of medical information, emotional relationship with health care staff, performance of dialysis center staff, and organizational aspects of health care service.

In terms of data analysis, spearman rank-order correlation was used to examine relationships between perceived quality of care and staff burnout subscales for each dialysis. Staff burnout was assessed using the Maslach Burnout Inventory. Three staff burnout subscales were developed by using factor analysis: Emotional Exhaustion, Depersonalization, and Personal Accomplishment.

Results of the analysis revealed that overall; burnout scores were lower than the Italian normative sample, with no significant differences between physicians and nurses. However, considering each dialysis center separately, in 2 centers, nurses registered higher emotional exhaustion levels compared with physicians, with
statistically significant differences (P = 0.004 and P = 0.003, respectively). Analysis of overall perception of quality of care showed general appreciation for the courtesy and kindness of staff, but evidence of problems regarding organizational aspects and structural factors. However, the most critical dimension was for information. There was a significant positive correlation between staff personal accomplishment and perception of quality of care and a significant negative correlation between staff emotional exhaustion and patient satisfaction. No significant correlation was found between staff depersonalization and perceived quality of care.

The results suggested that high levels of burnout in physicians and nurses are associated with poor patient satisfaction in dialysis units. Identifying and preventing staff burnout may increase patient satisfaction with health care. In addition, binary factor analysis results indicated that patients value open dialogue, recognition as a unique individual, friendly warm personality, giving gentle touch and the availability of health professionals during service delivery. Health professionals need therefore to understand the strengths and weaknesses of the services they provide from clients’ lenses to better serve patients’ needs and improve quality of care provides to enhance patients’ satisfaction.

Bazant and Koenig (2009) conducted a study in Nairobi, Kenya with an aim of quantifying women’s satisfaction with delivery care in informal settlement. The study also purposed to determine characteristics of women and delivery in health care associated with satisfaction. Study variables included access to the facilities, provider empathy and location of facility in relation to the outcome variable which was patient
satisfaction. The study methodology adopted a household survey design to collect the data.

Systematic sampling of households was used to select 1266 women who delivered in health facilities in 2004 and 2005. Satisfaction was assessed by whether women would recommend the delivery care facility and deliver there again. Data collected was analyzed using multi-variate analysis. Result of multivariate analysis revealed in the study that health care services and health staff attitudes strongly influenced the perceived quality of care hence patient satisfaction. Therefore, in enhancing quality of care, health care managers and stakeholders can identify areas in need of improvement in order to affect quality care. Knowing the causes of dissatisfaction and problems encountered in the provision of quality health services especially those that may have been prevented, allows health care workers to focus on areas in need of improvement.

Hu et al. (2011) did a study whose aim was to examine how overall customer satisfaction and customer loyalty associate with the medical service quality attributes offered in Taiwan. Cluster sampling design was used to select 286 patients attending outpatients in health facilities. The study examined how customer satisfaction was influenced by customer loyalty, perceived quality of care, staff ability and competence. Data collected was analyzed using Kano’s integrated model and the Customer Satisfaction Index Model.

Results indicated that customer satisfaction was negatively affected by customer complaints. Customer loyalty proved to be independent of customer satisfaction and
customer complaints, which may have been due to the barriers erected to dissuade patients from changing to a new provider. The major finding suggests that perception of the customers towards employees to be based on how professionally the employees are able to deal with the customers, their ability to handle complaints and the skills they have towards their job. The perceived service quality offered in a hospital affects client satisfaction, trust and hence its performance.

A study conducted in Kenyatta National Hospital in Kenya with an aim to establish factors affecting provision of quality service in the Public health sector (Wanjau and Wangari, 2012). The study adopted a case study design in which simple random sampling was utilized in selecting a total of 103 respondents, comprising; 16 doctors, 32 nurses, 29 clinical officers, 14 laboratory technologists and 12 pharmacists. Data was collected using closed and open ended questionnaires. The study assessed how employee capability, technology, communication and financial resources affected outcome variable i.e. quality of service delivery. Confirmatory factor analysis was used to analyze data collected and show the impact of the study variables on service quality.

Results indicated that low employee’s capacity led to a decrease in provision of service quality in public health sector by factor of 0.981 while inadequate technology adoption in provision of health service led to a decrease in provision of service quality by a factor of 0.917. The Ineffective communication channels affected delivery service quality in public health sector by a factor of 0.768 while insufficient financial resources resulted to decrease in provision of health service quality by factor of 0.671. This implied that low employees capacity, low technology adoption, ineffective
communication channels and insufficient fund affect delivery of service quality to patients in public health sector, affect health service quality perceptions, patient satisfaction and loyalty. This points the need of comprehensive healthcare policy which would be addressing the plight of the worker, the working environment, the resources to enable the healthcare personnel perform effectively, and emotional intelligence management of the workforce.

Dang et al. (2013) conducted a study whose purpose was to examine the link perceived quality of care and adherence to HIV care. In terms of methodology, this study employed a cross-sectional study design in which randomly sampling design was used to select a sample of 489 patients receiving HIV care at two Texas clinics in USA. The study examined how perceived service quality influenced HIV suppression indirectly through retention in HIV care and adherence to HAART.

The outcome variable, perceived service quality was based on two validated items, one adapted from the Consumer Assessment of Healthcare Providers and Systems survey (Would you recommend this clinic to other patients with HIV?) and one adapted from the Delighted-Terrible Scale, (Overall, how do you feel about the care you got at this clinic in the last 12 months?). A validated, single-item question measured adherence to HAART over the past 4 weeks. Retention in HIV care was based on visit constancy in the year prior to the survey. HIV suppression was defined as plasma HIV RNA <48 copies/mL at the time of the survey.

In terms of data analysis, SEM model was used to test the influence of HIV suppression indirectly through retention in HIV care and adherence to HAART. The
results of the study revealed a patient satisfaction score of 8.5 on a 0- to 10- point scale. In SEM analyses, perceived quality of care influences retention in HIV care and adherence to HAART, which in turn serve as key determinants of HIV suppression. Therefore, interventions to improve the quality of care experience, without necessarily targeting objective clinical performance measures, could serve as an innovative method for optimizing HIV outcomes.

Maina (2014) conducted a study to determine the effect of customer perception on performance of Karen Hospital in Kenya. In terms of research methodology, the study adopted a case study design in which respondents were clients of Karen Hospital. The population comprised clients who have visited Karen Hospital in the past one year. Simple random sampling of 321 respondents from 107 hospital branches in Nairobi was done. Structured survey questionnaires were administered to selected Clients who had visited the hospital or had taken their kin to the hospital in the month of January and February 2015. The study aimed at determining how customer satisfaction services were influenced by hospital staff, cost of services and perceived quality of health care. Data collected was done using correlation and regression analysis techniques with an aim of establishing the relationship between the study variables.

Correlation analysis revealed that perception on cost had a weak positive relationship with perceived quality of care. Perception towards hospital staff had a strong relationship with quality of care. These results indicated that perception towards the hospital staff was very much related to perceived quality of service. In general, customer perception towards quality of health services provided has a strong
relationship with hospital performance and patient satisfaction. Regression analysis revealed that 63.9% of change in performance of hospitals can be explained by customer perception on cost, hospital staff and quality of service. This indicated the significant role played by the patient perceived quality of care.

2.3.3 Factors Influencing Patient Satisfaction
Client satisfaction is an integral service-quality component that should be monitored closely by health service providers. Empirical review indicated that many factors within and outside the formal health system have significant influence on the perceived quality of health services provided and hence customer satisfaction. The following studies discuss key factors which play a key role in influencing overall patient satisfaction.

Jabnoun and Chaker (2003) conducted a study with an aim of assessing quality of care in public hospitals in Pakistan. The study used facility-based cross-sectional design employing use of stratified sampling design to select 369 respondents from patients seeking services from the public hospitals located in Lahore, Pakistan. For this purpose validated questionnaire was on modified ‘SERVQUAL’ using five service quality dimensions (variables), namely; empathy, tangibles, timeliness, responsiveness and assurance was used to assess the perceived quality of care. Data analysis using structural equation modeling technique (SEM) indicate that public hospitals are not making visible efforts to deliver quality of services to their patients and are not making any visible efforts to meet patient’s needs and wants. Regression analysis showed that timeliness of service, friendliness of staff, reliability of services,
empathy, physical structures and availability of supplies are important elements which enhance perception of service quality.

Hutchinson et al. (2011) carried out a study whose purpose was to quantify differences in the quality of family planning (FP) services at public and private providers in three representative sub-Saharan African countries, to assess how these quality differentials impact upon FP clients' satisfaction, and to suggest how quality improvements can improve contraceptive continuation rates. This study was done in three countries: Tanzania, Kenya and Ghana. The study methodology used multi-stage cluster sampling design to select and study respondents. Indices of technical, structural and process measures of quality were constructed from Service Provision Assessments (SPAs) conducted in Tanzania (2006), Kenya (2004) and Ghana (2002) using direct observation of facility attributes and client-provider interactions.

Data analysis involved used of marginal effects from multivariate regressions controlling for client characteristics and the multi-stage cluster sample design was used to assess the relative importance of different measures of structural and process quality at public and private facilities on client satisfaction. The study variables used included client satisfaction scores, waiting times and availability of supplies. Study results indicated that client satisfaction is associated with shorter waiting times, methods and supplies. In addition, client satisfaction was associated with other factors which include communication, respect and client-provider relationship. According to the study, patient satisfaction is associated with shorter waiting time while in private facilities satisfaction has been associated with consultation duration.
In 2011, Nabbuye and Makumbi conducted a study with an aim of identifying factors associated with general satisfaction among clients attending outpatient clinics in a referral hospital in Uganda. The study adopted a cross-sectional exit survey of patients and care-givers on patient satisfaction with services in seven outpatient clinics at Mulago hospital in Uganda. Quota sampling was used to select 347 patients for the administration of the exit interviews. The main outcome variable of the survey was mean score of clients' general satisfaction with health-care services while the independent variables included education level, costs, length of waiting time, client's perceived technical competence of provider, accessibility, convenience and availability of services especially prescribed drugs.

Regression analysis was used to determine how the independent variables predicted patient satisfaction. Results of the study indicated that overall the clients' general satisfaction was suboptimal. Client satisfaction was lower among clients incurring costs of at least $1.5 during the visit and those reporting longer waiting time (>2 h). The study also revealed that client's perceived technical competence of provider, accessibility, convenience and availability of services especially prescribed drugs were the strongest predictor of general satisfaction. Satisfied clients have been found to be more likely to use health services, comply with medical treatment and continue with the healthcare providers.

Tateke et al. (2012) conducted a study in Ethiopia with an aim of establishing determinants of patient satisfaction with outpatient health services at public and private hospitals in Addis Ababa, Ethiopia. The study incorporated use of a cross-sectional design to collect data from a stratified random sample of ART clinics in four regions of Ethiopia. The study examined how patient satisfaction (outcome variable)
was influenced by type of provider, cost of services, perception of service quality and access to services. The cross-sectional study used data that was collected using a time-motion study of patient services paired with 665 patient exit interviews in a stratified random sample of antiretroviral therapy clinics in 21 hospitals and 40 health centers in 2012.

Data were analyzed using f-tests across provider types, and multivariate logistic regression to identify determinants of patient satisfaction. Most patients were satisfied or somewhat satisfied with the services received, but patients who received services from nurses and health officers were significantly more likely to report satisfaction than those who received services from doctors. Investments in the health facility were associated with higher satisfaction, while increasing service costs to patients were associated with lower satisfaction. Easy access to services was also associated with improved patient satisfaction. The study showed high levels of patient satisfaction with task shifting. The evidence shows acceptability of studies which support the inclusion of task shifting as a mechanism for scaling-up health services to achieve universal health coverage, particularly for underserved areas facing severe health worker shortages, as a service quality improvement measure.

Aljumah et al. (2014) conducted a study with an aim of investigating the relationship between patient treatment satisfaction and adherence to antidepressants, and the role of patient beliefs toward medication in patient treatment satisfaction. The study employed a facility-based study design in which systematic sampling was used to select a total of 403 patients attending Al Amal Psychiatric Hospital in Riyadh, Saudi Arabia. The study assessed how the outcome variable which was patient satisfaction
was associated with unavailability of doctors and nurses, their negative attitudes and behaviors, lack of drugs, long travelling distances and the waiting times for treatment are major hindrances to the utilization of services and a cause of decreasing customer satisfaction in public hospitals. Patient outcomes of care are affected by rapport and interpersonal quality of practicing health professionals. Medication adherence was assessed using the eight-item Morisky Medication Adherence Scale, and treatment satisfaction was assessed using the Treatment Satisfaction Questionnaire for Medication.

Correlation and Chi-square analysis was used to show existence of associations between variables and predict the outcome of the relationship respectively. The results indicated that adherence to antidepressants was associated with treatment satisfaction with the antidepressants, with a direct positive correlation. Results of the study showed high treatment satisfaction scores among patients with major depressive disorder, which correlated with adherence and patient beliefs about the necessity of treatment. This finding revealed that understanding of the role of patient beliefs, and preferences can help caregivers and other stakeholders to improve patient satisfaction.

2.4 Summary of Literature Review

The chapter has discussed related studies from both developed and developing countries such as Kenya. The review has provided important insights on perceived quality and patient satisfaction of clients in the health sector including Kenyan public health system. However, despite the extensive literature on the topic, few studies have been carried out in the Kenyan public health sector and particularly public
hospitals. Where such studies have been done, the results are not sufficiently conclusive especially due to factors such as limitation in scope of the studies and hence the generalization of results. Most of the studies have also failed to sufficiently report on the satisfaction index/scores for the quality of service delivery. This has resulted in lack of reliable baseline data for benchmarking future assessment as well as for policy implication.

Further, few studies have used SERQUAL model to assess quality perception and customer satisfaction in Public Hospitals. Finally, with the devolved health care system, change in management structures and governance in health care, there is need to re-evaluate the perceived quality of health service delivery as a strategy for re-tooling and reforming the public health care system, particularly hospitals to patients’/clients’ expectations. These presents important review gaps and trends to be addressed in this study.
CHAPTER THREE: MATERIALS AND METHODS

3.1 Introduction
This chapter discusses the methodology used in conducting the study. The chapter is organized as follows: study design, study variables, location of the study, study population, sampling design, sample size and sample size determination, data collection tools and procedures, pre-testing of research tools, reliability and validity measures, data analysis and ethical consideration.

3.2 Study Design
The study used cross-sectional descriptive study design employing mixed methods of data collection i.e. quantitative (structured questionnaires) and qualitative (KII) methods. This design was appropriate since it permits collection of data about variables as they are found in health facilities within a short period of time.

3.3 Study Variables
3.3.1 Dependent Variable
The dependent variable of the study was patient satisfaction with the quality of services provided.

3.3.1.1 Measurement of Patient Satisfaction
This was measured using satisfaction index derived from 5 service quality dimension indicators of actual service delivery experiences (perceived scores) of the SERVQUAL model. Each of the five dimensions was assessed using 5 pointer Likert scale. The scores for each of the dimensions were weighted using the customer
importance and the score for each dimension multiplied by the weighting. The total scores for each dimension were aggregated to determine the overall satisfaction index.

3.3.1.2 Measurement of the Perceived Quality of Service
Perceived quality was assessed using the five SERVQUAL dimensions. For each of the dimensions of service quality above, the tools measured both the expectations and perception of the service on a scale of 1 to 5, 22 questions in total. Then, each of the five dimensions was weighted according to customer importance, and the score for each dimension multiplied by the weighting. Following this, the gap score for each dimension was calculated by subtracting the expectation score from the perception score. The presence of a positive gap score meant that expectations have been met or exceeded and a negative score implied that expectations were not being met. Gap scores for each individual statement was analyzed and aggregated to give an overall quality perception of the services delivered. This allowed assessment where key gaps in performance, from the perspective of the customer, are occurring.

3.3.2 Independent Variable (s)
The independent variables of the study were:

i) Perceptions of the service quality. This variable explored patient perceptions towards service delivery in terms of their tangibility, reliability, responsiveness, assurance and empathy.

ii) Health System Factors. This variable studied health system factors influencing patient satisfaction and perceptions on quality of services such as staff competence, physical infrastructure and facilities, patient privacy, timeliness of services and staff friendliness.
3.4 Location of the study
The study was conducted in Nyandarua County (See Appendix 5) which has a total population of 596,268 and an area of 3,304 km\(^2\). Health services in Nyandarua County are provided through 65 governmental health facilities, 14 NGO facilities and 686 private facilities with Nyandarua County Hospital being the main County Referral Hospital (MOH, 2014). Currently, the County has the following health personnel: 61 nurses per 100,000, 8 doctors per 100,000 and 20 clinical officers per 100,000 people which is almost at par with the national personnel distribution. Among key health indicators include contraceptive prevalence rate of 64.4%, 86.1% births deliveries at a health facility, Malaria Positivity test rate of 49% and children immunization coverage of 77.8% (MOH, 2014).

3.5 Study Population
The study population included 4,650 patients who constituted 4,000 general outpatient visits and 650 inpatient visits per month.

3.5.1 Inclusion Criteria
The following persons were allowed to participate in the study:

i) All patients who were present in the facility at the time of data collection.

ii) Any selected respondent who gave informed consent to participate in the study.

iii) Respondents who were above 18 years.

3.5.2 Exclusion Criteria
The study excluded the following respondents who were too sick to participate in the study. The decision to exclude such persons was based on self-reports from patients.
3.6 Sample size determination
The quantitative sample size was determined using the formula by Fisher et al. (1998):

\[ n = \frac{Z^2 P(1-P)}{d^2} \]

Where:

\( Z \) = Standard Normal deviation (1.96 for a 95% confidence level); \( P \) = the proportion of the population having the characteristic being measured (if the proportion is unknown, set \( P = 0.5 \)); \( d \) = the level of accuracy desired, or the sampling error of 0.05.

Since patient satisfaction index in public hospitals in Nyandarua County was not known, hence \( P = 0.5 \) was used to maximize on the sample size.

Therefore: \[ n = \frac{1.96^2 \times 0.5 \times 0.5}{0.05^2} = 384 \]

This sample size was adjusted for the monthly workload of 4,650 as follows.

\[ n_f = \frac{n}{1 + \left(\frac{n}{N}\right)} = \frac{384}{1 + \left(\frac{384}{4650}\right)} = 354 \]

Where:

\( n_f \) = The final sample size, when the population is < 10,000

\( n \) = The sample size of the populations of 10,000 or more

\( N \) = Total population size from which the sample is drawn
Total sample size for the study was 389, increased from 354 to take care of non-response.

The Table 3.1 shows the distribution of the selected respondents in both inpatient and outpatient department in the county hospital.

**Table 0.1: Distribution of sampled patients**

<table>
<thead>
<tr>
<th>Type of facility</th>
<th>Average patient visits per month</th>
<th>Sample size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outpatient Department</td>
<td>4,000</td>
<td>334</td>
</tr>
<tr>
<td>Inpatient Department</td>
<td>650</td>
<td>55</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4,650</strong></td>
<td><strong>389</strong></td>
</tr>
</tbody>
</table>

*Source: Nyandarua County Hospital, Health Records Office, 2015*

### 3.7 Sampling design

First, Nyandarua County Referral Hospital was purposively selected since it is the main County Referral Hospital in Nyandarua County. All public and private facilities in Nyandarua County refer patients for advanced health care in this County Hospital.

Systematic sampling and simple random sampling techniques were used to select study respondents. Systematic sampling was used for outpatients where by an exit interview was conducted. Every 12\textsuperscript{th} patient exiting was interviewed till a total number of 334 patients were interviewed. The K\textsuperscript{th} value, the sampling interval was determined by dividing the population size (4,000 patients) by the number of days the data collected (20days), resulting to 200 patients attended to every day. Total outpatient sample size (334) was then divided with 20 days to get the total number of 17 sampled out patients interviewed every day. Total patients attended to daily (200) were then divided by daily sampled outpatients (17), to determine the K\textsuperscript{th} value, 12.
The starting point was determined by use of date method where by the first date of interview was 11\textsuperscript{th}, thus 1 +1 = 2. The counting started at the 2\textsuperscript{nd} discharged patient. Simple random sampling was done for inpatient respondents where by rotary method was used for discharged patients. 3 and 2 pieces of paper labeled Y respectively were folded and patients allowed to pick one randomly. Those who picked Y were interviewed. This was repeated daily till a total of 55 inpatients discharged was attained. This helped achieve the total sample size of 389 respondents for the study within one month.

In selecting key informants for the study, purposive sampling approach was used to ensure the interviewees selected had the required understanding, knowledge and experience in the subject matter. These included Sub-County MOHs, facility in-charges and heads of departments in the sampled facilities. A total of 20 key informants were selected for interviews.

3.8 Data Collection Tools

The study used survey questionnaires to collect data from study respondents and a key informant guide to guide key informant interview. The study adopted a validated tool (Questionnaire) called SERQUAL (Appendix 3) comprising 22 questions for measuring both expected and perceived scores (Parasuraman et al., 1990). The questionnaire measures five (5) dimensions of quality which are Tangibles, assurance, empathy, responsiveness and reliability. However, additional adjustments were made to make the questionnaire more suited for the health care settings and ensure better understanding of the statements. The questions were divided into 2 response, service reality that they feel and customer hope for, and customer satisfaction index derived
trough CSI method. A standardized key informant guide (Appendix 4) was used to ensure uniformity and consistency of questions asked during interviews.

### 3.9 Data Collection Procedures

During quantitative data collection, the researchers introduced themselves to the respondent (s) selected to participate in the study. The informed consent form was read to each respondent after which the respondent either accepted or declined to participate in the study. Any respondent who did not consent to participate was thanked for their time. For key informant interviews, any respondent who consented was taken through the interview.

For structured questionnaires, the respondents were allowed 25 minutes after which the filled questionnaires were collected for data entry and cleaning. Respondents who had a problem in understanding and filling the questionnaire due to language barriers were assisted by trained research assistants. Five research assistants were interviewed, recruited and trained for one day on the study objectives, study tools, field work, interactions and handling of study respondents and ethical requirements to assist the lead researcher in carrying out data collection. A diploma in a health or health related discipline and being residents of the study area was a mandatory requirement for research assistants.

### 3.10 Pre-testing of data collection tools

Pre-testing of the questionnaire was done in Laikipia County Hospital in Laikipia County which borders Nyandarua County. Laikipia County was selected because
respondents and health facilities in the two counties shared in most characteristics and it was a distant from the selected study area.

The purpose of pre-testing was to establish a common understanding of the tools by the research team and to determine the approximate time required to complete one study tool for purposes of ascertaining clarity and objectivity of questions. Following the pre-test, questions found to be unclear were reframed.

3.10.1 Validity
Validity is the accuracy and meaningfulness of inferences, which are based on the research results. In other words, validity is the degree to which results obtained from the analysis of the data actually represent phenomenon under study. Validity therefore, has to do with how accurately the data obtained in the study represents the variables of the study (Mugenda and Mugenda, 2003).

In this study, to ensure internal validity of tools, random sampling techniques were used to enhance homogeneity and representativeness of selected population while random selection of a large sample of study respondents and comparison of results with studies done elsewhere was done to enhance external validity of the study. The study used other similar study questionnaires to inform and guide development of the study tools and measurement of items included in the tools as measure of enhancing validity of the tools. Expert opinion from the supervisors was also sought and their inputs taken into account in development of the study tools to enhance validity.
3.10.2 Reliability
Reliability is a measure of the degree to which research instruments yields consistence results or data when used repeatedly in a manner that decreases random error (Mugenda and Mugenda, 2003).

To achieve reliability, Cronbach’s alpha was calculated using SPSS Version 20 to determine reliability of the instruments used in this study. According to Sekaran (2002), coefficients which are greater than 0.6 but less than 0.8 are considered good. The average Cronbach’s alpha reliability coefficient for the instrument was 0.775 which was within the acceptable reliability range hence the tools were reliable.

3.11 Data Analysis
Data analysis involved quantitative and qualitative approaches. Quantitative data was first compiled and coded into SPSS version 20. Questionnaires with missing data were discarded. Advanced excel was used to calculate satisfaction index and perceived quality of health services from the 5-point likert scale for all the 22 questions in the survey questionnaire.

Customer satisfaction index = \frac{\text{average score on each question} \times \text{average weighting}}{\text{Total counts in each question}}

To determine perceived quality of services, the gap score (GS) for variable was computed using the formulae: perception score minus the expectation score. The presence of a positive gap score meant that expectations were met or exceeded and a negative score implied that expectations were not met. Using SPSS, Principal component analysis was performed to establish impact of variables on perceived quality of services.
To determine health system factors influencing patient satisfaction, linear regression model was performed using Stata. The significance of the model was tested at 5 percent level. The regression coefficients were used to give the change in the log odds of the outcome for a one unit increase in the predictor variable.

On qualitative data, key informants data was analyzed thematically using QSR/Nvivo to elicit their perspectives on the perceived quality of the services provided and triangulate findings.

### 3.12 Ethical considerations

Approval to conduct the study was granted by Kenyatta University Graduate School (Appendix 5). Ethical approval was obtained from Kenyatta University Ethics Review Committee (Appendix 6). Clearance from local authority to conduct the study was also obtained from Nyandarua County Government and Nyandarua County Hospital (Appendix 7). Research Authorization was granted by National Commission for Science, Technology and Innovation (Appendix 8). Informed consent to participate in the study was obtained from study respondents and confidentiality was maintained by ensuring privacy of the study participants.

Consent form was used to obtain informed consent as well as enable respondents inquire on any issues of concern that related to the study especially ethical concerns (Appendix 3). The identities of the respondents involved in the study were duly protected by ensuring that the names of the participants were not indicated in the data collection tools. Data collected from the field was kept in a lockable box to ensure security and confidentiality and only the principal investigator had access to the contents thereof.
CHAPTER FOUR: RESULTS

4.1 Introduction to the results
This chapter presents the findings of the study on perceived quality of services in Nyandarua County Hospital. Detailed analysis of the data, interpretation and explanation of the results with regard to objectives and the research question are given. The findings are based on information from questionnaire survey from a representative sample of 389 patients and consultative discussions using key informant interviews. The chapter is organized as follows: background characteristics of study participants, patients’ satisfaction, perceived service quality and health system factors.

4.2 Social - demographic characteristics of respondents
The social - demographic characteristics of the sampled patients are presented in Table 4.1. In relation to age, about 74% of the respondents were aged 18-35 years and 8% were aged over 45 years. Age of respondents ranged between 18 and 71 years. In terms of gender, 57% were females and 43% were males.

In regard to highest education level, 51% had primary education and 21% had college education and above. In terms of average monthly income, 57% were earning Ksh10,000 and below and 9% were earning above Ksh 30,000.
Table 0.1: Social – Demographic characteristics of the study participants

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-25 years</td>
<td>118</td>
<td>30.3</td>
</tr>
<tr>
<td>26-35 years</td>
<td>169</td>
<td>43.4</td>
</tr>
<tr>
<td>36-45 years</td>
<td>70</td>
<td>18.0</td>
</tr>
<tr>
<td>46-55 years</td>
<td>19</td>
<td>4.9</td>
</tr>
<tr>
<td>Over 55 years</td>
<td>13</td>
<td>3.3</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>167</td>
<td>42.9</td>
</tr>
<tr>
<td>Female</td>
<td>222</td>
<td>57.1</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
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</tr>
<tr>
<td>Primary Level</td>
<td>198</td>
<td>50.9</td>
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<tr>
<td>Secondary Level</td>
<td>109</td>
<td>28.0</td>
</tr>
<tr>
<td>College Level</td>
<td>67</td>
<td>17.2</td>
</tr>
<tr>
<td>University Level</td>
<td>15</td>
<td>3.9</td>
</tr>
<tr>
<td><strong>Average Monthly Income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than Ksh 5000</td>
<td>133</td>
<td>34.2</td>
</tr>
<tr>
<td>Ksh 5000-10000</td>
<td>89</td>
<td>22.9</td>
</tr>
<tr>
<td>Ksh 11000-20000</td>
<td>93</td>
<td>23.9</td>
</tr>
<tr>
<td>Ksh 21000-30000</td>
<td>36</td>
<td>9.3</td>
</tr>
<tr>
<td>Ksh 31000-40000</td>
<td>29</td>
<td>7.5</td>
</tr>
<tr>
<td>Ksh 41000-50000</td>
<td>9</td>
<td>2.3</td>
</tr>
</tbody>
</table>

4.3 Patient Satisfaction Index
Satisfaction index was used to determine the level of patients’ satisfaction. The index was derived from a mean aggregate score of the five quality dimensions of SERVQUAL model measured using a 5-likert scale namely: tangibles, reliability, responsiveness, assurance and empathy. The results of analysis are shown in Table 4.2.
### Table 0.2: Patient Satisfaction Index

<table>
<thead>
<tr>
<th>Satisfaction Index</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tangibility</td>
<td>69%</td>
</tr>
<tr>
<td>Reliability</td>
<td>48%</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>55%</td>
</tr>
<tr>
<td>Assurance</td>
<td>59%</td>
</tr>
<tr>
<td>Empathy</td>
<td>50%</td>
</tr>
<tr>
<td><strong>Patient Satisfaction Index</strong></td>
<td><strong>56%</strong></td>
</tr>
</tbody>
</table>

In determining the satisfaction index, the average of the customers’ importance (expectation) score for each variable was calculated and expressed as a factor of that average known as weighted score. The satisfaction (perceived) score was multiplied with the weighted score to obtain a satisfaction index. I.e. Satisfaction Index=Weighted Score * Satisfaction score. To obtain indices for each of the quality dimension, an aggregate mean was calculated. Results of the analysis revealed that a satisfaction score of 69% on service tangibility, 48% for reliability, 55% for responsiveness, 59% for assurance and 50% for empathy of the services. The overall satisfaction index for the services was 56%.

### 4.4 Quality Perception of Services

#### 4.4.1 Tangibility of Service

Perceived quality of service tangibility was measured using perceived quality gap score. The presence of a positive gap score means that quality expectation (s) was met or exceeded and a negative score implies that the quality expectation(s) was not met. The results of analysis are shown in Table 4.3.
Table 0.3: Quality perception of tangibility

<table>
<thead>
<tr>
<th>Tangibles</th>
<th>Expectation Score (E)</th>
<th>Perception Score (P)</th>
<th>Gap Score (P-E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospitals should have well maintained and modern equipment</td>
<td>4.8</td>
<td>3.4</td>
<td>-1.4</td>
</tr>
<tr>
<td>Physical facilities such as building should be visually appealing and pleasant</td>
<td>4.7</td>
<td>3.7</td>
<td>-1.0</td>
</tr>
<tr>
<td>Staff in hospitals should be clean and well groomed</td>
<td>4.9</td>
<td>2.5</td>
<td>-2.4</td>
</tr>
<tr>
<td>Patient rooms should be comfortable enough and accord privacy</td>
<td>4.8</td>
<td>4.8</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Mean Score</strong></td>
<td><strong>4.8</strong></td>
<td><strong>3.6</strong></td>
<td><strong>-1.2</strong></td>
</tr>
</tbody>
</table>

The tangibility quality gap score for each of the four variables studied was computed by subtracting perception score from the expectation score in which the score computed for the variables represent the average score for all the study respondents. Mean score was calculated by obtaining the average scores. Results of analysis showed that patient expectations for the tangibility was not met (GS=-1.2). Patient expectations for well maintained and modern equipment (GS=-1.4) was not met. However, patient rooms were perceived to be comfortable and to accord sufficient privacy (GS=0.0).

The principal components method of extraction was done to determine variables (component(s)) which accounted for the greatest variation in perceived quality of service tangibility. The results of analysis are shown in the Table 4.4.
Table 0.4: Principal component analysis for tangibility

<table>
<thead>
<tr>
<th>Tangibility</th>
<th>Initial Eigen values</th>
<th>Total Variance (%)</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pleasant and visually appealing physical facilities</td>
<td>1.366</td>
<td>34.154</td>
<td>34.154</td>
</tr>
<tr>
<td>Well maintained and modern equipment</td>
<td>1.085</td>
<td>27.119</td>
<td>61.274</td>
</tr>
<tr>
<td>Comfortable patient rooms with sufficient privacy</td>
<td>.837</td>
<td>20.935</td>
<td>82.209</td>
</tr>
<tr>
<td>Clean and well groomed staff</td>
<td>.712</td>
<td>17.791</td>
<td>100.000</td>
</tr>
</tbody>
</table>

The four service tangibility variables were entered into SPSS software. The PCA technique was used to extract the four variables using un-rotated factor solution based on their initial Eigen values and percentage of variance explained by the variables. The analysis used perceived customer scores. Result of the analysis indicated that pleasantness and visual appearance of physical facilities and availability of well-maintained and modern equipment were the two main aspects of tangibility which explained 61.2% of the customer perception on tangibility of the services.

Key informants revealed that investment on tangibility of the services such as expansion and renovation of physical buildings and acquisition of modern equipment are key aspects which influence quality perception of customers toward the facility. The following statement from key informant interview emphasizes the role of tangibles in customer satisfaction:

“...Patients value privacy during treatment. Health facilities in this county don’t have adequate investment to assure patients privacy such as adequate beds and consulting rooms...”

4.4.2 Reliability of Services
Perceived quality of service reliability was measured using perceived quality gap score. The presence of a positive gap score means that quality expectation (s) was met
or exceeded and a negative score implies that the quality expectation(s) was not met.

The results of analysis are shown in Table 4.5.

Table 0.5: Quality Perceptions on Reliability

<table>
<thead>
<tr>
<th>Reliability</th>
<th>Expectation Score (E)</th>
<th>Perception Score (P)</th>
<th>Gap Score (P-E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospitals should perform services and procedures correctly the first time without mistakes and or errors</td>
<td>4.8</td>
<td>2.1</td>
<td>-2.7</td>
</tr>
<tr>
<td>Hospitals should provide services within the time promised in the service delivery charter</td>
<td>4.8</td>
<td>2.8</td>
<td>-2.0</td>
</tr>
<tr>
<td>Hospitals should submit legible patient reports, documents and information and without errors</td>
<td>4.8</td>
<td>2.6</td>
<td>-2.2</td>
</tr>
<tr>
<td>When a patient has a problem, the staff should show sincere interest to solve it</td>
<td>4.9</td>
<td>2.5</td>
<td>-2.4</td>
</tr>
<tr>
<td>Doctors/nurses should explain health conditions, diagnosis and treatment in a clear and understandable way</td>
<td>4.9</td>
<td>2.3</td>
<td>-2.6</td>
</tr>
<tr>
<td><strong>Mean Score</strong></td>
<td><strong>4.9</strong></td>
<td><strong>2.5</strong></td>
<td><strong>-2.4</strong></td>
</tr>
</tbody>
</table>

The reliability quality gap score for each of the five variables studied was computed by subtracting perception score from the expectation score in which the score computed for the variables represent the average score for all the study respondents. Mean score was calculated by obtaining the average scores. Results of analysis showed quality expectation for the reliability of services was not met (GS=-2.4). The highest quality perception gap score was on performance of services and procedures correctly the first time without mistakes (GS=-2.7). Expectation for provision of services within the time promised in the service delivery charter was also not met (GS=-2.0).
The principal components method of extraction was done to determine variables (component(s)) which accounted for the greatest variation in perceived quality of service reliability. The results of analysis are shown in the Table 4.6.

Table 0.6: Principal component analysis results for reliability

<table>
<thead>
<tr>
<th>Reliability</th>
<th>Initial Eigenvalues Total</th>
<th>Variance (%)</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correct performance of services a first time without mistakes and or errors</td>
<td>2.794</td>
<td>55.887</td>
<td>55.887</td>
</tr>
<tr>
<td>Provision of services within the time indicated in the service delivery charter</td>
<td>.743</td>
<td>14.862</td>
<td>70.749</td>
</tr>
<tr>
<td>Submission of legible and accurate patient documents and information without errors</td>
<td>.591</td>
<td>11.818</td>
<td>82.567</td>
</tr>
<tr>
<td>Staff sincerity to solve patient problems</td>
<td>.498</td>
<td>9.965</td>
<td>92.532</td>
</tr>
<tr>
<td>Staff ability to communicate health issues such as diagnosis in a clear and understandable way</td>
<td>.373</td>
<td>7.468</td>
<td>100.000</td>
</tr>
</tbody>
</table>

The five service reliability variables were entered into SPSS software. The PCA technique was used to extract the five variables using un-rotated factor solution based on their initial Eigen values and percentage of variance explained by the variables. The analysis used perceived customer scores. Result of the analysis showed that performance of services and procedures correctly the first time without mistakes and or errors was the single most factors which explained 55.9% of the patient perception on quality of services in regard to their reliability.

Qualitative findings revealed increasing good will and commitment to improve reliability of services and enhance positive customer experiences during service delivery:
“...You find that due to poor staffing norms and inadequacy of facilities, there are long queues which result in more waiting time than that shown in the service charter. However, progress has been made after devolution and I expect in the near future to be able to provide services in a timely manner...”

### 4.4.3 Responsiveness of the services

Perceived quality of service responsiveness was measured using perceived quality gap score. The presence of a positive gap score means that quality expectation(s) was met or exceeded and a negative score implies that the quality expectation(s) was not met.

The results of analysis are shown in Table 4.7.

#### Table 4.7: Quality perception on responsiveness of services

<table>
<thead>
<tr>
<th>Responsiveness</th>
<th>Expectation Score (E)</th>
<th>Perception Score (P)</th>
<th>Gap Score (P-E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>At the hospital, staff should inform patients exactly when service will run</td>
<td>4.8</td>
<td>2.9</td>
<td>-1.9</td>
</tr>
<tr>
<td>Staff should be willing to help patients</td>
<td>4.9</td>
<td>2.7</td>
<td>-2.2</td>
</tr>
<tr>
<td>Shortness of admission waiting time</td>
<td>4.9</td>
<td>2.8</td>
<td>-2.1</td>
</tr>
<tr>
<td>Shortness of daily waiting time</td>
<td>4.9</td>
<td>3.1</td>
<td>-1.8</td>
</tr>
<tr>
<td><strong>Mean Score</strong></td>
<td><strong>4.8</strong></td>
<td><strong>2.9</strong></td>
<td><strong>-2.0</strong></td>
</tr>
</tbody>
</table>

The responsiveness quality gap score for each of the four variables studied was computed by subtracting perception score from the expectation score in which the score computed for the variables represent the average score for all the study respondents. Mean score was calculated by obtaining the average scores. Results of analysis showed quality expectations for the responsiveness of the services were not met (GS=-2.0). The highest perception gap was on willingness of staff to help patients...
when needed (GS=-2.2). In relation to timeliness of services, the waiting time for admission in the hospital (GP=-2.1) and the waiting time for daily services at the hospital were perceived to be longer than expected (GS=-1.8).

The principal components method of extraction was done to determine variables (components) which accounted for the greatest variation in perceived quality service responsiveness. The results of analysis are shown in the Table 4.8.

**Table 4.8: Principal component analysis results for responsiveness of services**

<table>
<thead>
<tr>
<th>Responsiveness</th>
<th>Initial Eigenvalues</th>
<th>Variance (%)</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shortness of waiting time for daily services</td>
<td>2.283</td>
<td>57.076</td>
<td>57.076</td>
</tr>
<tr>
<td>Willingness of staff to help patients</td>
<td>.849</td>
<td>21.219</td>
<td>78.296</td>
</tr>
<tr>
<td>Informing staff when service will run or are available</td>
<td>.641</td>
<td>16.021</td>
<td>94.317</td>
</tr>
<tr>
<td>Shortness of Waiting time for admission</td>
<td>.227</td>
<td>5.683</td>
<td>100.000</td>
</tr>
</tbody>
</table>

The four service responsiveness variables were entered into SPSS software. The PCA technique was used to extract the variables using un-rotated factor solution based on their initial eigenvalues and percentage of variance explained by the variables. The analysis used perceived customer scores were used. Result of the analysis showed that length of waiting time for daily services was the single most factor which explained 57.1% of the patients’ perceived quality of service in regard to their responsiveness.

Qualitative results indicated that services were not sufficiently responsive to clients’ needs as explained in the following statement drawn from key informant interviews:

“…Some of the days I have many customers especially during clinic days which results to long queues and more waiting time than usual…”
“...In some instances you find it difficult to give every patient the time they need because the staff are busy attending to patients...”

### 4.4.4 Assurance of Services

Perceived quality of service assurance was measured using perceived quality gap score. The presence of a positive gap score means that quality expectation(s) was met or exceeded and a negative score implies that the quality expectation(s) was not met.

The results of analysis are shown in Table 4.9.

#### Table 0.9: Quality perception on assurance of services

<table>
<thead>
<tr>
<th>Assurance</th>
<th>Expectation Score (E)</th>
<th>Perception Score (P)</th>
<th>Gap Score (P-E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>At the Hospital, staff should be polite and courteous to patients</td>
<td>4.9</td>
<td>3.8</td>
<td>-1.1</td>
</tr>
<tr>
<td>Health staff should be competent to handle patient problems well</td>
<td>4.9</td>
<td>2.9</td>
<td>-1.9</td>
</tr>
<tr>
<td>Patients should feel confident and secure when receiving treatment</td>
<td>4.9</td>
<td>2.9</td>
<td>-2.0</td>
</tr>
<tr>
<td>Hospitals should provide adequate privacy during treatment</td>
<td>4.9</td>
<td>2.9</td>
<td>-2.0</td>
</tr>
<tr>
<td>Health staff should have good knowledge to answer patient questions correctly</td>
<td>4.9</td>
<td>2.6</td>
<td>-2.3</td>
</tr>
</tbody>
</table>

The assurance quality gap score for each of the five variables studied was computed by subtracting perception score from the expectation score in which the score computed for the variables represent the average score for all the study respondents. Mean score was calculated by obtaining the average scores. Results of analysis showed quality expectation for the assurance of the services was not met (GS=−1.9). The highest quality perception gap was on ability of staff to answer patient questions.
correctly (GS=-2.3). The least quality perception gap was on politeness and courteousness of staff to patients (GS=-1.1).

The principal components method of extraction was done to determine variables (component(s)) which accounted for the greatest variation in perceived quality of service assurance. The results of analysis are shown in the Table 4.10.

Table 4.10: Principal component analysis results for assurance of services

<table>
<thead>
<tr>
<th>Assurance</th>
<th>Initial Eigenvalues</th>
<th>Variance (%)</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confidence and security when receiving treatment</td>
<td>2.228</td>
<td>44.557</td>
<td>44.557</td>
</tr>
<tr>
<td>Staff knowledge to answer patient questions correctly</td>
<td>.989</td>
<td>19.790</td>
<td>64.347</td>
</tr>
<tr>
<td>Politeness and courteous of staff to patients</td>
<td>.774</td>
<td>15.490</td>
<td>79.837</td>
</tr>
<tr>
<td>Adequate of privacy during treatment</td>
<td>.582</td>
<td>11.647</td>
<td>91.484</td>
</tr>
<tr>
<td>Staff competence to handle patient problems</td>
<td>.426</td>
<td>8.516</td>
<td>100.000</td>
</tr>
</tbody>
</table>

The five service assurance variables were entered into SPSS software. The PCA technique was used to extract the variables using un-rotated factor solution based on their initial eigenvalues and percentage of variance explained by the variables. The analysis used perceived customer scores were used. Result of the analysis indicated that patient confidence with the services was the main aspect of service delivery which explained 44.5% of patient perceptions on assurance of services.

4.4.5 Empathy
Perceived quality of service empathy was measured using perceived quality gap score. The presence of a positive gap score means that quality expectation (s) was met or
exceeded and a negative score implies that the quality expectation(s) was not met. The results of analysis are shown in Table 4.11.

Table 0.11: Quality perception on empathy of services

<table>
<thead>
<tr>
<th>Empathy</th>
<th>Expectation Score (E)</th>
<th>Perception Score (P)</th>
<th>Gap Score (P-E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospitals should operate at times suitable to patients</td>
<td>4.9</td>
<td>2.6</td>
<td>-2.3</td>
</tr>
<tr>
<td>Doctors and nurses should listen to you attentively</td>
<td>4.9</td>
<td>2.4</td>
<td>-2.5</td>
</tr>
<tr>
<td>Hospitals should have people to attend and assist patients who need help</td>
<td>4.9</td>
<td>2.5</td>
<td>-2.4</td>
</tr>
<tr>
<td>Staff should be able to understand specific needs of patients</td>
<td>4.9</td>
<td>2.6</td>
<td>-2.4</td>
</tr>
<tr>
<td>Doctors/nurses should spend enough time with each patient</td>
<td>4.9</td>
<td>2.6</td>
<td>-2.3</td>
</tr>
<tr>
<td><strong>Mean Score</strong></td>
<td><strong>4.9</strong></td>
<td><strong>2.5</strong></td>
<td><strong>-2.4</strong></td>
</tr>
</tbody>
</table>

The empathy quality gap score for each of the five variables studied was computed by subtracting perception score from the expectation score in which the score computed for the variables represent the average score for all the study respondents. Mean score was calculated by obtaining the average scores. Results of analysis showed that quality expectation for empathy was not met (GS=-2.4). The highest quality perception gap was ability of service providers to listen to patients issues attentively (GS=-2.5). Patient expectation that service providers should spend enough time with the patient during service delivery was also not met (GS=-2.3).
The principal components method of extraction was done to determine variables (component(s)) which accounted for the greatest variation in perceived quality of service empathy. The results of analysis are shown in the Table 4.12.

**Table 0.12: Principal component analysis results for empathy of services**

<table>
<thead>
<tr>
<th>Empathy</th>
<th>Total</th>
<th>Variance (%)</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctors/nurses spend enough time with each patient</td>
<td>2.479</td>
<td>49.583</td>
<td>49.583</td>
</tr>
<tr>
<td>This hospital has people to attend and assist patients who need help</td>
<td>.883</td>
<td>17.663</td>
<td>67.246</td>
</tr>
<tr>
<td>The hospital operates at times suitable to patients</td>
<td>.646</td>
<td>12.920</td>
<td>80.166</td>
</tr>
<tr>
<td>Doctors and nurses listen to me and my issues attentively</td>
<td>.596</td>
<td>11.923</td>
<td>92.090</td>
</tr>
<tr>
<td>Operation at times suitable times to patients</td>
<td>.396</td>
<td>7.910</td>
<td>100.000</td>
</tr>
</tbody>
</table>

The five service empathy variables were entered into SPSS software. The PCA technique was used to extract the variables using un-rotated factor solution based on their initial eigenvalues and percentage of variance explained by the variables. The analysis used perceived customer scores were used. Result of the analysis indicated that the ability of doctors/nurses to spend enough time with each patient was the main aspect of service delivery which explains 49.5% of the patients’ perception on quality of services in regard to empathy of the staff towards patients.

Qualitative results indicated lack of adequate service empathy as expounded in the following statements from key informant interviews:

“...The hospital doesn’t have enough staff to be able to help all the patients who need support to access services in different points within the hospital. There is
scarcity of supportive facilities and trained personnel for that purpose. However, we have mechanisms for helping the critically ill patients…”

“…Scarcity of trained personnel means that our customer can not have adequate encounter with the professional personnel especially the consultants who are few…”

4.4.6 Overall Service Quality Perception
In determining the overall service quality perception for the hospital, a mean aggregate of the perceived gap quality scope was calculated. The results of the analysis are shown in Table 4.13.

Table 4.13: Perceived quality of services

<table>
<thead>
<tr>
<th>Quality Dimension</th>
<th>Expectation Score</th>
<th>Perception Score</th>
<th>Gap Score (P-E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tangibility</td>
<td>4.8</td>
<td>3.6</td>
<td>-1.2</td>
</tr>
<tr>
<td>Reliability</td>
<td>4.9</td>
<td>3.2</td>
<td>-1.7</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>4.8</td>
<td>2.9</td>
<td>-1.9</td>
</tr>
<tr>
<td>Assurance</td>
<td>4.9</td>
<td>4.1</td>
<td>-0.8</td>
</tr>
<tr>
<td>Empathy</td>
<td>4.9</td>
<td>4.3</td>
<td>-0.6</td>
</tr>
<tr>
<td><strong>Overall Quality Perception Score</strong></td>
<td><strong>4.9</strong></td>
<td><strong>3.6</strong></td>
<td><strong>-1.3</strong></td>
</tr>
</tbody>
</table>

Overall, there was a negative gap score for the five service quality dimensions which implied that patients’ expectation for the perceived quality of services was not met (GS=-1.3).
4.5 Health system factors predicting perceived quality of services

All the 389 observations in the data set were used in the analysis. A linear regression model was used to establish factors predicting satisfaction with perceived quality of services. The likelihood ratio F-statistic of 14.10 with a p-value of 0.0000 meant that the regression model as a whole fits significantly better than a model with no predictors. The results of the analysis are shown in Table 4.14.
In regard to staff competence in handling patient problems, the rank indicator variables for slightly agree and strongly agree had coefficient which were statistically
significant at 5 percent level. This means that a rank of slightly agree on staff competence versus that of slightly disagree, increases the log odds of satisfaction by 0.342 while a rank of strongly agree on staff competence versus that of slightly disagree increases the log odds of satisfaction by 0.747. In regard to staff friendliness, the coefficient of neither agree nor disagree was statistically significant at 5 percent level. This means that a rank of neither agree nor disagree on health staff friendliness versus that of slightly disagree, decreases the log odds of satisfaction by 0.164.

In regard to availability of prescribed drugs in the hospital pharmacy, the rank indicator variable for strongly agree had a coefficient which was statistically significant at 5 percent level. This means that a rank of strongly agree on availability of drugs in the hospital pharmacy versus that of slightly disagree, increases the log odds of satisfaction by 0.208. In regard to patient privacy during treatment, the rank indicator variable for slightly agree was statistically significant at 5 percent level. This means that a rank of slightly agree on provision of patient privacy versus that of slightly disagree increases the log odds of satisfaction by 0.418.

In regard to shortness of patient waiting time, the rank indicator variable for strongly disagree, neither agree nor disagree, slightly agree and strongly agree had a coefficient which were statistically significant at 5 percent level. This means that a rank of strongly disagree on shortness of waiting time versus that of slightly disagree decreases the log odds of satisfaction by 0.486 while a rank of neither agree nor disagree on shortness of waiting time versus that of slightly disagree decreases the log odds of satisfaction by 0.271. A rank of slightly agree on shortness of waiting time
versus that of slightly disagree increases the log odds of satisfaction by 0.489 while a rank of strongly agree on shortness of waiting time versus that of slightly disagree increases the log odds of satisfaction by 0.672.

The model revealed that staff competence in handling patient problems, health staff friendliness, availability of prescribed drugs in the hospital pharmacy, patient privacy during treatment and patient waiting time are predictors of patient satisfaction with perceived quality of services. However, the model revealed that performing lab tests within the hospital and cost of health services were not predictors of patient satisfaction level. Therefore, the null hypothesis that health system factors do not predict patient satisfaction with perceived quality of services was rejected.
CHAPTER FIVE: DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Discussion

5.1.1 Patient Satisfaction
Patient satisfaction measurement provides an important parameter for assessing quality of healthcare indicators which are not well reflected by other service statistics such as patient data, waiting times and consultation times. The study revealed a satisfaction index of 56% which implied that about half of the patients were not satisfied with the perceived quality of the services. A study conducted by Nezenega et al. (2013) in Southern Ethiopia to assess patient satisfaction with tuberculosis treatment revealed a satisfaction index of 90% which was higher than the 56% reported in this study. The difference in the satisfaction index can be explained by difference in study area context.

Patient satisfaction level influences patients’ decisions on health service utilization, future recommendations and choice of service delivery points. Dissatisfied patients bypassed a facility for another one perceived to offer quality services irrespective of the distance (Nezenega et al., 2013). Similar to a study by Kumar et al., (2008), patients who were dissatisfied with the quality of services had the tendency to spread a bad word of mouth to other potential users which tainted the public image of the facility. Few patients were willing to launch complaints to the facility management or seek redress for fear of discrimination by the service providers. The study established that establishing patients’ satisfaction and experiences is important step in improving perceived quality of services and enhancing service utilization rates at the facility level.
5.1.2 Perceived Quality of services
Perceived quality of health services influence patients’ satisfaction with service delivery. Patient perception of quality is the perception of patient needs and expectations being met (Hu et al., 2011). The study reported improvement in physical facilities and equipment in the facility. This was attributed to the benefits of devolved health system of governance which had led to increased investment in the hospital infrastructure and development. For instance, County governments including that of Nyandarua have signed agreement for modern medical equipment and facilities for treatment which has led to improvement in quality and range of services provided. However, value for such enormous investment can be attested by their transition to efficient and effective service delivery which can be measured by customer satisfaction levels as well as treatment outcomes.

Visual appearance and modernization of available infrastructure and facilities such as building and equipment had been found to impact perceptions of customers on their expectations for services available in a health facility (Wanjau and Wangari, 2012). Well maintained and visually appearing facilities are presumed to be a mark of quality. Proper maintenance and use of modern technology influences choices of customers for their preferred service providers (Hutchinson et al., 2011).

Lack of adequate comfort and privacy, which is a key aspect of health service delivery, in patient rooms in the hospital impacts negatively service quality perceptions. Lack of sound proof consulting rooms and use of open wards resulted in patients feeling uncomfortable with the privacy and hence confidentiality of their information. This finding was reinforced by Hu et al. (2011) who found patients
privacy and confidentiality of patients’ information to influence perceived quality of services and patient satisfaction.

Many patients felt that the waiting time for the services was unnecessarily long. Timeliness of services was important especially for patients who were critically ill, in pain or had other obligations to undertake after being attended (Halwindi et al., 2013). Longer waiting time, (i.e. longer time than those indicated in the service delivery charter) experienced when seeking services in the facility was shown to negatively impact on the perceived quality of services. Waiting in the facility have been reported to be unnecessarily long and longer than the time limits indicated in the service delivery charter. Engaging in other activities other than the professional duties such as taking to a friend for a long time over the phone and or in the office, leave the office for refreshment etc. during working hours is perceived to be the cause for longer waiting time and inefficiency in service delivery. This has been linked to poor staff and service delivery supervision which results into longer waiting times (Gopal and Bedi (2014). Provision of quality services requires staff to prioritize and be sensitive to clients’ needs whether implied or stated.

Similar to Dang et al. (2013), patients also valued correct medical interventions and treatment which resulted in positive health outcomes such as fast recovery, reduction of pain and absence of medical errors. Poor treatment options and outcomes taint the trust of a facility and its public image. Health service quality is highly judged based on the treatment outcomes (Nezenega et al., 2013). The purpose of seeking services is to recover from a certain condition of situation. Achieving such an objective leads into positive ratings on the perceived quality of the services available in the facility.
Health care providers are expected to be sincere in helping patients solve their problems. However, in many instances, staff not responsive enough in identifying and attending to patients. This was coupled by poor provider-client communication especially explanation of health conditions, diagnosis and treatment in a clear and understandable way. Staff attitude, commitment and sensitivity to patients’ issues is essential for patients to develop effective and friendly relationship with service providers (Dang et al., 2013). Patient satisfaction with the perceived quality of service has been linked to the subjective feeling of the customers in relation to their experiences during production and consumption of the service products (Argentero et al., 2008). Explaining and communicating provider intentions and interventional outcomes such as explaining diagnosis and treatment plans, their purposes and outcomes has a positive effect on customer perceptions. This requires service providers to create a good rapport that makes patients feel comfortable and confident with the process.

Competency and experience of staff in handling patient problems and issues has a significant impact on quality perceptions. Knowledge and expertise in offering client focused services and the ability to build adequate trust in a patient was important for patients to demand services. Staff competence was identified as important in attending to patient issues, answer patient questions correctly and positive health outcomes. Provider professionalism of staff in dealing with the patients, their ability to handle complaints and the skills they have towards their job constitute key parameters influencing quality of health service delivery (Hutchinson et al., 2011). The study
indicated the need for refresher trainings and sensitization on emerging issues and patients’ management to enable them manage changes in health care delivery.

Patient confidence on the services was also useful in improving service quality perceptions and their comfort when receiving services. There were privacy concerns due to lack of adequate measures such as well partitioned wards. In patients were reported to at times share beds which deluded their privacy and exposed them to other communicable diseases and ailments while in the hospital (Hu et al., 2011). This was similar to findings by Hu et al. (2011) who found privacy concerns to cause many patients especially those with chronic illness and sexual ailment to bypass some facilities for others. Patients feel confident where the quality of services meets their expectations.

Empathy was also an important aspect of service delivery which influenced their perceptions on quality of services. The facility had insufficient mechanisms for ensuring its staff put themselves into the place of patients and understanding their needs to be able to help them. For instance, service providers were perceived not to listen to patients issues attentively and not to be able spend enough time with the patient during service delivery which resulted to patients’ dissatisfaction. A study by Nwankwo et al. (2010) reported that service providers in public health facilities do not spend adequate time to examine and understand client needs for appropriate treatment. This lead to patients feeling that the staff were not readily available, committed and willing to assist patients who were in need such as critically ill in outpatient care. Spending adequate time to examine the patients has been linked to
ability of providers to provision of appropriate medical interventions and high quality health care intervention outcomes (Kumar et al., 2008).

5.1.3 Health System Factors
Factors within the formal health system influence patient satisfaction perceived quality of health services provided (Nabbuye and Makumbi, 2011). Length of waiting time was an important aspect which influenced patient satisfaction. The results were similar with those of Hutchinson et al., (2011) which associated patient satisfaction with shorter waiting time in public facilities and consultation duration in private facilities. Patients prefer facilities that are prompt in service delivery within the service charter. Time spent when seeking health services is an important aspect which influences patients’ decisions on choice service delivery facilities.

Proper communication, patient respect and client-provider relationship boost patients’ confidence with the services offered which improves the perceived quality of service delivery and patient satisfaction (Peprah, 2013). Confidence in service delivery is influenced by the trust in the competence of the staff, their ability to understand patient needs and handle patients’ problems effectively. Knowledgeable providers are important in providing highly valued treatment therapies associated with good health outcomes (Nabbuye and Makumbi, 2011). Knowledgeable providers increase the confidence of patients when consuming services.

Patient privacy is a primary concern for patients when seeking health care. Patients trust health professionals with their problems and conditions and therefore expect the staff to protect the trust and confidence. Quality of care has also been associated with the rapport and interpersonal quality of health professionals (Aljumah et al., 2014).
Friendliness of staff encourages patients to be free, open and co-operative which influences their treatment outcomes and hence patient satisfaction. Physical and infrastructural investments in the health facility have also been shown to enhance perceived service quality (Tateke et al., 2012). Quality of infrastructure and infrastructure affects the subjective perception of patients’ perception regarding the quality of the services provided. Physical appearance and evidence of improved infrastructure such acquisition of new equipment improves patients perceptions towards the facility.

5.2 Conclusions

5.2.1 Satisfaction Index
Results revealed an average patient satisfaction (56%) with perceived quality of services. Patient satisfaction rated lowest on empathy and reliability of the services offered.

5.2.2 Service Quality Perceptions
Results indicated a negative quality perception towards the health services. The facility was unable to meet patients’ expectations for service reliability, responsiveness and empathy of the services. The perceived quality ability of the hospital was significantly affected by the longer waiting times, inadequate attention in identifying and addressing unique patient needs and lack of sufficient staff empathy in attending to patient needs.

5.2.3 Health System Factors
Results showed that staff competence in handling patient problems (p=0.045), health staff friendliness (0.042), availability of prescribed drugs in the hospital pharmacy
(0.020), patient privacy during treatment (p=0.009) and patient waiting time (p=0.022) were predictors of patient satisfaction levels.

5.3 Recommendations
The study recommends that the facility in collaboration with all the stakeholders such as Ministry of health at County and National level do the following:

1. Improve reliability, empathy and responsiveness of services by ensuring service delivery adheres to the service charter requirements and continual identification of patients' needs for improved patient satisfaction;

2. Scale up quality improvement interventions through provision of modern medical equipment, expansion of facilities for efficient and effective service delivery, professional (competence) development, reduction in waiting times and improved patient-provider relationships;

3. Scale up investment in health system capacity to deliver quality patient centered services through employment of adequate and well trained staff to enhance operational capacity (competence) and efficiency (waiting time), provision of adequate drugs and enhancing privacy of service delivery.

5.4 Recommendations for Further Study
The study recommends further studies on the following:

i) Comparative study on perceived quality of services in private and public facilities
ii) Effect of the Kenya Quality Model of Health (KQMH) implementation on patient satisfaction with perceived quality of services in the piloted facilities.

iii) Study to examine the role of staff friendliness on patient satisfaction with perceived quality of service.
REFERENCES


MOH (2014). *Nyandarua Health Services at a glance*. Ministry of Health, Nyandarua County.


APPENDICES

Appendix 1: Consent Form

Researchers’ Statement

Goodmorning/afternoon, my name is Catherine Syombua Katuti. I am a Masters student at Kenyatta University. Today, I am here to carry out a study on "To assess patient level of satisfaction with perceived health services quality in Nyandarua County Referral Hospital". This form will give you information you need, so that you can make a decision on whether to participate or not to in the study. There are no wrong or right answers. You will be given time to consider if you would like to be in the study. Please read the form well and ask where you don’t understand. Please be honest and truthful in answering the questions. I assure you that the information you give will be totally confidential and you will not be required to identify yourself by name.

Purpose

The information obtained from this study will be used to inform policy on quality of health services and patient satisfaction in Nyandarua County hospital, Kenya.

Procedure:

You will be interviewed using a researcher-administered questionnaire (You will be assisted in case you are unable to read or write or understand any of the questions asked). The interview will last for about half an hour and participants will be required to give answers to all the questions. Participants will have the opportunity to make suggestions and give information on how to improve quality of health services in Nyandarua County.
Risks

To protect people from learning your participation in this study, all information you will give us will be kept confidential within our research team. All the data will be stored in a password protected computer.

Benefits

There is no financial compensation or other personal benefits accruing from participating in the study. However your participation and/or answers to the questions may provide useful insights into quality of health services in your County.

Confidentiality and privacy

No names will be used on any of the reports from the study. All the respondents will be given different identification numbers and the information relating to each participant will be strictly confidential, available only to the study team. Notes and any other recordings done will be destroyed once summary is prepared. The data collected from the field will be kept in a lockable box for which only the principal researcher will have access.

Voluntary participation

Your participation is voluntary, and you may therefore refuse to answer any question or stop the interview at any time without suffering any consequences.
Instructions:

When you sign below, it shows that you have agreed to participate in the study. If you do not understand any part of the information that has been read to you/you have read, be sure to ask questions.

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I wish to take part in the study entitled “To assess patient level of satisfaction with perceived health services quality in Nyandarua County Referral Hospital”. I understand that I may at any time during the study withdraw my consent without any consequences. I have understood the information given in this sheet and I give my consent to be interviewed.

Respondent number ……………Signature……………………Date………
Name of the researcher: ………………………Signature……………Date………..

Do no sign until you have understood all that is expected or required.

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CONTACTS

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Department of Health Management and Informatics, Kenyatta University
P.O BOX 43844-00100, Nairobi
Tel: +254-020-8710901-19
Email: otienogo@gmail.com

Dr. Julius Korir, Supervisor,
Department of Economic Theory, Kenyatta University
P.O BOX 43844-00100, Nairobi
Tel: +254-020-8710901-19
Email: jkorir@gmail.com
Appendix 2: Study Questionnaire

My name is Catherine Syombua Katuti, Master of Health Information Management student at Kenyatta University. I am carrying out a study entitled “patient level of satisfaction with perceived health services quality in Nyandarua County Referral Hospital”. The purpose of the study is to assess the perceived quality of health services in Nyandarua County and the extent to which patients’ are satisfied with the quality of the services provided. The information obtained and the resultant recommendations will assist hospitals improve their service quality in line with clients’ needs and expectations. Participation in this study is absolutely voluntary. The information in this questionnaire shall not be used for any other purposes other than for this study. You are not required to provide your name, and will therefore remain anonymous. The results of the study will be used to help answer unanswered questions as far as records management and their availability in the hospitals is concerned. It would be highly appreciated if you could answer all questions accurately. Please give your honest and sincere opinion.

GUIDE FOR COMPLETING THE QUESTIONNAIRE

1. Please answer all questions; do not skip any questions.
2. This questionnaire will only take 15 minutes to complete.

PART A: IDENTIFICATION PANEL

Name of hospital_________________________ Department_________________________
Sub-county__________________________

PART B: BACKGROUND CHARACTERISTICS

Guide for answering questions: Please answer questions by filling any blank space or making a tick (✓) next to the correct answer and explain where necessary.

1. What is your age? _____________yrs
4. What is your average monthly income in Kenyan Shillings?
   [5] Over 50,000

PART B: CUSTOMER EXPECTATIONS

5. The following questions will measure your expectations for the quality of service provided in this health facility. Please answer by circling the correct response to each of the question in the table below using a scale of 1 to 5 where 1 means “strongly disagree”, 2 means “slightly disagree”, 3 means neither “agree nor disagree”, 4 means “slightly agree” and 5 means “strongly agree”.

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<td>2. Physical facilities such as building should be visually appealing and pleasant</td>
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<td>3. Staff in hospitals should be clean and well groomed</td>
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<td>4. Patient rooms should be comfortable enough and accord privacy</td>
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<td><strong>Reliability</strong></td>
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<td>5. Hospitals should perform services and procedures correctly the first time without mistakes and or errors</td>
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<td>6. Hospitals should provide services within the time promised in the service delivery charter</td>
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<td>7. Hospitals should submit legible patient reports, documents and information and without errors</td>
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<td>8. When a patient has a problem, the staff should show sincere interest to solve it</td>
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<td>Doctors/nurses should explain health conditions, diagnosis and treatment in a clear and understandable way</td>
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<td><strong>Responsiveness</strong></td>
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<td>10</td>
<td>At the hospital, staff should inform patients exactly when service will run</td>
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<td>11</td>
<td>Staff should be willing to help patients</td>
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<td>12</td>
<td>Waiting time for admission in the hospital should be short</td>
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<td>13</td>
<td>Waiting time for daily services at the hospital should be short</td>
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<td><strong>Assurance</strong></td>
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<td>14</td>
<td>At the Hospital, staff should be polite and courteous to patients</td>
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<td>15</td>
<td>Health staff should be competent to handle patient problems well</td>
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<td>16</td>
<td>Patients should feel confident and secure when receiving treatment</td>
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<td>17</td>
<td>Hospitals should provide adequate privacy during treatment</td>
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<td>18</td>
<td>Health staff should have good knowledge to answer patient questions correctly</td>
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<td><strong>Empathy</strong></td>
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<td>19</td>
<td>Hospitals should operate at times suitable to patients</td>
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<td>20</td>
<td>Doctors and nurses should listen to you attentively</td>
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<td>21</td>
<td>Hospitals should have people to attend and assist patients who need help</td>
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<td>22</td>
<td>Staff should be able to understand specific needs of patients</td>
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<td>23</td>
<td>Doctors/nurses should spend enough time with each patient</td>
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PART C: CUSTOMER PERCEPTIONS

6. The following questions will measure your perception on the quality of service provided in this health facility. Please answer by circling the correct response to each of the question in the table below using a scale of 1 to 5 where 1 means “strongly disagree”, 2 means “slightly disagree”, 3 means neither “agree nor disagree”, 4 means “slightly agree” and 5 means “strongly agree”.

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<td><strong>Tangibles</strong></td>
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<td>1  This hospital has well maintained and modern equipment</td>
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<td>2  Physical facilities in this hospital such as building are visually appealing and pleasant</td>
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<td>3  Staff in this hospital have clean and well groomed</td>
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<td>4  Patient rooms in this hospital are comfortable enough and accord privacy</td>
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<td>5  This hospital performs services and procedures correctly the first time without mistakes and or errors</td>
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<td>6  This hospital provides services within the time promised in the service delivery charter</td>
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<td>7  This hospital submits legible patient reports, documents and information and without errors</td>
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<td>8  In this hospital, when a patient has a problem, the staff show sincere interest to solve it</td>
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<td>9  Doctors/nurses explains health conditions, diagnosis and treatment in a clear and understandable way</td>
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<td>10 At the hospital, staff inform patients exactly</td>
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PART D: HEALTH SYSTEM FACTORS

7. The section will ask you questions which relates to health services delivery. Using a scale of 1 to 5, where 1=Strongly Disagree, 2=Slightly Disagree, 3=Neither
Agree nor Disagree, 4=Slightly Agree and 5=strongly Agree, please rank each of the statement in the table below.

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<td>Staff are well trained to offer services</td>
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<td>Health staff are friendly</td>
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<td>Prescribed drugs are readily available in the hospital pharmacy</td>
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<td>Lab tests are done within the hospital</td>
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<td>Hospital provides privacy during treatment</td>
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<td>Health Service charges are pocket friendly</td>
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<td>The staff are friendly to the patients</td>
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<td>The hospital maintains patient information confidentiality</td>
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<td>Patient waiting time is within the service delivery charter</td>
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8. From your own experience, are you satisfied with the quality of services provided at this facility?  

9. Would you recommend the services of this hospital to other people or friends?  

THANK YOU FOR YOUR TIME AND PARTICPATION
Appendix 3: Matrix for calculating of perceived quality score

<table>
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<tr>
<th>Dimension</th>
<th>Statement</th>
<th>Expectation Score</th>
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Appendix 4: Key Informant Guide

Part A: Identification Panel

Position/Qualification___________________________Sub-
County___________________________

Part B: Questions

1. In your own opinion, how would you rate patient’s satisfaction with the quality of health services provided in this County/facility? **Probe for:** existing statistics, tools used and trends

2. From experience, what are the major perceptions of clients towards the quality of services provided? What are the patients’ experiences and feedbacks? How has this affected hospital performance in terms of service utilization and income generation? **Prove for:** perceptions in terms of tangibles, responsiveness, assurance, empathy and reliability

3. In your own view, what are the factors influencing perceived quality of services and satisfaction levels of clients in this facility/county? What strategies are in place to deal with the mentioned issues in regard to service quality perceptions and patient satisfaction?

4. What are your key suggestions for improving quality of health services and clients’ satisfaction levels in this facility/county?
Appendix 5: Graduate School Approval

KENYATTA UNIVERSITY
GRADUATE SCHOOL

E-mail: dean-graduate@ku.ac.ke
Website: www.ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 8710901 Ext. 57530

Our Ref: P140/CTY/PT/24423/11                                      DATE: 13th June 2016

Director General,
National Commission for Science, Technology
& Innovation
P.O. Box 30623-00100,
NAIROBI

Dear Sir/Madam,

RE: RESEARCH AUTHORIZATION CATHERINE SYOMBUA KATUTI—REG. NO.
P140/CTY/PT/24423/11

I write to introduce Ms. Catherine Syombua Katuti who is a Postgraduate Student
of this University. She is registered for M.P.H degree programme in the
Department of Health Management & Informatics.

Ms. Katuti intends to conduct research for an M.P.H Proposal entitled, “Patient
Level of Satisfaction with Perceived Health Service Quality in Nyandarua County
Referral Hospital”.

Any assistance given will be highly appreciated.

Yours faithfully,

MRS. LUCY N. MBAABU
FOR: DEAN, GRADUATE SCHOOL
Appendix 6: Kenyatta University Ethics Review Approval

KENYATTA UNIVERSITY
ETHICS REVIEW COMMITTEE

Fax: 8711242/8711575
Email: kuerc.chairman@ku.ac.ke
           kuerc.secretary@ku.ac.ke
Website: www.ku.ac.ke

Our Ref: KU/R/COMM/51/814

Date: 6th October, 2016

Catherine Syombua Katuti
Kenyatta University
P.O. Box 43844 – 00100
NAIROBI

Dear Catherine

APPLICATION NUMBER PKU/570/1659 – “PATIENT LEVEL OF SATISFACTION WITH PERCEIVED HEALTH SERVICE QUALITY IN NYANDARUA COUNTY REFERRAL HOSPITAL”

1. IDENTIFICATION OF PROTOCOL
   The application before the committee is with a research topic “Patient Level of Satisfaction with Perceived Health Service Quality in Nyandarua County Referral Hospital” received on 25th August, 2016 and discussed on 27th September, 2016.

2. APPLICANT
   Catherine Syombua Katuti

3. SITE
   Nyandarua County, Kenya

4. DECISION
   The committee has considered the research protocol in accordance with the Kenyatta University Research Policy (section 7.2.1.3) and the Kenyatta University Ethics Review Committee Guidelines AND APPROVED that the research may proceed for a period of ONE year from 6th October, 2016.

5. ADVICE/CONDITIONS
   i. Progress reports are submitted to the KU-ERC every six months and a full report is submitted at the end of the study.
   ii. Serious and unexpected adverse events related to the conduct of the study are reported to this board immediately they occur.
   iii. Notify the Kenyatta University Ethics Committee of any amendments to the protocol.
   iv. Submit an electronic copy of the protocol to KUERC.

When replying, kindly quote the application number above.

If you accept the decision reached and advice and conditions given please sign in the space provided below and return to KU-ERC a copy of the letter.

DR. TITUS KAHIGA
CHAIRMAN ETHICS REVIEW COMMITTEE

Signature: ........................................ Dated this day of ....... 12 October...... 2016.

cc. Vice-Chancellor
    DVC-Research Innovation and Outreach
Appendix 7: County Authorization

REPUBLIC OF KENYA

COUNTY GOVERNMENT OF NYANDARUA
JM KARIUKI (OL’KALOU) COUNTY HOSPITAL

PHONE: +254 733 685 480
Email: olkhospdis@yahoo.com

P.O. Box 221-20303
Ol’Kalou

Ref No: OLK/GEN/VOL4/43
Date: 23/2/2016

To
Catherine Syombua
Po Box 751
Olkalou

Dear Madam

RE: STUDY ON PATIENT LEVEL OF SATISFACTION WITH PERCEIVED HEALTH SERVICE

The management has received your request to carry out the above study and has no objection. We wish you well and we hope you will furnish us with your results and recommendations.

Thanks in advance.

Dr. Macaria
Medical Superintendent
JM Kariuki Hospital
Appendix 8: NACOSTI Approval

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471,
2241349, 3310571, 2219420
Fax: +254-20-318245, 318249
Email: dp@nacosti.go.ke
Website: www.nacosti.go.ke

when replying please quote

Ref: No NACOSTI/P/16/88017/14926 Date: 16th December, 2016

Catherine Syombua Katuti
Kenyatta University
P.O. Box 43844-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on “Patient level of satisfaction with perceived health service quality in Nyandarua County Referral Hospital,” I am pleased to inform you that you have been authorized to undertake research in Nyandarua County for the period ending 6th December, 2017.

You are advised to report to the County Commissioner, the County Director of Education and the County Director of Health Services, Nyandarua County before embarking on the research project.

On completion of the research, you are expected to submit two hard copies and one soft copy in pdf of the research report/thesis to our office.

BONIFACE WANYAMA
FOR: DIRECTOR-GENERAL/CEO

Copy to:
The County Commissioner
Nyandarua County.

The County Director of Education
Nyandarua County.
Appendix 9: Map of Nyandarua County

Source: Google Maps