

**QUALITY OF HEALTH CARE SERVICES
IN NYERI DISTRICT, KENYA:
PATIENTS PERCEPTIONS AND
THEIR EFFECTS ON
SERVICE UTILIZATION¹**

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**A Thesis Submitted in Partial Fulfillment for the Award of a
Master Degree in Public Health of the
University of Nairobi**

2004

DECLARATION

I hereby declare that this thesis is my original work and has not been presented for a degree in any other university or institution

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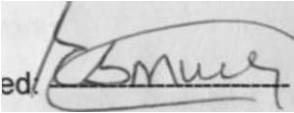
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DEDICATION

This work is dedicated to:

God, who granted and continues to grant me the will and strength to excel in all work;

My family, husband Daniel Ndonga Tigiti and my children, Stanley Ngure, Loise Nyanjau, James Kanyi, and Francis Mwangi for their immeasurable support and encouragement;

My late mother Josphine Wangechi for her unconditional love, my brothers and sister, especially George Ngure and Peter Maina and their loved ones for enabling me throughout my life. Also to my in-laws and their loved ones, and other relatives;

Because of your *Prayers* the effort was worthwhile and will benefit mankind.

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LIST OF ACRONYMS

MoH	Ministry of Health
MOH	Medical Officer of Health
HIV	Human Immunodeficiency Virus
AIDS	Acquired immune Deficiency Syndrome
TB	Tuberculosis
NGO	Non-Governmental Organization
DISH	Delivery of Improved Services for Health
SERVQUAL	Service Quality
WHO	World Health Organization
KEMSA	Kenya Medical Supply Agency
KEMRI	Kenya Medical Research Institute
KMTC	Kenya Medical Training College
KNH	Kenyatta National and Referral Hospital
KDHS	Kenya Demographic and Health Survey
GOK	Government of Kenya
NSHIF	National Social Health insurance Fund
PHC	Primary Health Care
URTI	Upper Respiratory Tract Infection
IMR	Infant Mortality Rate
MMR	Maternal Mortality Ratio
NHIF	National Hospital Insurance Fund
SPSS	Statistical package for social sciences
VCT	Voluntary Counselling and Testing

DEFINITION OF CONCEPTS

Cost of service: reflects the direct costs of a health activity and other hidden or non-quantifiable costs imposed on the government Sector, patients, patient's family and relatives, the local community and other agencies. Both providers and consumers in terms of the resources they expend in delivering and consuming health care incur cost.

Demand: an economic concept rooted in the notion of what a person is able and willing to pay. Demand is seen to reflect both the strength of the persons desire to receive the service, that is the value placed on it and the amount that will have to be sacrificed in order to do so. It is not a "self perceived need", or "professionally defined" need but an "expressed" need.

Derived demand: the demand for items such as materials, machinery or labour that go into the production of a final product, that is those components are not demanded for their own sake but because there is a demand for the final product requiring them; a concept that applies to health care.

Elasticity of demand: the concept describes the degree of responsiveness of a persons demand for, say, medical treatment to a change in his/her income (income elasticity), or a change in the charges he/she has to pay. For example, if the price of elasticity of demand is 0.3, it means that a percent change (increase or decrease) in income will change (increase or decrease) the number of visits for a health facility by 0.3%. If the price

elasticity of medical care demand is -0.45, it means that a one percent increase in user charges will reduce the demand by 0.45%.

Expectations: this is an array of possible medical outcomes that reflect what might, could, will, should, or had better not happen. There are different types of expectations occurring in a hierarchy form for each patient.

Formal health care options: refers to institutionalised private, faith-based and government health care providers.

Health seeking behaviour: defined as a health seeking process by a patient or those closer to him/her in identifying the appropriate kind of care at the onset of ill health. It includes any activity undertaken by individuals who perceive they have a health problem or to be ill for the purpose of finding an appropriate remedy.

Health care decision making: a process of deciding on a course of action in relation to sourcing health care, including factors and / or people who influence the decision and reasons for the decision.

Household: a group of people who "share a fire", that is, who share food or a cooking pot on a regular basis.

Health: WHO definition "A state of complete physical, mental and social well-being, and not merely the absence of disease".

Health sector: the most widely used practical criteria used to define precisely what services and activities comprise the health sector is the health sector expenditures which include capital and current expenditures on activities whose primary intention (regardless of effect) is to improve health

Utilization of health services: is used to mean demand for health services.

Opportunity cost refers to the benefit derived from consumption of other goods and services, which a patient sacrifices in order to obtain health care.

Perceived quality: perceived service quality consists of two parts: technical quality and functional quality. Technical quality refers to what a patient gets during the service or what remains once the service is over such as an X-ray for diagnosis purpose or a theatre or a service facility. Functional quality is the impression formed as the patient interacts with the provider such as behaviour of facility staff and if favourably perceived can reverse a low technical quality perception. This is an important factor to consider in designing services.

Production function: expresses the relationship between inputs and outputs and represents a tool for analysing how different resources (inputs) such as doctors, health workers and community volunteers can be combined to produce services (outputs) of various kind.

Treatment seeking is an important health seeking behaviour that refer to the behaviours of patients and those close to him/ her at the onset of an illness that lead to treatment.

Value: this is what you get for what you give; e.g. a trade off in the patients mind between quality and price paid.

ABSTRACT

There is continued concern about unequal access to quality health care. In its policy framework, the Ministry of Health recognizes the challenges these emerging health issues entail.

The 1994 Health Policy Framework, and the Nation Health Sector Strategic Plan (NHSSP, 1999-2004) provide the vision and the agenda for the Ministry of Health (MOH). The aim of the Kenya Government is to expand coverage of health services and their accessibility to vulnerable groups.

The Ministry of Health also identified and committed to focus and allocate more resources on (a) preventive and promotive health care, (b) rural dispensaries and health centers, (c) primary health care, (d) family planning and Maternal and Child Health (MCH), (e) control of TB, HIV/AIDS, malaria; communicable and vector borne diseases; environmental health services, and (f) nutrition programs as core poverty programs.

The Ministry of Health institutions form a pyramidal structure of facilities with the system being key component of overall health care system. Also there is emphasis on curative versus primary and preventive health care. The GOK through the ministry of health contributes about 42% of the total spending on health and individuals through the out of pocket expenditures contributes 40% towards health financing (Republic of Kenya, 1977).

Inadequate staffing and inadequate health care quality are the main factors constraining health services utilization in Kenya. However, empirical information about this issue is lacking, for example, the demand for health care at some facilities is higher than others yet the technical quality of service at the same facilities is low. The main objective of this study was to determine how patients' perceptions about quality of services influence the use of the services.

The results from the study, and the literature review shows that unmeasured factors and their perception by patients are important determinants of health service demand. In particular, patients' perceptions about quality of health facilities are important factors in utilization of health services.

The study revealed that 31.9% of patients at the health facilities in Nyeri District are below the age of five years. Moreover, a significant number of patients lived between 1 and 5 km from the health facility (40.5%). The results further show that public hospitals were the preferred source of care (45.8%). Contrary to the current perception about the quality of health care in public facilities being poor, the results of this study indicate that demand is high at these facilities despite the unfavorable attitude of patients about medical personnel. This finding is due to the presence of doctors in hospitals and easy accessibility of patients to many government health facilities. The presence of doctors and drugs, combined with facility proximity lead to overcrowding at public health facilities, which typically would be associated with friction between patients and health personnel.

Other factors influencing the utilization of health facilities include travel time, age of adult caregivers, household size, gender of the patient, education and user charges. However, while the effects of perceived quality under different model specifications persists, the effects of user charges become insignificant when social and demographic factors are added into the demand model.

The concluding chapter of the thesis summarizes the policy implications of the study findings and recommendations for way forward. These recommendations include:

- Staffing of all health facilities with qualified staff,
- Health policy revision on health financing,
- Expansion of rural health care facilities, and
- A more holistic approach to provision of healthcare.
- Deployment or visits by doctors to rural health facilities

CHAPTER ONE: INTRODUCTION

1.1 Background

There is continued concern about unequal access to quality health care. In its policy framework, the Ministry of Health recognizes the challenges these emerging health issues entail. Despite a massive expansion of the health infrastructure since independence, increasing population and rising demand for healthcare curtail the ability of the government to provide adequate health services to the entire population. The Government has responded to this by embarking on health sector reforms (Republic of Kenya, 1994). Good health begins with the individual and the aim of government policy is to provide an enabling environment for good health, achieved by ensuring sustainable improvement to services provided (Republic of Kenya, 1994).

The 1994 Health Policy Framework, and the National Health Sector Strategic Plan (NHSSP, 1999 - 2004) provide the vision and the agenda for the Ministry of Health (MOH). The aim of the Government through the Ministry of Health is to implement appropriate policy, structural, financial and organizational reforms to enhance efficient and effective delivery of health care services. This will reduce the burden of diseases, especially malaria, HIV/AIDS, and other preventable disease and expand coverage of health services and accessibility to vulnerable groups. To further support this effort the MOH plans to establish a viable and efficient decentralized system for providing quality health services throughout the country.

The strategic plan identifies the specific treatment and essential health services packages to be delivered at each level of the health care system. The Ministry of Health identified and committed to focus and allocate more resources on (a) preventive and promotive health care, (b) rural dispensaries and health centers, (c) primary health care, (d) family planning and Maternal and Child Health (MCH), (e) control of TB, HIV/AIDS, malaria; communicable and vector borne diseases; environmental health services, and (f) nutrition programs as core poverty reduction programs.

1.2 Health Care System

The Ministry of Health institutions form a pyramidal structure of facilities with the system being key component of overall health care system. Health services are delivered through a network of dispensaries, health centres and hospitals, with the dispensaries and the health centres addressing common diseases; whereas the hospitals in addition provide care for emergency and complicated conditions. In addition, a number of parastatals in the ministry - Kenya Medical Research Institute (KEMRI), Kenya Medical Training College (KEMTC), Kenyatta National and Referral Hospital (KNH), Moi Teaching and Referral Hospital, Kenya Medical Supply Agency (KEMSA), and the National Health Insurance Fund (NHIF) complement the services provided by the health centres, dispensaries, district and provincial hospitals. Management of these institutions is through management boards and health teams at different levels. However, disparities exist in the types of staff available in the

health care systems. The distribution of professional staff in the health sector does not reflect the real health needs of the population, many being concentrated in the urban areas.

The greatest health problem facing the country is HIV/AIDS pandemic. Dealing with this disease and its attendant complications requires proactive initiatives, for example supporting Voluntary Counselling and Testing (VCT) facilities for employees and patients, improving access to affordable antiretroviral drugs, increasing insurance cover for HIV/AIDS patients and opening up of more hospices so that terminally ill patients can be treated with dignity. The solution to the HIV/AIDS pandemic requires a holistic and participatory approach to health care that is responsive to the views of patients about the quality of health services if the existing trend of the key health indicators is to be reversed. For instance the IMR stood at 74 per 1,000 live births in 1998 (Kenya Demographic Health Survey, 1998). Maternal mortality Ratio in Kenya has remained one of the highest in the world and stood at 590 per 100,000 by 2001 (WHO, 2003). Presently, it stands at 414 per 100,000 (KDHS 2003)

Other factors that have contributed to the reversing of some of the health indicators are external to the Ministry of Health such as increased poverty levels, inadequate access to clean water and sanitation facilities calling for a sector-wide approach to improving health indicators. The emphasis on curative versus primary and preventive health care have further compounded the problem. For example the hierarchical structure of the health system has a skewed budgetary allocations in the health

sector, with tertiary and secondary care facilities absorbing more resources (about 70%) compared with primary care institutions such as health centers and dispensaries (about 30%), (Republic of Kenya, 1999). This pattern stems from the public sectors being the main provider of health services, through its network of about 2,300 facilities, comprising: hospitals (117), health centers (461), dispensaries (1,722), and a bloated work force.

Because the government of Kenya (GOK) owns the majority of the health facilities, it is the major financier of health services, relying on tax revenues. The GOK through the Ministry of Health contributes about 42% of the total spending on health and individuals through out-of-pocket expenditures contributes 40% towards health financing (Republic of Kenya, 1977). However, findings from 2003 household and expenditure survey show that only 25% of sick people seek formal health care. For the health centers, less than 1.0% of the population is served (Republic of Kenya, 2003).

The KDHS 2003 shows a reverse in most health indicators. For example average immunisation coverage is 52% (Central >75% and N. Eastern 8%); IMR is 78/1000 live births; MMR is 414/100,000 and under 5 utilisation of facilities at 20.2%.

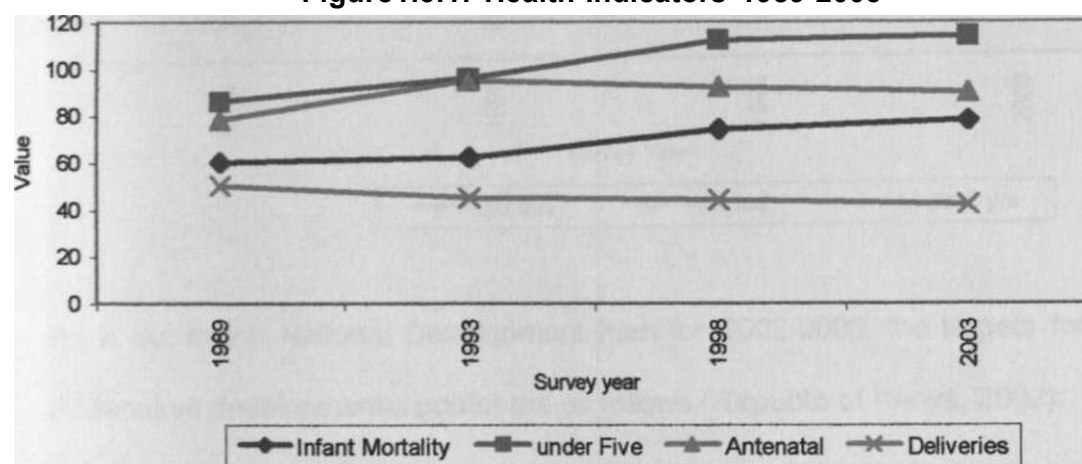
Further, the KDSH 2003 shows the following:

Table 1.2.1a: Infant and under 5 mortality. Kenya 1984 - 2003

Survey year	Applicable calendar year	Infant Mortality	Under five	Facility delivery	
				Antenatal	Deliveries
1989	1984-1988	60	86	78	50
1993	1988-1992	62	96	95	45
1998	1993-1997	74	112	92	44
2003	1998 - 2002	78	114	90	42

Source: KDSH 2003

Figure 1.3.1: Health Indicators 1989-2003



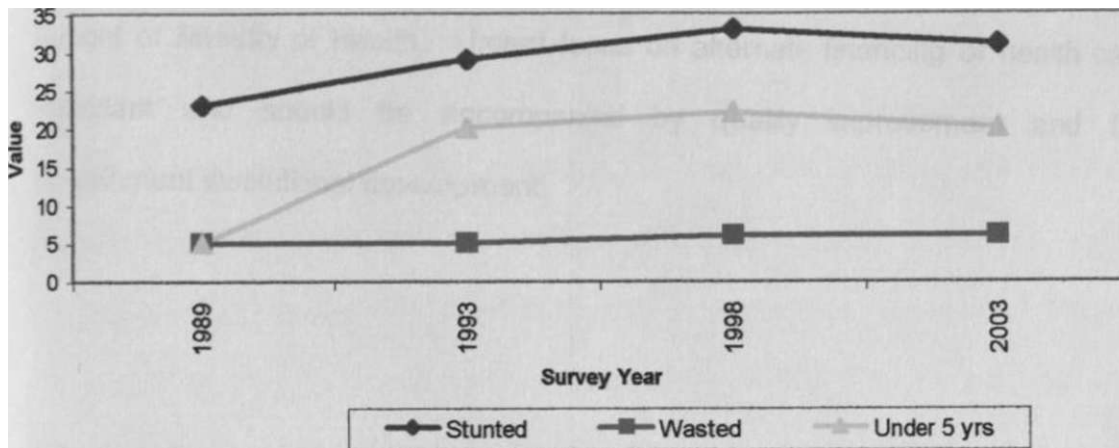
The KDHS confirm that Kenya has a severe generalised HIV epidemic prevalence of 6.7 %

Table 1.2.1b: Nutrition 1984 - 2002

Survey year	Applicable calendar year	Stunted	Wasted	Under Weight
1989	1984-1988	23	5	5
1993	1989-1992	29	5	20
1998	1993-1997	33	6	22
2003	1998-2003	31	6	20

Source: KDHS 2003

Figure1.2.1b: Nutrition Status 1984 - 2002



As is set in the National Development Plan for 2002-2008, the targets for health (Millennium developmental goals) are as follows (Republic of Kenya, 2002):

- Reduce IMR from the present level of 78/1,000 per live birth
- MMR reduction from 414 to less than 200 per 100,000 persons.
- Vitamin A deficiency in under 5 year olds eliminated by 2005
- Reduced prevalence of HIV/AIDS from present average of 6.7%.
- Efficient utilization of resources to maximize utilization of available health care facilities.

Absolute and per capita expenditures on health have continued to decline from US\$9.50 in 1980/81 to US\$3.50 in 1996/1997, with the present per capita expenditure on health being US\$6.2 (Republic of Kenya 1997). However, Kenyan's

health spending remain insignificant and far below the WHO'S recommended per capita expenditure of US\$34 (WHO, 2003). The cost of caring for HIV/AIDS patients, who occupy over 50% of hospital beds, could be equivalent to the entire recurrent budget of Ministry of Health. Urgent focus on alternate financing of health care is important and should be accompanied by quality improvement and funds containment institutional development.

CHAPTER TWO: RESEARCH PROBLEM, OBJECTIVES AND JUSTIFICATION

2.1: Research Problem

There are many problems, which constrain the Ministry of Health to legislate for and ensure the delivery of adequate levels of quality health care in its facilities, including the following; under-funding of health facilities, inadequate capacity of the public health care systems, lack of amenities, inadequate staffing, and archaic health laws. This has resulted in the reverse of key health indicators and loss of health gains achieved since independence. The Ministry of Health has responded to these challenges by developing a national health strategic plan that contains the priority packages for the population (Republic of Kenya). As the Ministry of Health continues to implement the packages, the quality of health care continues to deteriorate at all the three levels of health care systems levels, i.e. primary, secondary and tertiary levels. The increasing prevalence and incidence of HIV/AIDS with its attending complexities and impacts have further complicated the problems. A major problem is the limited inpatient capacity with a bed occupancy rate of over 50% by AIDS patients. In addition, the length of stay is usually longer for AIDS patients, further constraining the scarce resources and adversely affecting admission of patients suffering from other ailments.

In spite of these constraints, the utilization of public health care services by the community is high, though patients continue to use the mission and the private health

care services for acute cases, citing quality as the main reason. This is in consistent with findings that showed that cost-sharing program resulted in reduction in proportion of the number of patients using the public health facilities (Mwabu et al 1995). Government documents reviewed indicate that the government has a policy on improving access and quality of health care but do not know their (access and quality) effects on health care utilization

These observation leads to the following questions and observations:

- Why is demand for health care at some facilities high even when technical quality of service at the same facilities is known to be low?
- How much of the utilization of services can be accounted for by service quality?

2.2: Main Objective

The main objective of the study was to determine how patients' characteristics, access and quality factors influence utilization of health care services. This will assist in better understanding of the needs of patients and how they expect these needs to be satisfied. In turn, management will have a base for planning and implementing the planned services.

2.3: Specific Objectives

- To document patients' perception of the healthcare facilities in Nyeri District, using data from a cross section survey.

- To relate patients' utilization of health services to service quality.
- To estimate responsiveness of utilisation of health services in Nyeri district to changes in user fees and income of patients

2.4: Importance of the Study ^

This study will benefit the management of the various hospitals at various levels of health service delivery. The results will further assist in making health policy decisions that are patient driven rather than basing such decisions only on perceptions of facility managers. On the other hand, patients will benefit because their actual needs will be included in healthcare decision making, thus ensuring services would be designed to meet their expectations. Improved service quality lead to better care, which further should lead to reduced morbidity and mortality rates. Also the results will benefit other scholars and researchers.

2.5. Organization of the Study

Each of the following four chapters deals with different aspects of the study. Chapter 3 deals with a review of the studies conducted locally and internationally on health service utilization. The findings of the studies helped the researcher to identify the gaps in health care delivery in Kenya. There is a general agreement that econometric studies do not fully explain the effect of specific aspects of quality on utilization. Chapter 4 contains methodology and the materials used in the study.

In chapters 5, the results of the study are presented- information on characteristics of patients, health care providers and utilisation of healthcare services. The results are in form of a narrative that summarizes information contained in the frequency tables and model table. Chapter 6 contains; Discussion of the results, Conclusion, Policy Implications of the results, and Recommendations.

CHAPTER THREE: LITERATURE REVIEW

3.1: Introduction

Quality as defined by Crosby (1967) means "conformity to requirements". A second definition of quality states that quality is "about fitness" for use (Juran, 1970), a definition that draws attention to satisfying patients needs. These two definitions form the concept of patient perceived quality.

For patients and the community, quality care is something that meets their needs. Since patients often differ, their personal satisfaction ultimately depends on the perception, attitude and expectations of each individual (Margaret Brawley, 2000).

3.2: User Fees, Service Quality, and Utilization

Quality of health care provision gained attention under structural adjustment reforms of health systems in developing countries in the 1980's. A study on health care financing in Ogun State, Nigeria, confirmed earlier studies that quality is a major determinant of patient choice of health care providers, strengthening the recommendation that quality improvements should accompany increases in user fees (Denton et al., 1991). Distance did not have a significant influence over demand for health care. It was further suggested, that further investments in reducing distance to health facilities and the prices of rural health clinics be reduced to zero were not required and that there was room for introducing user fees to public health facilities.

Heller (1982) in a study in Malaysia revealed that the demand for care was highly inelastic to cash price. Cash price did not appear to be a factor differentiating users or volume of outpatient services. Similarly, (Akin et al. 1986) in a study in the Philippines showed there was little effect of cash prices on the volume and the choice of health care.

In Kenya, two studies reported a substantial decline in health care utilization after the introduction of user fees (Mwabu 1995, Mbugua 1995). The number of outpatient visits in government health centres, fell by 52 percent. Furthermore, the number of patients using government dispensaries, where fees did not rise, increased by 5.9 percent. After suspension of fees, the number of visits to government health centres increased by 41 percent and to dispensaries by some 4 percent. The user fees forced some 20 - 26 percent of the patients out of the modern health care system. Attendance at all health facilities fell sharply on introduction of user fees. Likewise, utilization of inpatient hospital services substantially declined. For example, the utilization of child health services fell by 4 percent, the use of family planning services rose by 17 percent and the attendance for antenatal care increased by 6 percent.

Meanwhile, there had been a number of studies providing conflicting conclusions as to the effect of prices on demand for health care (Mwabu, 1986; Gertler et al, 1987; Alderman and Gertler, 1988). Furthermore, studies on the demand for medical care in industrial countries uniformly concluded that prices were important determinants of utilization of medical care (Manning et al, 1987).

The main criticism of these studies is that concerning the effect of quality of services on demand. Therefore, it should not be surprising that when user fees become part of other costs without improvements in quality, utilization dropped. People paid more, yet received the same services; thus, they were receiving less for their money. The importance of management of user fees to improve quality is further supported by experience reported from facility based longitudinal studies in Benin, Sierra Leone and Guinea, which showed that when fees were accompanied with an improvement in quality of care, overall utilization did not drop, but increased (Knippenberg, 1990).

Another study from the Niger (Diop, 1995) demonstrated that the combination of cost recovery and quality improvements increased access to quality health care for rural populations in general, and the rural poor in particular. Furthermore, it provided evidence for the assertion that for access to quality health care for rural populations to sustain, cost recovery ties to quality improvement measures and to cost containment measures. Chawla and Ellis (2000) showed that quality-improvement initiatives included increased drug availability as well as improved management, supervision and training of staff.

3.3: Measuring Demand Effects of Quality

With the introduction of cost-recovery, a considerable body of research in health economics has attempted to estimate the importance of financial factors such as time price, cash price, travel price, and income—in influencing patient choice of provider. While focusing on financial determinants of choice, health care demand studies have

also examined effects of other factors, such as the quality of services, seasonality, patient, and demographic characteristics. Although, the econometric health care demand studies resolves many of the weaknesses faced by facility-based studies, it is limited by the extent to which it can examine effects of specific attributes of quality.

A number of studies that include measures of quality reviewed included (Akin et al. 1981, 1986a, 1986b; Denton et al., 1991; Heller, 1982, Mwabu, 1984). Also reviewed are studies that focus on how to deal with multidimensional aspects of quality (Ellis and Mwabu, 1991; Lavy and Germain, 1993; Mwabu, et al., 1993).

3.4: Unobservable Quality

To capture the effect of unobserved quality factors (Mwabu, et al., 1984; Mwabu and Mwangi, 1986) used provider-specific dummy variables to capture the effects of unobservable provider attributes as perceived by the patient. Using the preference dummy variables, Mwabu ranked the facilities based on patient preference as follows: mission clinics, government hospitals, private clinics, government clinics, pharmacies, and traditional healers, where healers were not preferred.

In other similar studies (Gertler et al., 1988; and Bitran 1989a, 1989b), quality was also unobservable. Provider-specific coefficients created provider-specific intercepts, which allowed for a certain core dimension of quality to vary by alternative. In addition, slope coefficients reflected how the provider's quality varied by each socio-demographic characteristic.

In both studies, the remaining coefficients suggested that quality perceptions vary between individuals of different socio-demographic groups.

3.5: Observable Quality

The study of Ogun State, Nigeria, used facility operational costs per capita, observed physical condition of the facility, percentage in a year drugs are available, number of functioning X-ray machines and laboratory, number of support personnel and nurses per capita, and doctors per capita to proxy quality of care. A simulation, probability of choosing public care, private care, or self- treatment was used to examine effects of quality on demand. When public and private operational expenditures per person doubled, patients moved, to a limited degree, from self-care into public care, with no change in private care usage. If only the public-sector operational expenditures doubled, patients would shift from the private to the public sector (Denton et al., 1991).

In an earlier work, Heller (1982) captured quality by creating variables that identified the type of provider the patient expected to see based on previous visits. He found that the likelihood of consulting a physician had only a statistically insignificant effect on total usage of outpatient care. However, households did respond significantly to a higher probability of care from a physician rather than a paramedic in their choice between public and private clinics.

In another study, Mwabu, Ainsworth, and Nyamete (1993) paid particular attention to the difficulties of examining the effects of quality improvements on utilization patterns using cross-sectional data. The typical expectation was that an improvement in some aspects of quality would increase demand, either by attracting new users or by increasing the number of visits by existing users. However, three types of endogenous problems could bias the coefficients on the quality variables. First, although individuals might have demanded higher quality services, utilization could appear to decrease with improved quality if quality improvements were effective in treating illnesses, thus reducing overall population morbidity in the end. If demand were high such that stocks quickly deplete, the coefficients would imply that individuals preferred low-quality facilities. The results indicated that their measures of quality improvements had significant negative and positive effects on demand. The quality attributes were interacted with gender variables to investigate gender-specific quality preferences that affect utilization. The researchers acknowledged the difficulty of disentangling the demand effects of quality improvements from offsetting supply constraints and health effects over time.

In another study conducted in Kenya, Ellis and Mwabu (1991), examined relationships between willingness to pay and quality using 13 measures of physical attributes of the facility that were available from the Kenyan Ministry of Health. Simulations showed generated welfare gains of willingness to pay for quality improvements. This finding adds further support to the importance of quality in influencing health care utilization patterns; however, the aggregate measure of

quality does not allow one to determine preferences for specific dimensions of quality.

3.6: Measuring Perceived Quality

The SERVQUAL is a multi-item scale for measuring customer perception of service quality. Many studies have used this measure of perceived quality, for example (Parasuraman, Zeithaml, and Berry, 1988), and (Crompton and Mackay, 1989) for measurement of service quality along dimensions of reliability and validity. A SERVQUAL modified tool fits the needs of this study because the econometric measures and studies are limited in examining effects of specific attributes of quality on demand (Ellis and Mwabu, 1991; Lavy and Germain, 1993; Mwabu, et al., 1993).

Health care demand studies all strongly suggest that quality of health care is an important factor in choosing a health care provider and that patients are willing to pay for improvements in quality. Most of the studies indicated that the strongest preference was for the availability of drugs, in both amounts and types of essential drugs. Preferences for building infrastructure and type of health providers were weaker, but apparent. Investigations of demand patterns—in this case, patient choice of type of provider should include patient and not provider perceptions of quality.

However, most studies measured quality using only structural attributes (the most easily collected quality data) without careful investigations as to whether these were appropriate or complete measures of what patients were looking for. Perceptions of

process or outcome measures of quality are almost totally lacking in health care demand studies. Further investigation of patient perceptions of quality in health facilities is necessary. In addition, investigation into the distribution aspects of quality improvements following gap identification is important.

3.7: Dimensions of Health Service Quality

In the DISH study, patients felt that the health facilities lacked qualified staff and resented midwives or nurses who were "training-on-the-job." Patients consider the provider consultation when judging quality of care. Referrals though valued by patients, are often misunderstood. Sometimes clients view referrals as a failure of the staff or health unit to correctly identify their problem (Nshakira et. al., 1996). The relationship between health worker and client is a tenuous one. Low patient satisfaction of quality of care may arise from poor attitudes from health workers (Kim et. al., 2000).

One study found that people were uncertain about exact costs of health services because the charges varied depending on the service a client received (Nshakira et al., (1996). In Tororo District, Uganda, Opare (1996) discovered that communities were in fact willing to pay for improved quality of services. Despite an appreciation for improved services, some people could not still afford the services.

Many studies show that patients equate availability of drugs with high quality services. In Kenya, Mwabu et al 1993 reported that drug availability in the health

facility had a positive impact on demand for services. Patients believe a health facility with good quality service must be equipped with diagnostic equipment, blood testing equipment and laboratory equipment (Margaret Brawley, 2000).

CHAPTER FOUR: MATERIALS AND METHOD

4.1: Study Design and Measurement Issues

The study was a cross section survey of patients attending health facilities in Nyeri district in the year 2003. The SERVQUAL methodology provided the measure for the unobservable quality. In this respect it combined with Mwabu's provider specific dummy variable method to capture the effects of unobserved provider quality attributes as perceived by the patient. See also, Gertler et al., 1988; and Bitran, 1989a, 1989b.

4.2: Study Site

Nyeri district is one of the seven districts in Central Province with an area of 3,226 square kilometres. Laikipia District borders it to the north, Muranga District to the south, Kirinyaga District to the east, Nyandarua District to the West and Meru District to the Northeast. The district has seven administrative divisions, 35 locations and 193 sub locations. Nyeri district had a projected population of 692,000 in 2002, a density of 214.5 persons per square kilometre and intercensal annual growth of 0.8%.

The district lies between 600m to 3,000 metres above sea level and is close to the equator. The district has moderate climate due to its elevation with temperatures averaging around 24 degrees centigrade throughout the year. The southern part gets

an average annual rainfall of 1,000 mm while the northern areas of Mweiga and Kieni are drier and get only 400-600mm of rainfall per annum.

The district has public utilities such as roads, schools, colleges, and health facilities. Nyeri District has 222 health facilities registered by the Ministry of Health and they include 3 public hospitals (one provincial and two sub district hospitals), 10 public health centres, 52 public dispensaries, one private hospital and three nursing/maternity homes, 112 private clinics, 19 pharmacies, 3 mission hospitals and 19 mission dispensaries.

According to the 1999 census, health situation in Nyeri District continued to deteriorate as revealed by socio-demographic and health indicators such as crude death rate was 9.7 per 1000; IMR at 27.2 per 1000 live births, under five mortality rate per 1000 live births was 53. Life expectancy at birth was 60.2 for males and 67.7 for females. Total fertility rate was 3.8 per woman. Some key health indicators have reversed with continued loss of gains achieved since independence.

The mean age is 21.2 years, those aged below 18 years are 45.3% and those above 55 years are 9.5%. The urban population is 11.7% with rest being predominantly rural based. The percentage of labour force participation rates for population aged 15-64 years is 88.9% and percent of economically active population wage employment age 15-64 years is 25.8%. The household head by gender is 59.5% females and 40.8 males with household size of 3.9. percentage of household with piped water is 43.5%,

toilet facility is 99%, electricity for lighting is 13.7% and percentage of tenants household is 22%. Unpaid workers by gender are 40.8% for males and 59.9% for females.

The above economic, social demographic and health indicators show that Nyeri district is relatively developed.

4.3: Conceptual Model

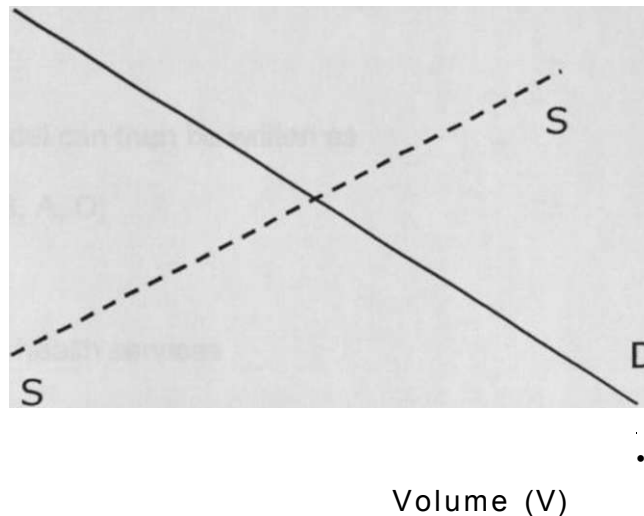
Patients' choice of health facilities and the extent to which they utilized facilities can be related to three sets of factors:

- The patients' socio demographic characteristics which include gender, age, level of education, household size, marital status, religion, and occupation.
- Access factors, which include income, out of pocket cost of services, transport expense, travel time, waiting time at the facility and other service fees.
- Attributes of health facilities, such as type of facility (public, private, mission); distance from home; physical appearance (of buildings, staff apparels, condition of equipment and cleanliness); patients' perception of observed and unobserved quality dimensions.

The three sets of variables (socio-demographic characteristics as given above, access and quality factors) were the independent variables. The dependent variable was the frequency of use of the chosen facility, measured by the number of visits to the facility over the last one month. Other things held constant, the number of visits to a health facility decline as the cost of treatment at a facility increases. This inverse

relationship between visits and cost of treatment (user fee) can be represented by a market diagram as follows.

Figure 1: Demand & Supply Curve



Where,

P = Price per visit

V = Number of visits to a health facility over a specific period, e.g. one month

DD = Demand curve for medical care

SS = Supply curve for medical care, which is assumed to be fixed

As the price (user charge) increases, the number of visits (D) declines. However holding user charges constant, the demand curve shifts up or down as the factors (e.g. income, quality and age) change. From the demand curve we can derive the price elasticity of demand. A price elasticity of demand is the percentage change in

the number of visits resulting from a *unit* per change in user charges. For example, if the price elasticity of demand is 0.3, it means that a percent change (increase or decrease) in income will change (increase or decrease) the number of visits for a health facility by 0.3%. If the price elasticity of medical care demand is -0.45, it means that a one percent increase in user charges will reduce the demand by 0.45%.

A general demand model can then be written as

$$D = f(P, Q, S, A, O)$$

Where,

D = Demand of health services

P = Price of services per visit

Q = Quality factors

S = Social economic factors

A = Access factors

O = other factors

4.4: Operational Definition of Key Concepts

In case of facility attributes and quality dimensions, the Likert scale created a multiple- item measure of quality. The respondents in the study responded to a number of statements, related to a common theme. They then indicated their degree of agreement or disagreement on a four-point range. The answer to each constituent question was a score. A score of one represented the most favourable score while a score of four represented a most unfavourable score.

Facilities types are nominal measures used to classify respondents in terms of their facility preference (i.e. public, mission or public). Variables such as age, income, cost, time and distance are interval/ratio measures with logical zero points. The gender variable, a dichotomous variable was considered as a nominal measure. Satisfaction, perception and quality measures were treated as interval measures to allow for use of correlation and regression analysis.

4.5: Unit of Study

The sampling unit from the selected facilities and the people utilising the facilities is the patient.

4.6. Sampling

4.6.1: Sampling frame

Source list from which the sample is drawn was obtained from the health information office of the Medical Officer of health, Nyeri District (Appendix 1).

4.6.2: Minimum Sample size required for the study

A large and representative sample (that fulfils the requirement of efficiency, reliability, representative and flexibility) will be used. The sample was collected from an infinite

population and the following formula was used to calculate the sample size (Fischer, 1995).

$$n = z^2 \cdot pq / d^2$$

Where,

P = 0.25 - the estimated proportion of patients attending formal providers

q = 1-p

Z = critical value corresponding to 95% confidence interval obtained from the tables of standard normal distribution,

d = degree of precision set at ± 0.05

n = size of the sample

$$n = (1.96)^2 \cdot (0.25) \cdot (0.75) / (0.05)^2 = 288$$

Thus, the most conservative sample needed for the study was 288. Of this 288 a proportion of 1:5 was drawn from each of the selected divisions. The sample was increased to 326 respondents during data collections to allow for adequate numbers of patients visiting the different facilities to reveal their perceptions of the health care delivery in the study area.

4.6.3: Inclusion and Exclusion Criteria

The criteria used to include the subjects was-all patients who voluntarily sought health care in the health facilities registered by the Ministry of Health. The subjects were in possession of registration cards with an in or outpatient number. The subject

exited from the pharmacy and those patients who did not exit from the pharmacy were not included.

4.6.4: Sampling Selection

The sampling procedure adopted ensured that relatively small sampling error will occur and will help in the control of the systematic bias. A combination of purposeful, simple random sampling, and systematic sampling was used. Kieni East Division and the Nyeri Municipality divisions are purposefully selected from among the seven divisions of Nyeri District. Provider types were sampled using simple random selection. The following sub-groups of providers were considered: public hospitals, public health centres, and public dispensaries; private hospitals /private clinics /pharmacies; mission hospitals/mission dispensaries (see Appendix"!)). In total ten facilities were sampled.

Three hundred and twenty six patients were interviewed. Sample sizes of the patients at various provider types and at different levels of healthcare provision were determined using their respective proportions in the population (appendix2). The patients were sampled using systematic sampling and interviewed at the exit points in the sampled facilities. The exit point of choice was the pharmacy because all patients pass through pharmacy to check presence or absence of drugs. The first patient was randomly selected. Consequent patients were selected at intervals of 10. The method is easy and less costly and is suitable for large population. Also the sample is spread over the entire population. The method was appropriate because

patients attending the health facilities are unlikely to exhibit any hidden periodicity especially if the exit is common to all patients and the populations listing is in random order.

4.7: Data Collection

A modified SERVQUAL instrument was used to collect the data. The instrument was pre-tested at Nanyuki district hospital, results discussed and adopted.

Research assistant and the interviewers were recruited after undergoing an aptitude test. Those recruited were trained on the following:

1. Contents of the structured questionnaire i.e. questions and the expected responses
2. Procedure for administering the questionnaire i.e. courteous approach with a thorough explanation of the purpose of the study
3. Completion of the questionnaire and entering the responses correctly.
4. The need for valid and reliable data
5. Types of data, the concept of health care services, the concept of participation and the concept of gender.

4.8: Reliability and Minimization of Bias and Errors

The study was designed to utilise both quantitative and qualitative techniques to enrich the reliability of the data. The recall period was restricted to one month to minimise the recall errors. The random selection of facilities and the systemic

sampling of patients minimised the selection bias. Strict supervision of the interviewers by the researcher ensured that reliable data was collected.

4.9: Data Processing and Analysis

The collected data underwent cleaning to ensure its completeness, accuracy, uniformity, and consistency. The data were analyzed using SPSS and STATA software whereby frequencies and summary statistics were obtained. Different analytical methods were used as follows:

- Uni-variate analysis was used to compute the means and correlations of key variables
- A bi-variate analysis was used to compare relationships between two variables, e.g. utilization and age.
- Multivariate analysis to determine predictors of health care services utilization.

The estimating model in a multivariate regression was:

$$D = a + b_1X_1 + b_2X_2 + \dots + b_kX_k + e$$

Where,

D = Number of visits expressed in logs

$X_1 \dots X_k$ = Explanatory variables expressed in logs where applicable,

$b_1 \dots b_k$ = Coefficients to be estimated

e = Error term

4.9: Ethical Consideration

Prior to the commencement of the field activities, informed consent was sought from facility and community leaders. The respondents understood that the information they voluntarily gave was confidential. To ensure confidentiality the respondents were not required to give their names during the interview. A number represented each respondent, and these numbers served as the unique identifier of the patients.

4.10: Limitation of the Study

- The sample of patients used in this study had voluntarily visited the facilities and so may not be representative of the whole population.
- Due to funding problems, the sample size is small and therefore its results may not be generalized to the whole population.
- Observed quality such as drug availability was measured reasonably but unobserved quality such as patients attitudes towards treatment received was hard to measure
- The results could further be improved by undertaking a community survey. However, the researcher was limited in this regard by lack of adequate funding for the study

CHAPTER FIVE: STUDY RESULTS

5.1: Patients Characteristics

There are two possible bases for calculations, patients and respondents. This is because many patients were children who could not be interviewed. Thus, their guardians accompanying them were the respondents, along with adult patients. The specific characteristics considered here included patients' age, sex, education, household size, marital status, religion and occupation. The occupation, marital status, age and the education of under age patients refer to those of the accompanying parent and guardian or respondents. The patient is the person who received treatment, who sometimes was also a respondent. A respondent is the person interviewed (a patient or a person accompanying the patient). When emphasis is on respondent, it is meant the person accompanying the patients; and when emphasis is on patient, it means the person who received treatment.

5.1.1: Age and gender of patients and respondents

The age of both the patient and the respondent were obtained. For children and those too old or sick to respond, the guardian/parent responded. The study results show that 32% of patients were below the age of 5 years. The mean age of the patients is 22.6 years. The age of the respondent was also recorded and the results indicate that 47.4 % of the patients were 16-25 years old, 33.5% were 26-45 years,

9.85% were 46-60 years, and 7.07% were 61 years and above (Tables 5.1.1a and 5.1.1b).

Table 5.1.1a: Age distribution of respondents in Nyeri District

Age in years	0 - 15	16 -25	26 -45	46 -60	61 & above	TOTAL
Frequency	7	154	109	31	24	326
Percentage	2.2	47.4	33.5	9.9	7.1	100

Fig 5.1 1a: Age distribution of respondents in Nyeri District

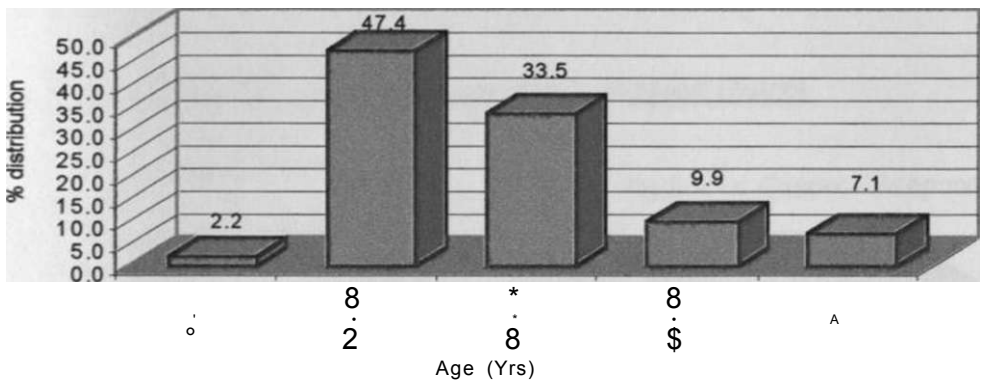
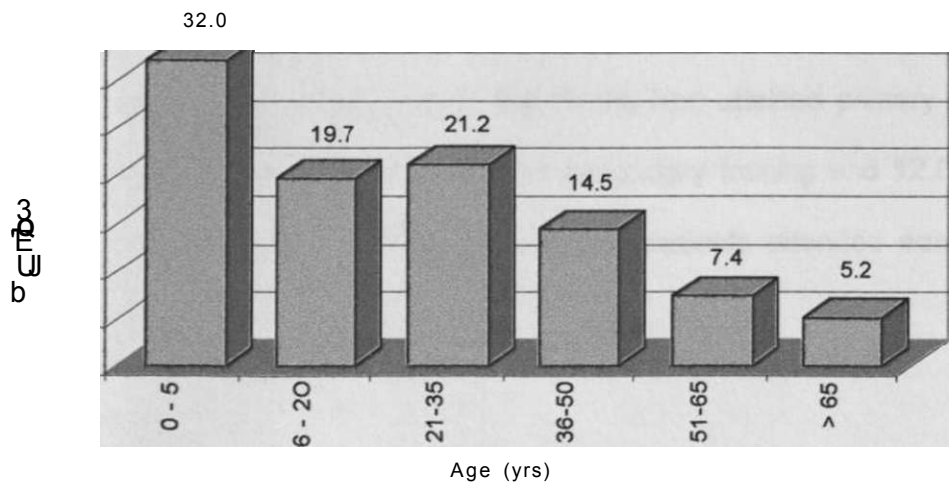


Table 5.1.1b: Age distribution of Patients in Nyeri District

Age (Yrs)	0 - 5	6 - 20	21 - 35	36 - 50	51 - 65	>65	Total
Frequency	104	64	69	47	24	17	325
Percentage	32.0	20.0	21.2	14.4	7.4	5.2	100

Fig 5.1.1b: Age distribution of patients in Nyeri District

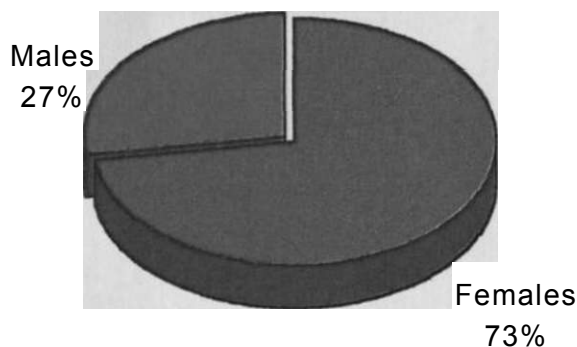


The patients were requested to state their gender and results show that 55% of the patients were males and 45% were females. The survey also collected data on the respondent's gender. Women were the majority (72.7%) among those who visited the health facilities while men were 27.3%. The two types of data were important because some patients were also respondents especially those who came to seek services unaccompanied.

Table: 5.1.1c: Gender distribution of respondents in Nveri District

Gender: Respondent	Frequency	%
Female	237	72.7
Males	89	27.3
Total	326	100

Fig 5.1.1c: Gender - Respondents



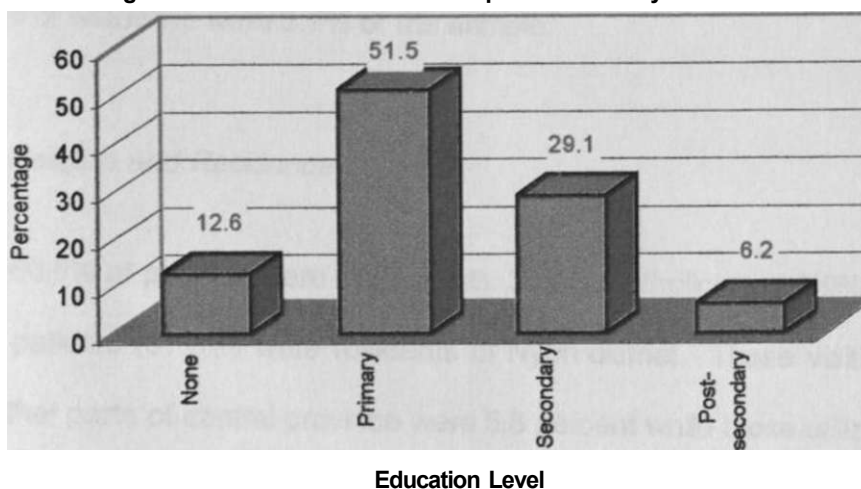
5.1.2: Education and Occupation of Respondents

The education of patients was categorized as none, primary, secondary, post-secondary training. The study revealed that 51.5% had attained primary education, 29.1% secondary education, 6.1% had post secondary training and 12.6% had no education at all. The mean number of years the patients attended school was 8 years.

Table 5.1.2: Education level distribution in Nyeri District

Education	Frequency	Percent
None	41	12.6
Primary	168	51.5
Secondary	96	29.1
Post-secondary training	20	6.2
Total	326	100.0

Fig 5.1.2: Education Level of Respondents in Nyeri District



The occupation of the patients in the study area included homemakers, husbands, professionals, government employees, private sector employees, household servants, casual labourers, farmers, and unemployed. About 30.1% of respondents were homemakers followed by farmers (18.7%) and 15% were small-scale persons. Among those likely to have an income from employment, government employees were 6.4%; professionals, 4%; and private sector employees, 8.3%. This result revealed that the majority of patients utilizing modern care facilities were engaged in income generating activities.

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5.1.3: Household Size and Marital Status

The average household size was four members. Many of the household 44% had at least three members. The study showed those who were married to be (58.9%), followed by those who never married and had no children (23.6%). Single mothers who never married were 11%, while the divorced or separated parents were 2.1%, widows or widowers were 3.7% of the sample.

5.1.4: Religion and Residence

About 60.6% of patients were Protestants, 38.3% Catholics and 0.9% Muslims. Many of the patients (87.6%) were residents of Nyeri district. Those visiting the facilities from other parts of central province were 5.6 percent while those utilizing the facilities and were from other parts of the country constituted 6.7% of the sample.

5. 2: Attributes of Facilities

5.2.1: Access factors to the facility

The Study showed that the mean distance from patients home to facility is 11.8 kilometres. Many of patients (40.5%), lived 1-5 kilometres from the health facilities, 19.9% lived 6-10 kilometres from the facilities while 11.7% lived less than a kilometre away. Only 6.7% and 5.5% lived 11-15 km and 16-20 km respectively. However, 14.1% lived more than 21km from the health care facilities.

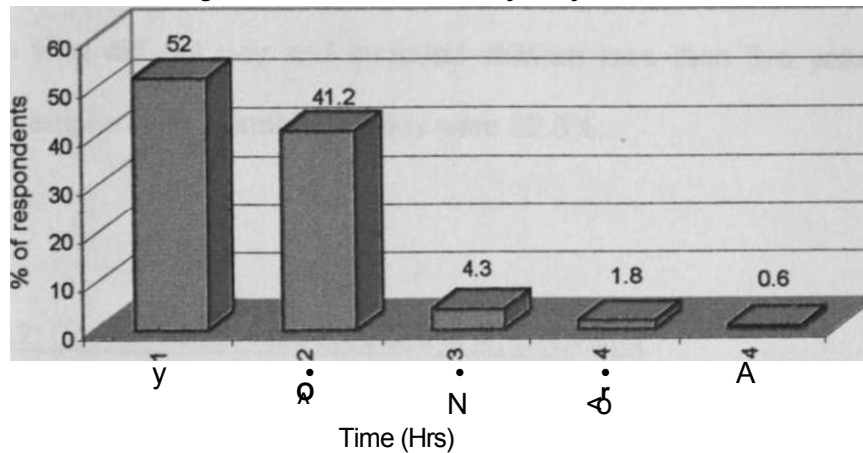
The study showed that most patients used public means (51.2%) or walked to the facility (39.9%). The others either used their own means (7.7%) or hired transport (0.6%). The average cost of travel per visit was 40.6 shillings. The study showed that those who did not pay for travel were 45.7% including those who walked or used means such as bicycles, carts etc. Those who paid for travel in the range of 1-50 shillings were 40.8%. Those who paid 51-100 shillings were 6.1%, 101-150 shillings were 21.8% and 151-150 shillings were 3.1%. Those who paid above ksh200 were 1.5%.

The mean travel time was one hour. About 52% of patients used less than one hour to get to facilities; many patients walked to the facilities. Some of the patients took 1-2 hours (41.2%), others took 2-3 hours (4.4%), 3-4 hours (1.8%). Only 0.6% took more than 4 hours to get to the facilities (table 5.2.1 :)

Table 5.2.1: Time taken from home to a health facility in Nyeri District

Travel time in Hours	Less than 1	1 -2	2. 1-3	3. 1-4	Above 4	TOTAL
Frequency	169	136	14	6	2	326
Percentages	52	41.2	4.3	1.8	0.6	100

Fig 5.2.1: Time taken to facility in Nyeri District



The mean waiting time was 2.1 hours). The mean was derived from actual time patient arrived at the facility and the starting time of interview with the patient. The percentage of patients who waited for less than an hour was 55.8%, while those who waited for 1 - 2 hours were 18.5%, and 2 - 3 hours (13.3%). Those patients who waited for 3 - 4 hours were 5.6%, with 6.5% waiting for four hours and above.

The sum of the travel time to a facility and waiting time at the facility was the total time a patient spent seeking health care services. The study showed that 16.4 % took less than an hour to seek the services, 40.7% took 1 - 3 hours, 29.0% took 3-5 hours, and 13.9% spent 5-7 hours. The mean number of hours spent seeking health care services is 3 hours.

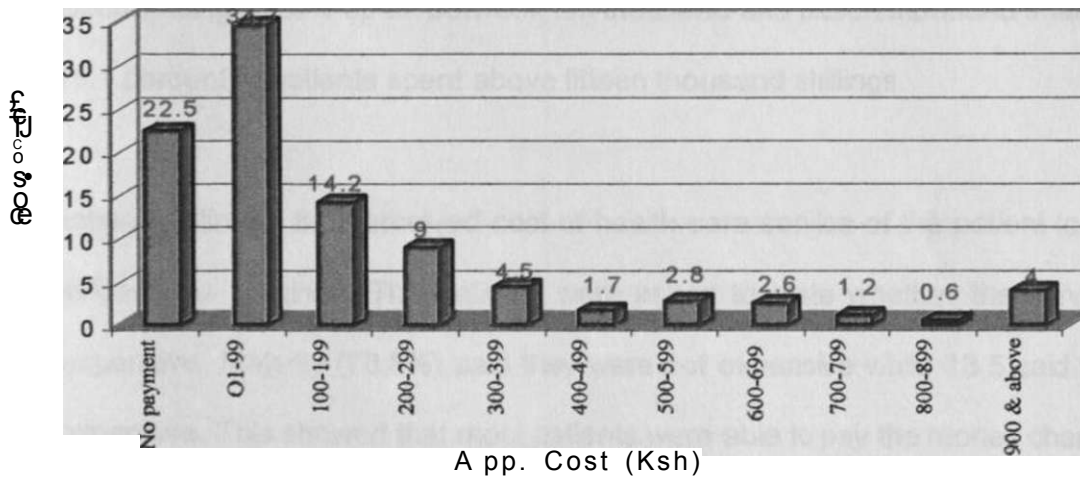
The study revealed that 34.7% of the patients paid less than a hundred shillings for treatment. The number that did not pay anything at all for services was 22.5% and

those who paid between five hundred shillings and one thousand shillings were 4.6%. Patients who could afford to pay above nine thousand shillings were 4.0%. The proportion who did not pay and included children less than five years and those officially exempted due to inability to pay were 22.5%.

Table 5.2.2: Cost of health care services in Nyeri District

Cost of service (ksh)	Non payment	1-99	100-199	200-299	300-399	400-499	500-599	600-699	700-799	800-899	Above 900	Total
Frequency	75	119	46	26	16	6	10	8	4	3	12	326
%	22.5	34.7	14.2	9.0	4.5	1.7	2.8	2.6	1.2	0.6	4.0	100

Fig. 5.2.2 Cost of Health Services In Nyeri District



The patients also revealed what they spent on other non-health goods and service. Most patients 48.8% spent 1-100 shillings while 42.3% did not spend anything. In

addition, 4.9% spent 100-200 shillings and 4% spent above 200 shillings. On average, the patients spent 49.5 shillings to meet other needs such as lunches.

Total expense for medical services were computed by adding travel expense, services expense and other expenses. The results from the study show that 60.9% paid 1-200 shillings, and 13.2% spent 201-400 shillings. Those who spent nothing were 8.2% while those who spent above 801 shillings were only 7.8%. To seek health services the patients in total spent an average of 357.5 shillings.

The patients further gave information on how much they spent on healthcare one year before the interview. About 80.8% spent below 500 shillings and 7.4% spent 500-10000 shillings, 1.5% spent between ten thousand and fifteen thousand shillings. Only 10.1 percent of patients spent above fifteen thousand shillings.

Information relating to the perceived cost of health care service of the patient to pay for services was obtained. The patients were asked to state whether the services were expensive. Majority (78.5%) said they were not expensive while 13.5 said they were expensive. This showed that most patients were able to pay the money charged in the facilities.

5.3: The Quality Dimensions

Patients' perception of the facility's quality attributes revealed varying results. The patients rated the facilities by scoring on a likert scale. The fikert scale ranges from excellent to poor and through good to fair. The attributes used to rate the facilities are the attributes patients valued in a provider.

5.3.1: Patients rating of Unobservable Quality Characteristics in Nyeri District

The patients were asked how the staff behaved towards them during consultations. Sixty three percent of patients said the attitude of facility staff was excellent. The percentage of patients who said the attitude of staff was good were 28.7%, while 5.8% believed the attitude was fair. Only 2.1% said that the staffs were patient unfriendly.

Of the patients interviewed, 36.8% believed that the diagnosis done by staff in the facilities was adequate and complete. In addition, 2.5% and 24.6% believed that the diagnosis was good and fair respectively. Only 2.1% thought that diagnosis was poor while 0.9% was not sure whether diagnosis was complete or inadequate.

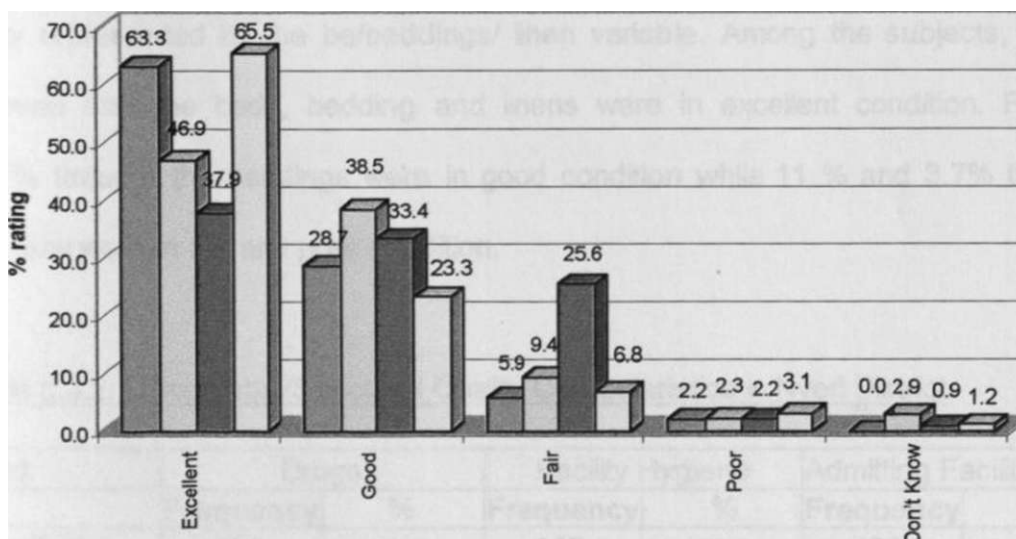
The patients were asked to rate the examination areas and the behaviour of staff during examination and treatment (privacy and confidentiality). Among the patients, 65.3% rated facilities as excellent, 23.2% rated them as good, while 6.6%, and 3.1% rated them fair and poor respectively. Those undecided were 1.6%.

The patients' confidence on the capability of the staff was sought. Those patients who believed that staff qualification were excellent were 47%, while 38.5% felt they were good. Others (9.4%) felt that the staff qualification was fair, while 2.3% felt that staff qualifications was poor and 2.9% were not sure.

Table 5.3.1: Unobservable Quality Characteristics (Nyeri District)

Rating	Attitude		Completeness of Diagnosis		Privacy / Confidentiality		Staff Qualifications	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Excellent	205	63.3	120	37.9	211	65.5	145	46.9
Good	93	28.7	106	33.4	75	23.3	119	38.5
* Fair	19	5.9	81	25.6	22	6.8	29	9.4
Poor	7	2.2	7	2.2	10	3.1	7	2.3
Don't Know	-	0.0	3	0.9	4	1.2	9	2.9
Total	324	100	317	100.0	322	100.0	309	100.0

Fig 5.3.1: Unobserved Quality Characteristics



• Staff Attitude • Staff Qualification • Completeness of diagnosis • Privacy / confidentiality

5.3.2: Observable Quality Characteristics in Nyeri District

The patients disclosed whether they had been provided with the drugs prescribed and whether the medications were consistently in stock. Availability of drugs was rated "excellent" by 40.2% of patients; "good" scored by 30.1% of the patients, "fair" by 18.7% and "poor" by 9.5% of patients.

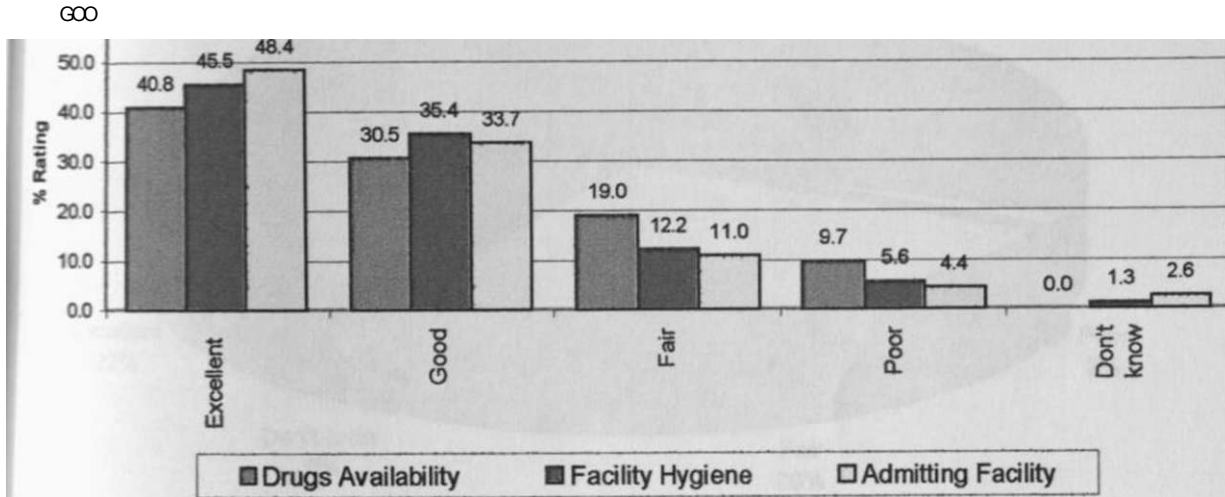
In regard to cleanliness, the respondents were required to give an opinion as to the cleanliness of the facility in general. The patients interviewed rated the cleanliness in the following way: excellent, 45.5%; good, 35.4%; fair, 12.2 and poor, 6.9%.

The patients were asked to give an opinion on the state of in-patient facilities- in the study represented by the be/beddings/ linen variable. Among the subjects, 48.5% believed that the beds, bedding and linens were in excellent condition. Further, 33.7% thought the beddings were in good condition while 11 % and 3.7% thought that they were in fair and poor condition.

Table 5.3.2: Observable/Structural Quality Characteristics in Nyeri District

Rating	Drugs		Facility Hygiene		Admitting Facility	
	Frequency	%	Frequency	%	Frequency	%
Excellent	131	40.8	145	45.5	132	48.4
Good	98	30.5	113	35.4	92	33.7
Fair	61	19	39	12.2	30	11.0
Poor	31	9.66	18	5.6	12	4.4
Don't Know		0	4	1.3	7	2.6
Total	321	100	319	100.0	273	100.0

Fig 5.3.2: Observable Quality Characteristics (Nyeri District)



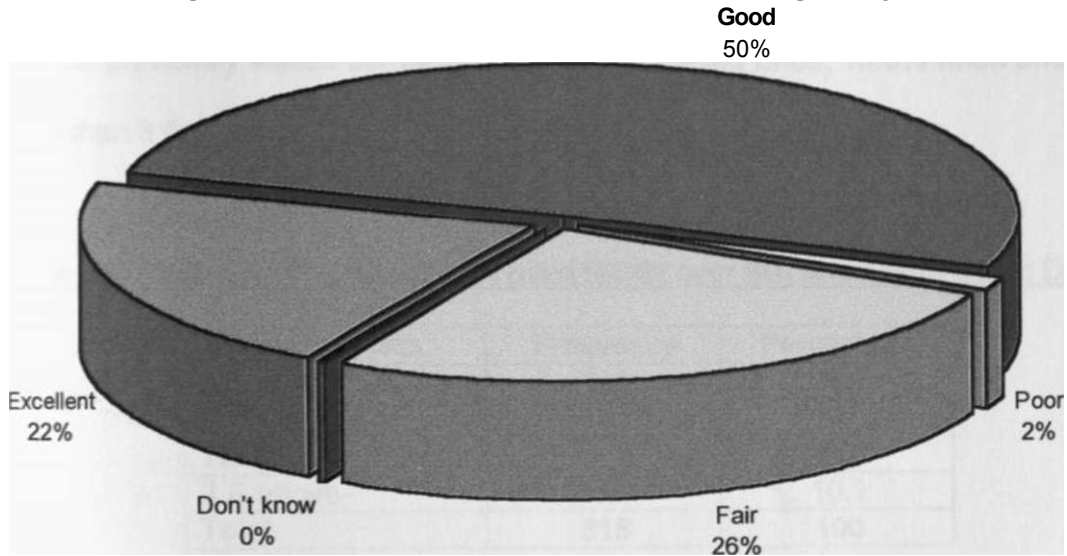
5.3.3: Overall rating of the facility in Nyeri District

The results indicate that 21.6% of the patients rated the health care services in Nyeri are excellent; 50.8% as good; 25.8% as fair and 1.5% as poor. At the same time 75.5% believed that the services were not expensive and 13.5% that they were expensive.

Table 5.3.3: Overall rating of the facilities in Nyeri District

Rating	Frequency	Percentage
Excellent	70	21.5
Good	165	50.6
Fair	84	25.8
Poor	5	1.5
Don't know	1	0.3
I Total	325	100

Fig 5.3.3: Overall Health care Service Rating in Nyeri District



Time taken to wait for health care at a facility was a good indicator of how well the facility layout facilitates provision of health services. In addition, it indicated how well the facility systems and the procedures are working. In the study, the patients rated the length of waiting time in the facilities. The majority 53.7% said the waiting time was average. For 22.6% waiting time was very short while others believed it was too long 20.7%.

5.4: Use of Health Care Services (frequency)

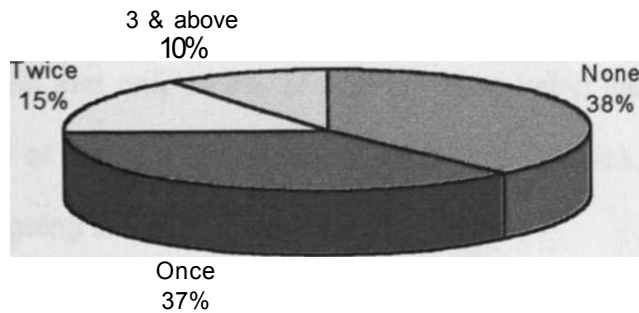
In order to obtain information on patients' frequency of use of a provider, inquiring how often they had used the provider over the last one month captured the rate of visits by patients to the provider. In addition, information on frequency of use by their members of the family over similar periods captured the rate of visit by family

members. Subjects were grouped into four groups: zero times, once, twice, three and above. The study showed that 37.1% of the patients interviewed at health facilities had not previously visited the facility; 35.6% had visited once, 15.0% twice and 9.8% more than 3 times.

Table 5.4.1 :Number of times patient visited facility over last one month (Nyeri District)

Number of Visits	Frequency	Percentage
None	121	38.1
Once	116	36.5
Twice	49	15.4
3 & above	32	10.1
Total	318	100

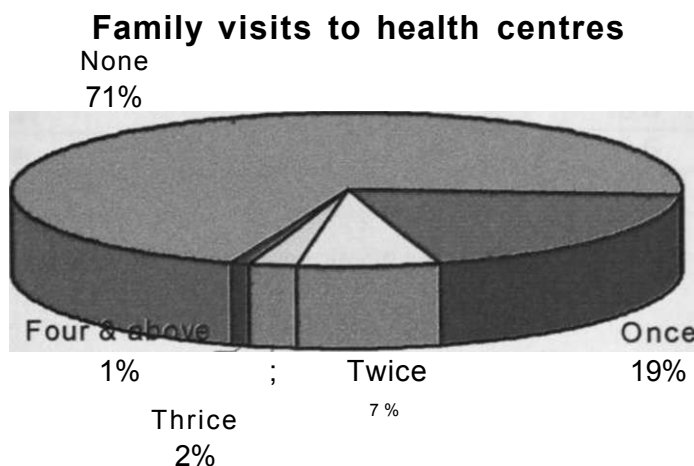
Figure 5.4.1: Percentage of Visits in Nyeri District



According to the patients, 70.9% of their household members had not visited the formal health facilities in the last one to one months. However, 19.1% had visited the facility once, 6.9%, 2.2% had visited it twice over last month one 3 months respectively. All others visited 3 times and more over last one month.

Table 5.4.2: Number of times family member(s) visited facility over last one month

Visits	Frequency	Percentage
None	226	70.8
Once	61	19.1
Twice	22	6.9
Thrice	7	2.2
Four & Above	3	0.9
TOTAL	319	100



The study revealed that only 14.4% of patients were using the facilities for the first time. The majority of patients 83.4% were revisiting the facilities. These results reveal that people were going to usual sources of care.

Patients stated 'yes' if referred to a facility and 'no' if they were not referred. The majority, 87.1% were not referred to the facility while the various providers referred (12.9%) to the facility. This shows there were few referrals, result that calls for the strengthening of the primary health care facilities.

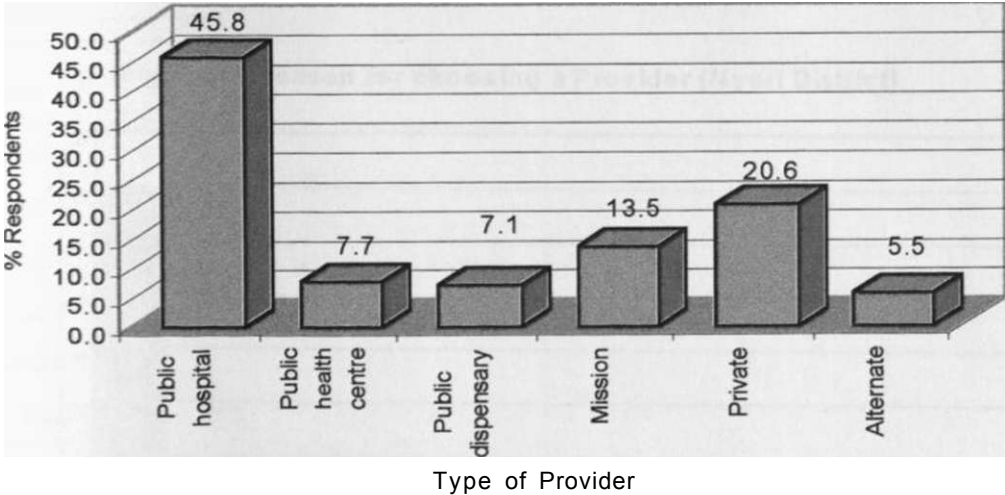
Among the provider choices, public hospitals were the most commonly used (45.8%) by the patients, followed by private facilities (20.6%), the mission (13.5%), public

health centres (7.7%) and public dispensaries (7.1%). From these results one could deduce that patients were by-passing the primary health care facility in favour of distant hospitals. A conclusion that further supports the importance of improving the rural facilities

Table 5.4.3 Utilization of healthcare providers in Nyeri District

Type of facility	Frequency	Percent
Public Hospital	149	45.8
Public Health Centre	25	7.7
Public Dispensary	23	7.1
Mission	44	13.5
Private	67	20.6
Alternate	18	5.5
Total	326	100.0

Fig 5.4.3: Utilization of Service Providers (Nyeri District)



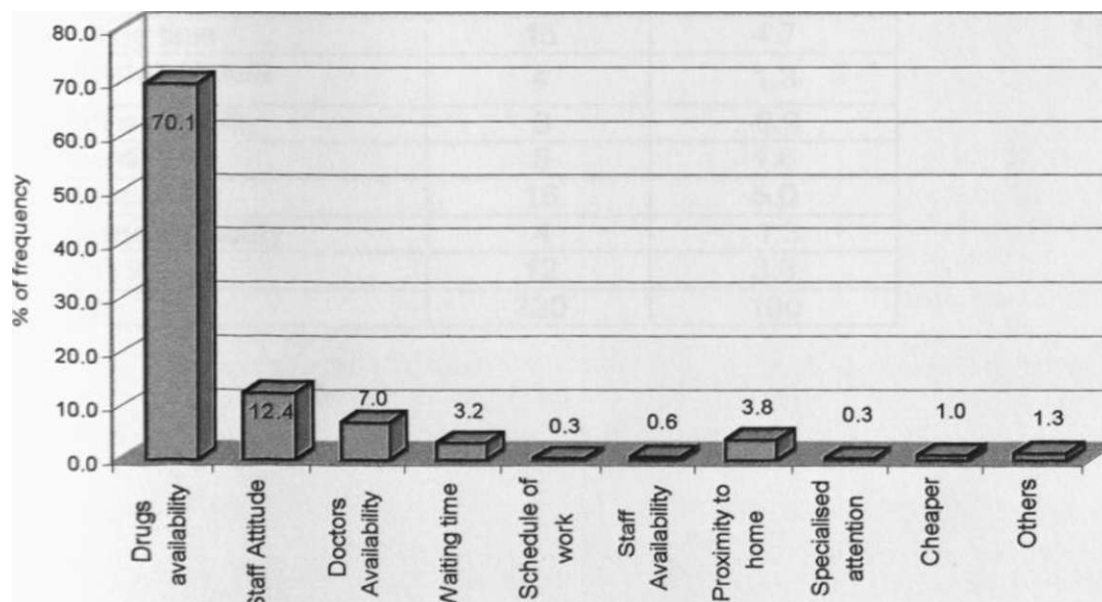
The provider type list provided information indicating the reasons for choosing a specific provider. Asked why they preferred the facility, 70.6% Of patients mentioned availability of drugs, 12.1% cited good attitudes of staff, and 7.01% said doctors were

available, while 4.3% of the patients were attracted by the nearness of the health facilities to their homes

Table 5.4.4: Reasons for choosing a Health Care Provider in Nyeri District

Reason for choice of a provider	Frequency	Percentage
Drug availability	220	70.1
Staff attitude	39	12.9
Doctors availability	22	7.0
Waiting time	10	3.2
Schedule of work	1	0.3
Staff availability	2	0.6
Proximity to home	12	3.8
Specialized attention	1	0.3
Cheaper	3	1.0
Others	4	1.3
Total	314	100.0

Fig 5.4.4: Reason for choosing a Provider (Nyeri District)

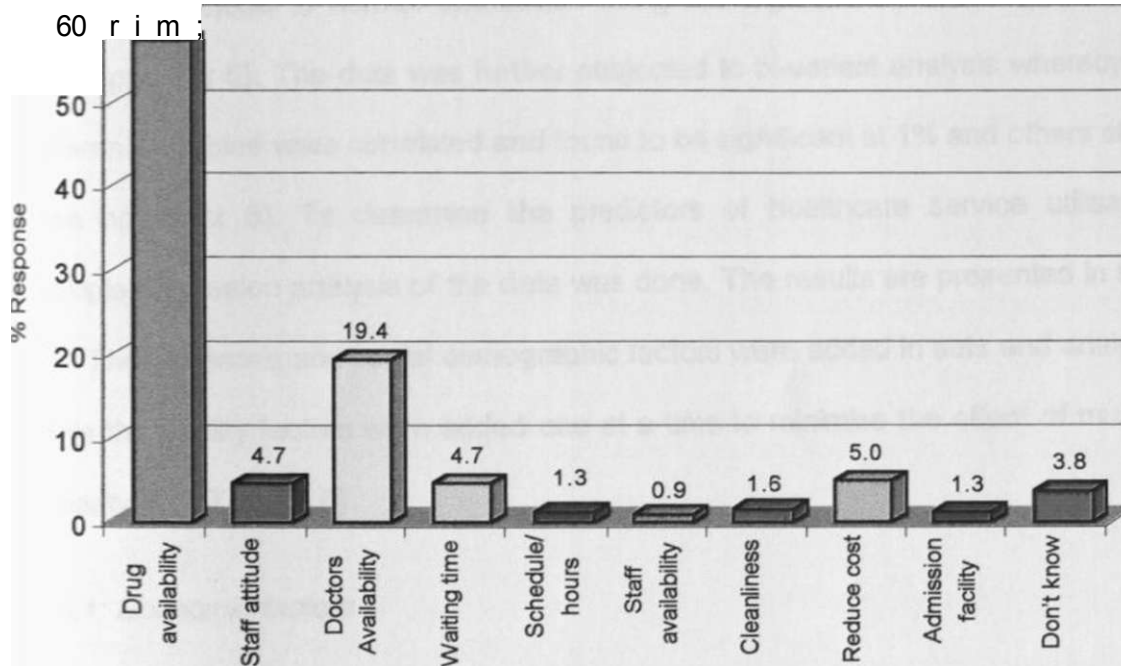


Patients' view on what they most desired to be improved indicates attributes most valued. From the results 19.4% wished that doctors made available in the health facilities, waiting time reduced (4.7%) and staffs change their attitude towards the patients (4.7%). Other felt that scheduling of working hours should be regulated and adhered to (1.3%). Reduction of cost of services (5.0%) was not a major concern. It is important to not that availability of drugs was cited as the one of the major concern (57.5%), supporting the fact that patients visited the selected facilities due to the availability of drugs. Only 3.8% were not sure of what they expected to be improved.

Table 5.4.4: Initiatives to improve Healthcare Service Provision (Nveri District).

Aspect	Frequency	Percentage
Drug availability	184	57.5
Staff attitude	15	4.7
Doctors Availability	60	19.4
Waiting time	15	4.7
Schedule/ hours	4	1.3
Staff availability	3	0.9
Cleanliness	5	1.6
Reduce cost	16	5.0
Admission facility	4	1.3
Don't know	12	3.8
Total	320	100

Figure 5.4.4: Important Initiatives to improve healthcare (Nyeri District)



5.5: Determinants of Health Service Utilization

The determinants of health service utilization were analyzed using bivariate and regression methods. The log of number of visits to the facility was the dependent variable. The independent variables included log income, log fees, log travel time, gender, log age, log years of schooling and service quality as perceived by the patient. Dummy variables were created to capture the utilization in the public facilities (=1) compared to other facilities (=0) registered with the Ministry of Health. The log of the variables was used because the relationship between the dependent variable and each of the independent variables is non-linear, e.g. the relationship

between visits to the facility and the service fee paid by the patient. The data was smoothed close to normal distribution using the logarithm of the individual data (see appendix 5). The data was further subjected to bi-variant analysis whereby the different variables were correlated and found to be significant at 1% and others at 5% (see appendix 6). To determine the predictors of healthcare service utilisation, multiple regression analysis of the data was done. The results are presented in table 5.5. The economic and social demographic factors were added in sets and analysed while the quality factors were added one at a time to minimise the effect of multi-collinearity (see Table 5.5)

5.5.1: Economic factors

The economic determinants of healthcare demand include log of income of patients, log of fee paid for health services and log of travel time. These have a varying influence on utilization of health services. Income is negatively associated with health service utilization, but the income coefficient is statistically insignificant. Service fee reduces health service utilization and its coefficient is significant ($t=2.28^*$). A unit percent increase in fee reduces utilization by 0.037%. This means that doubling the service fee will lead to a 3.7% reduction in utilization. The time to reach the health facilities reduces utilization of services. A percentage increase in travel time reduces utilization by 0.016%. Again, doubling travel time, e.g. when a health facility is closed for public health reasons or a facility is not capable of providing a specific service and the patient have to seek such services from facilities far away, reduces utilization by

1.6% because it increases travel time by 100 percent. However, the coefficient for travel time is not statistically significant.

5.5.2: Social - Demographic characteristics

Social and demographic factors used in the model include sex and log age of the respondent, sex of patients and education (log years of schooling) of respondents. The results indicate that age influence utilization of health services. The coefficient for log age of the respondents is 0.11. The positive sign of this coefficient means that the older the accompanying parent or guardian, the younger the patients visiting the hospitals. The younger the patient, the more they are likely to utilize the health facilities. However, the results indicate that the age coefficient is not statistically significant.

In the case of gender, the results reveal that compared with men women are more likely to seek health services for themselves and for their children (sex coefficient= -0.068, 't'=-1.54**). Furthermore, they are more likely to seek health care for their male children (patient sex coefficient=0.032, 't'-0.035). This is a clear case of gender disparity in utilization of modern health care services, but the insignificance of the gender coefficient should be noted.

Educations have a major influence on utilization of modern health care services (education coefficient= -0.171, 't' statistic=-2.05* and p-value=0.05). The higher the level of education, the lower the utilization of the facilities by patients. This result

captures the benefits of having a well-educated populace. Education influences the mindset of the people as to the importance of engaging in preventive measures to avoid illness, which has the effect of reducing the need to utilize the facilities for treatment. Education also determines the lifestyle of the individual, which in turn affects health status. Increasing the number of years of schooling by one percent reduces the number of visits by 0.171 %. Further, if the number of years of schooling increases by 100%, the number of visits decline by 17.1% because those educated have a better chance of employment compared to those with lower education. Better employments translates into a high income and better standard of living and hence less vulnerability to disease.

5.5.3: *Quality factors*

The quality variables were added into the model each at a time to avoid the problem of multicollinearity. The quality factors included patients' attitudes about staff, drug availability, adequacy and completeness of diagnosis, cleanliness of facilities, confidentiality or privacy during diagnosis, staff qualification, and beds and linen. The attitudes of facility staff are captured on a Likert scale, which has a value of one for the most favorable attitude and a value of four for the least favorable attitude. Thus, a higher value on the Likert scale is associated with poor attitude. The results indicate that even when the attitude of staff is bad, patients continue to use the facility (staff coefficient=0.068, 't' statistic=2.63*). This result captures the fact that good quality of service is highly valued by the patients and this increases demand for services. Due to demand increase, the staff overworks and adopts bad behavior towards patients. This problem may also be associated with inadequate staffing in the public health

Table. 5.5: Determinants of health service utilization (t-statistics in parentheses)

Variables	Models (Dependent variable Is Log. No of visits									
	1	2	3	4	5	6	7	8	9	10
Constant	0.418 (2.02)	0.361 (125)	0.440 (1.49)	0.306 (1.03)	0.406 (135)	0.435 (1.41)	0.480 (161)	0.498 (1-66)	0.627 (2.06)	0.619 (1.94)
Log income	-0.013 (0.28)	-0.003 (0.07)	0.00 (0.00)	0.007 (0.14)	0.005 (0.11)	0.005 (0.10)	-0.005 (-0.10)	-0.007 (-0.13)	-0.024 (-0.46)	-0.032 (-0.59)
Log sendee fee	-0.037 (2.28)*	-0.028 1.49)	-0.033 (1.88)**	-0.040 (1.98)*	-0.037 (1.81)-	-0.035 (1.67)-	-0.040 (1.92)**	-0.038 (1.83)-	-0.025 (117)	-0.05 (2.33)*
Log travel time	-0.016 (0.44)	-0.34 (0.85)	-0.31 (0.78)	-0.017 (0.43)	-0.31 (0.78)	-0.032 (0.76)	-0.029 (0.73)	-0.036 (0S1)	-0.034 (0.86)	-0.278 (0.66)
Log age of respondent		0.11 (0.99)	0.097 (0.89)	0.087 (0.79)	0.093 (0.82)	0.079 (0.69)	0.082 (0.73)	0.084 (0.75)	0.067 (0.58)	0.070 (0.60)
Sex of respondent (1 = male)		-0.068 (1.54)**	-0.067 (1.52)**	-0.067 (1.54)-	-0.066 (148)	-0.074 (1.66)-	-0.065 (147)	-0.066 (1.50)"	-0.079 (1.76)-	-0.056 (117)
Sex of patient (I=male)		0.013 (0.34)	0.009 (0.23)	0.013 (0.32)	0.009 (0.25)	0.004 (0.11)	0.018 (0.44)	0.008 (0.20)	0.007 (0.18)	0.039 (1.43)
Log education of patient		-0.171 (-2.05)*	-0.194 (2.27)*	-0.177 (2.08)*	-0.195 (2.27)*	-0.188 (-2.13)*	-0.177 (2.05)*	-0.205 (2.39)*	-0.212 (2.44)*	-0.170 (1.89)-
Provider (1=Public)			-0.052 (1-28)	-0.044 (1.09)	-0.053 (1.23)	-0.053 (127)	-0.045 (1.09)	-0.058 (1.43)	-0.076 (1.85)-	-0.051 (1.21)
Attitude of facility staff f (1-4)				0.068 (2.63)*						
Drug availability t(1-4)					0.00 (0.37)					
Completeness of diagnosis f (1 -4)						0.00 (0.03)				
Cleanliness of facility f (1-4)							-0.08 (0.53)			
Confidentiality t(1-4)								0.00 (1.29)		
Staff qualification t(1-*)									-0.007 (0.56)	
Inpatient facifty t (1-4)										-0.028 (135)
Sample size	291	250	250	250	247	244	246	248	240	209
R ²	0.019	0.050	0.057	0.083	0.055	0.055	0.054	0.064	0.062	0.081

* Significant at 5% level
the most unfavourable response

tMeasurement on Likert scale-takes in values 1 for the most favourable and a value of 4 for

CHAPTER SIX: DISCUSSION, CONCLUSION AND RECOMMENDATION

6.1 Discussion

The **study** was carried out in ten health facilities in Nyeri district. The main objective was to determine how patient characteristics, access and quality of health care services influence utilization of health care facilities.

6.1.1: Patients Demographic Characteristics

Patients' demographic characteristics provide proxy variables of economic status and also may determine individual demand for health services. For patients and community, quality care is one that meets their needs. Since patients often differ in their preference, their personal satisfaction ultimately depends on the perception, attitude and expectations of each individual (Margaret Brawley, 2000). These perceptions, attitudes and expectations are acquired in different ways - through previous experience with a provider or through information from the community - and are important in deciding the provider a person utilizes when seeking health care services. Many of the patients who utilized the healthcare facilities in Nyeri district were children aged below five years (32%) accompanied by their parents/ guardian's, majority of whom were women (73%). Further, the women accompanied their sons more than the daughters. All these factors requires consideration when planning for the health services

Individual demand for health may be treated as a derived demand and a function of individual health status. Healthcare services, in combination with several intermediate (proxy) determinants of health such as environmental conditions, sanitation and nutrition, have a direct influence on health. With this approach, the demand for health care, otherwise known as the "derived demand for health care," depends on the "health" production technology (Wouters, 1992). Individuals aim to maximize the utility and expect to get value for their money. The study results indicate that a person values quality health care and utilizes the facilities where quality care is provided. This further explains why people by-pass the primary health care facilities and opt for far away hospitals.

A person's occupation determines decision to seek care and where to seek the medical care while education level promotes value and attitudes that provide incentive to use health care services. Most of the respondents were engaged in gainful employment (>80%). Also results from the study indicate that 19% of respondents were in wage employment, which is supported by census survey, 1999 that showed that only 25% were in wage employment. This supports the view that most residents are self-employed. The results of the study further indicate that majority (51.5%) of respondent's had attained primary level education while 29.1% and 6.2% had attained secondary and post secondary level of education respectively. This education level exceeds the national enrolment level of 73.5% in 2001. It is hypothesized that low education leads to low use of health facilities.

Parents (40.7%) usually accompany children to seek health care. Married people seek more care and enjoy better health status. A study conducted in Rural Sri Lanka on evaluation and utilization of health services among females showed that married women sought more health care services than the unmarried. This is supported by this study, which shows that 59.3% of the respondents visiting facilities in Nyeri were married. Women tend to manage illness episodes by determining when and where family members when ill seek healthcare and also decide on when and what kind of care they should receive. The extent of present health care status is a determinant of use for health services. The unmarried tends to have poor health and are therefore at risk and would require more health care. Because there is some indirect relationship between marital status and expenditure patterns, the married people are more likely to enjoy more income than the rest and the unmarried people may find difficulties to pay for medical care. In theory, demand for health services by women exceeds that of men. The results revealed that 54.6 percent of patients were male while 45.4 percent were women. Both Mwabu and Mbugua (1995) concur that increase in user fee reduced (52%) utilization of public facilities in general. Since many of the people using the health facilities are women and children, the change in fee policy therefore mainly affected them, yet they are vulnerable and needs consideration

Certain religious denominations run a number of health facilities and may encourage their followers to seek care in affiliated facilities. Followers of denomination that

believe in spiritual healing would not seek medical care in the modern health facilities. To the faith believer's quality of health care is irrelevant.

6.1.2: Access to Health Care Services

Results show that many patients (40.5%) lived within 1-5 km from the health facility. As indicated in the literature review, distance from the health facility did not have any effect on utilisation as many bypassed the primary health care facilities to visit the district and the provincial hospitals. The reason leading to this health-seeking pattern is attributed to the poor quality of health care provided in these facilities, which translate into inaccessibility. However, since many patients lived 1 to 5 km from nearest facility and many walked (39.9%) to the facility, the overload on the district and referral facilities can be reduced by improving the quality of health care at the primary health care level. In this regard Nyeri districts meets the WHO requirement of distance travelled to reach a facility. Those interviewed said that health facilities were at reasonable distances from their homes except for a few who were on referral from rural health facilities. Many (40.8%) patients used public means to travel to the facilities to seek health care and paid an average of 40.6 Kenya shillings.

Of importance is the travel time between the home and the health facility, which was shown to have an effect on demand though statically insignificant. The travel time reduced utilisation of health care services. This could be due to, amongst others; the poor conditions of the roads that may be impassable during the wet seasons, and

lack of adequate transport to and from the health facilities. Patients walk long distances to reach a point where transport is available. The result from the study further shows that majority believed that waiting time was average (63.4%), but not statistically significant. However waiting for a service measures the efficiency of the processes, systems and procedures of a provider. Therefore it is important to note that 20.6% believed that the time is too long and should be improved (14.7%).

In addition, the result from the study shows that 59.2% paid 1-100 shillings, 12.9% spent 200-400 shillings. When asked if the health services especially in the public service were expensive, majority (78.5%) said they were not expensive, while only 13.5% believed they were expensive. This means that the user fee is not a burden to the users of formal facilities, leaving room for the introduction of alternate funding mechanism. However for this to be acceptable and successful, it should be accompanied by quality improvement and cost containment (Diop, 1995).

6.1.3: The Quality Dimensions

For patients and community, quality care is one that meets their needs. Frequency of use of a facility indicates a high perception for the facility that the patient highly values the service. The study on health care financing in Ogun State, Nigeria, reconfirmed earlier studies that quality is a major determinant of patient choice of health care providers, strengthening the recommendation that quality improvements should accompany increases in user fees (Denton et al., 1991). This view is

supported by the results of this study, which captures the effect of specific quality attributes on demand of healthcare services in Nyeri district. The attitude of staff towards the patients was statistically significant at 5% Confidence Interval and of more importance is the fact that it reduced the effect of both economic and socio-demographic factor on the utilisation except education, which remained statistically significant. Another quality factor with significant effect on utilisation is the beds/beddings/linen that captures the in-patient quality. These results explain why patients value the public hospital where quality enhancements are found. In this study, result shows that the facility of choice to patients was the public hospital (48.8%) leading to the conclusion that the overloading of public facilities is due to the high demand. In turn supplies are depleted giving a picture of low quality. A consistent supply of inputs especially drugs and other commodities are likely to remove that perception with an increase in utilisation.

Patients further believe a health facility with good quality service must be equipped with diagnostic equipment, blood testing equipment and laboratory equipment. Majority (62.9%) of patients cited the attitude of health workers as excellent. Good attitude of staff rated second as to why patients utilize a facility. Drug availability was cited as the most important reason while patients used a facility. In Kenya, Mwabu et al 1996 reported that drug availability in the health facility had a positive impact on demand for services.

From the results, 19.4% of the respondent wishes doctors are made available in the health facilities. The quality of reproductive healthcare study (DISH, 1999) found out that patients often expected facilities to have well qualified medical doctors and laboratory technicians. Patients consider the provider consultation when judging quality of care. Low patient satisfaction of quality of care may arise from poor attitudes from health workers as well as from poor outcomes of treatments arising from the unobserved factors not captured by the data such as a bad reputation of a facility in the community - likelihood of misdiagnosis or even death. The dummy provider variable captures the patients' perception of factors not captured by the data and how the perception varied with provider. The quality of the public facility is perceived as poor yet it is the most preferred. This captures the fact that if these public facilities were improved to a level close to that of other facilities, utilisation would increase. In the Dominican Republic, the quality of private health services was perceived to be higher. In Kenya, Mwabu listed mission hospital highest in his study in 1993. However, the study rates mission facilities third suggesting a low quality perception by the patients.

Perceptions of process or outcome measures of quality are almost totally lacking in health care demand studies. The study has investigated patient perceptions of quality as a measure of these parameters as perceived by the patient.

6.1.4: *Service utilization*

Quality of health care provision has gained an increasing attention under structural adjustment reforms of health systems in developing countries. If the benefit derived from the health care appears less, especially with advancing age, the desire to invest in more health care may decline. In a study conducted in Kenya 1989 of provincial and district health services to assess among other things the willingness to pay for health services revealed that age had a negative effect on willingness to pay. However the study shows that the bigger proportion of the population are in economically active age group (51%) and among them women are the majority. Furthermore, studies on the demand for medical care in industrial countries uniformly concluded that prices were important determinants of utilization of medical care (Manning et al, 1987). This is supported by the results of the study that shows that user fee is a determinant of health care in Nyeri District but though statistically significant, there is low price elasticity of demand. For access to quality health care for rural populations to be sustained, cost recovery should be accompanied not only by quality improvement measures, but also by cost containment measures.

The government is the main health provider of the healthcare services. Though the public hospital is the most preferred facility, unobserved factors not captured by the data lower the perception of patients regarding the quality offered. These factors may not necessarily be connected with quality but directly or indirectly affect utilization e.g. unnoticed defect on diagnostic equipment that lead to wrong diagnosis and failure to

treat illness timely which may lead to complications and patients' frustration. The dummy variable further reveals that the utilization of public facilities is low but can rise following quality improvements.

Patients preferred the public hospital, which is farther away than primary health facilities, further supported by the low referral rates in the study area. Previous reviews show that people actually bypassed these facilities and prefer the public hospitals that lead to creating an overload in these facilities. This overload is responsible for the bad attitude of staff to patients adapted to cope with long queues. In his earlier studies, Mwabu 1986 rated primary health care (rural) facilities higher than the public hospitals, however from the results of the study the trend appears to have changed from the earlier one.

Econometric studies support the importance of quality in influencing health care utilization patterns; however, the aggregate measure of quality does not allow one to determine preferences for specific dimensions of quality. The study, after controlling specific quality factors has isolated the effect each factor had on utilisation. Attitude of staff towards patients was found to be a major determinant of health services utilisation. Other factors include availability of doctors and the conditions of in-patient facilities. Other non-quality factors influencing utilisation are price of services and the education level of the respondents.

6.2 Conclusion and Policy Implications

The study analyzed patients' visits in ten health facilities in Nyeri district - Utilization of health care services. The main objective of the study was to determine how patients' characteristics, access and quality factors influence utilization of health care services.

The quality of services and its perception by patients influences health service utilization. The study has illustrated the critical role of patients' perception about service quality on visits to health facilities.

The results show that 41% of the patients lived within 1-5 km from the health facility, 59.2% paid 1-100 shillings for the health services, while about 40% of them walked to the facility. However, travel time lowers utilisation of health facilities.

A notable observation from table 5.5 is that even after controlling for effects of social-demographic and quality variables, the negative effect of user fee on service utilization remains, as hypothesized at the beginning of the study. Service utilisation in Nyeri, like in other places, is inelastic with respect to user fees (Akin et al. 1986). The attitude of health facility personnel towards patients is a determinant of service utilization. Also education level of the respondent is statistically significant.

Demand of health services in Nyeri District is relatively inelastic to price changes, specifically, a 10% increase in fees would reduce utilization by only 3.7% (This is not an automatic justification for financing health services through user fees. However, there is need for continuous financing of health care services because; (1) there are poor people who cannot afford, (2) those who are able to pay may be sacrificing other necessities such as food and shelter, and (3) it contradicts the idea of health care as a human right to which every one is entitled irrespective of ability to pay.

6.3: Recommendations

The rate of utilization of health services in the government facilities is high, compared with the utilization rate in the private and the mission facilities. This may be due to proximity of government health facilities. This is so even after taking into account the negative effects of the cost-sharing program. However, user fees are a deterrent to health service utilization by the poor. Thus, the waver and the exemptions systems in public health facilities should undergo reforms so that they can serve as proper safety nets for the poor. There is also need to implement alternate health financing such as a social health insurance scheme to ensure that everyone has access to good quality health care.

To further encourage utilization of existing health facilities qualification of the personnel deployed in all facilities needs improvement. Staff policies that deny the primary health care level facilities the presence of a doctor needs revision to enable

these facilities be served by doctors. However given the limited number of doctors in the country, government should facilitate supervision of primary health facilities by doctors. Patients' perception about adequacy of drugs and diagnosis at the health facilities affect health services utilization. The presence of a doctor in a health facility significantly increases demand for health services.

Since most patients visit the nearest health facilities, efforts to improve the availability of drugs and diagnostic capabilities at these facilities are necessary. The private and the mission facilities should also adopt these improvement efforts and initiatives.

A community-based survey would improve on the results of the study because it can reduce the self-selection bias.

Advocacy for health care rights for communities and individuals.

Further research is needed to identify gaps among income groups and other vulnerable groups to yield insight into effect of perceived quality on utilisation. Studies are needed to find out how patients perceive specific services.

Recommended research areas:

- Quality of health care systems in the health sector
- Rapid Community based survey to determine the effect of perception on utilization of health care services by the wider community.
- Continuous improvement assessment through Operations Research to develop/improve on operational models.

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APPENDICES

APPENDIX 1: Type and number of facilities in Nyeri

Table (1) showing the type and number of facilities in each division in Nyeri district.

Type of facility	Kieni east	Kieni west	Tetu	Mukur-weini	Mathira	Municipality
Public hospitals [gok]				1	1	1
Public health centres [gok]	2	2	3		1	2
Public dispensaries [gok]	8	6	9	11	7	11
Private hospitals / homes / maternity	1				2	3
Public clinics / private dispensaries	12	17	22	12	32	16
Pharmacies	1	2		4	8	4
Specialised hospitals		1			1	
Specialised dispensaries / health centres	2	2	2	3	5	5
Total	26	30	36	31	57	42

Appendix 2: Patients attendance to facilities

Report, March 2003 on patient's attendance in each division of Nyeri District.

Division	Type Of Facility	Total Cases	Re-Attendance and Revisits	Referrals	Number Of First Visits
I i3	Public hospitals	11,073	2,163	4	8,906
	Public health centres	1,786	175	15	1,596
	Public dispensaries	3,320	1,357	187	1,776
	Mission hospitals	1,325	399	-	926
	Mission facilities	8	8	-	-
	Private hospitals	910	618	8	284
	Private clinic	676	332	8	336
	Total	19,098	5,052	222	13,824
Tetu	Public hospitals	63	-	-	-
	Public health centres	3,629	663	39	2,927
	Public dispensaries	5,413	775	43	4,595
	Mission hospitals	-	-	-	-
	Mission dispensaries	128	41	2	85
	Private hospitals	-	-	-	-
	Private clinics	130	3	-	127
	Total	9,363	1,482	84	7,734
Mathira	Public hospitals	4,901	545	-	4,356
	Public health centres	1,108	190	-	918
	Public dispensaries	5,787	1,228	60	4,499
	Mission hospitals	2,263	1,495	-	768
	Mission dispensaries	1,120	405	-	715
	Private hospitals	648	494	-	154
	Private dispensaries and clinics	769	165	22	582
	Total	16,596	4,522	82	11,992
Mukurweini	Public hospitals	2,724	580	-	2,144
	Public health centres	-	-	-	-
	Public dispensaries	7,553	2,299	70	5,184
	Mission hospitals	634	181	-	453
	Mission dispensaries	-	-	-	-
	Private hospitals	-	-	-	-
	Private clinics and dispensaries	436	212	1	223
	Total	11,347	3,272	71	8,004

• S sz 0	Public hospitals	3,599	720	40	2,839
	Public health centres	2,689	543	64	2,082
	Public dispensaries	8,176	1,927	257	5,992
	Mission hospitals	-	-	-	-
	Mission dispensaries	1,112	766	9	337
	Private hospitals	-	-	-	-
	Private clinics and dispensaries	1,022	209	13	800
	Total	16,598	4,165	383	12,050
+0 at C 8 2	Public hospitals	-	-	-	-
	Public health centres	2,597	714	66	1,817
	Public dispensaries	4,999	1,185	41	3,773
	Mission hospitals	-	-	-	-
	Mission dispensaries	1,606	801	-	805
	Private hospitals	-	-	-	-
	Private clinics	193	33	3	157
	Total	9,395	2,733	110	6,552
C 1 8 *	Public hospitals				
	Public health centres	982	59	14	909
	Public dispensaries	3,335	338	40	2,957
	Mission hospitals	359	117		242
	Mission dispensaries	385	79	1	305
	Private hospitals				
	Private clinics	578	243	21	314
	Total	5,639	836	76	4,727

Source: MOH Nyeri District
A Case: Constitutes A Patients' Who Have Utilized The Facility.

Appendix 3: Summary statistics

Table A1: Descriptive statistics

Variable	Observations	Mean	Std. Dev.	Min.	Max.
Log number of visits	321	0.306	0.281	0	1.204
Log income	313	4.38	0.345	4.096	5
Log service fee	283	0.940	0.220	0	1.301
Log travel time	325	-0.166	0.434	-2	1
Log age of respondent (Years)	325	0.947	0.329	0	1.609
Sex of respondent (1=male)	326	0.273	0.446	0	1
Sex of patient (1= male)	326	0.454	0.499	0	1
Log education of patient (Years)	283	0.940	0.220	0	1.301
Attitude of patients about staff (Likert scale 1-5)	324	1.469	.705	1	4
Drug availability (Likert scale (1-5)	321	1.975	.993	1	4
Adequacy and completeness of diagnosis (Likert scale (1-5)	317	1.987	1.090	1	9
Cleanliness of the facility (Likert scale (1-5)	319	1.868	1.185	1	9
Confidentiality and privacy (Likert scale (1-5)	323	2.833	22.865	1	412
Staff qualification (Likert scale (1-5)	309	1.874	1.439	1	9
Beds, beddings and linen (Likert scale (1-5)	273	1.894	1.422	1	9

Appendix 4: QUESTIONNAIRE

Instructions

The questionnaire applied to all patients attending health care facilities in Kieni East and Municipality divisions, Nyeri.

1.0 Statement of consent

"Hallo, my name is _____ and I'm part of a team carrying out a study on how you perceive the health care offered by this facility. I hope you will feel free to answer the following questions. All the information that you will provide is confidential. Your name or information that may identify with you as a participant shall is not required. Can I go on? Thank you very much for your time and information.

2.0 General information

- 2.1. Data collector
- 2.2. Dates and time of data collection

3.0 Respondent's status

- 3.1. Patient's registration number

- 3.2. Respondents role-

CIRCLE THE NUMBER THAT ADEQUATELY DESCRIBES THE RESPONDENT

- ROLE
- Patient self _____01
 - Parent/guardian _____02
 - Spouse _____03
 - Relative _____04
 - Friend/neighbour etc _____05

- 3.3. Date of birth of the respondent: Month _____ Year —

4. 0 Type of Facility:

CIRCLE THE NUMBER THAT ADEQUATELY DESCRIBES THE TYPE OF FACILITY

- Public hospital _____01
- Public health center _____02
- Public dispensary _____03
- Mission hospital/ dispensary _____04
- Private hospital/ clinic/pharmacy _____05
- Alternative herbal/ others _____06

5.0 Patient socio-demographic information:

- 5.1. Date of Birth Month _____ Year
- 5.2. Number of usual household members

53 Sex of Patient

- Mate .01
- Female— -02

54 Occupation code (for children use parents information)

CIRCLE THE NUMBER (S) THAT SUITS BEST THE OCCUPATION OF THE RESPONDENT _____

- Housewife/ househusband _____01
- Artisan _____03
- Professional/accountant/lawyer/doctor _____04
- Government employee _____05
- Private sector employee _____06
- Servant/Houseboy/Maid _____07
- Casual labourer _____08
- Farmer/Herder/Fisherman _____09
- Student _____10
- Unemployed _____11
- Small-scale business person _____12
- Not applicable/ Child _____13

5.5. If the answer is housewife/house husband to "5.4" above, what is the occupation of the husband/wife?

USE ABOVE CODE

5.6. If the answer is student in "5.4" above, what is the occupation of your parent/ guardian?

USE CODE IN "5.4" ABOVE.

5.7. Marital status of patient -

CIRCLE THE CORRESPONDING NUMBER _____

- Never married with children _____01
- Never married without children _____02
- Married _____03
- Divorced/separated _____04
- Widowed _____05

5.8. If never married with child/children and living with parents/ guardian, what is the occupation of the parent/ guardian? Use code 5.4

5.9. Religion:

CIRCLE THE CORRESPONDING NUMBER _____

- Catholic _____01
- Protestant (specify grouping) _____02
- Muslim _____03
- Hindu _____04
- Other _____05

5.10. Residence. -

CIRCLE THE CORRESPONDING NUMBER _____

- District: _____01

Division: _____ **02**
Location: _____ **03**
Village: _____ **04**

511. Education code (for children use parents information)

~~CIRCLE THE CORRESPONDING NUMBER~~
 None _____ **01**
 Primary _____ **02**
 Secondary _____ **03**
 Post-secondary training _____ **04**

Total number of years in school

60 Health services utilization

61 How many times have you visited this facility?

- (1) Over the past month
- (2) Over the past 3 months

62 How many times have someone from your household beside yourself visited this facility?

- (1) Over the past one month
- (2) Over the past 3 months

63 Were you referred to this facility today:

TICK IN APPROPRIATE SPACE. Yes: — No:—
 If yes, which facility referred you? USE CODE 4

64 Where else would you prefer to seek further treatment apart from this facility?

USE CODE 4

65 Why do you prefer that specific facility?

~~CIRCLE ALL REASONS GIVEN BY THE RESPONDENT~~
 Drugs are availability _____ **01**
 Staff attitude is good _____ **02**
 Availability of doctors _____ **03**
 Waiting time is short _____ **04**
 Schedule/hours are adhered to _____ **05**
 Staff availability _____ **06**
 Cleanliness _____ **07**
 Nearest to home _____ **08**
 For specific service (e.g. X-ray, laboratory etc) _____ **09**
 Cheaper _____ **10**
 Don't know _____ **11**

70 Access to and cost of services

71 What is the distance from here to your home in kilometres?

RESPONDENT STATES ACTUAL NUMBER OF KILOMETRES

- 7.2 How did you travel to the hospital?
 CIRCLE ALL MEANS OF TRAVEL _____
- | | | |
|-------------------|-------|----|
| Walked | _____ | 01 |
| Used public means | _____ | 02 |
| Hired vehicle | _____ | 03 |
| Used own means | _____ | 04 |

7.3 How much did you pay? STATE FIGURE

7.4. How long did you take to reach the facility from your home?

7.5 How long have you waited since you arrived?
 ALSO RESPONDENT STATES ARRIVAL TIME

7.6 How much in total have you paid for the service?

7.7 Other expenses such as lunch, purchases etc.
 STATE TOTAL FIGURE

8.0 Usage

8.1 Is this the first time you have been to this facility?
 TICK AS APPROPRIATE. Yes No

8.2 If no, when were you here the last time? STATE DATE-
 Reason(s) for the visit- TICK THE APPROPRIATE NUMBER

See admitted patient	_____	01
Referred from another facility (name facility)	_____	02
Due illness	_____	03
Accompanied a patient	_____	04
Private visit	_____	05

8.3 Apart from this illness, have you been unwell in the last three months?
 TICK AS APPROPRIATE Yes_____No

8.4 If yes which facilities did visit?
 LIST FACILITIES AND CORRESPONDING DATE OF ATTENDANCE BELOW.

Hospital Name	Number of times
1—	
2	

8.5 When members of your family fall ill, which hospital do they usually visit?
 USE CODE 4. —

86 Why do they prefer the specific facility?
 CIRCLE ALL REASONS GIVEN BY THE RESPONDENT _____

Drugs are availability	_____	01
Staff attitude is good	_____	02
Availability of doctors	_____	03
Waiting time is short	_____	04

Schedule/hours are adhered to	05
Staff availability	06
Cleanliness	07
It's the nearest facility to home	08
Services are cheaper	09
Referred from another facility	10
Suggested by others	11
Don't know	12

9.0 QUALITY DIMENSIONS

DIRECTIONS

The following sets of statements relate to how the patient feels about the Hospital services. For each statement please indicate the extent to which the patient belief in each statement. Circling a '1' means that the RESPONDENT thinks the services are EXCELLENT and circling a '4' means the respondent thinks the services are POOR. You may circle any of the numbers in the middle that show how strongly the RESPONDENT feels. There are no right or wrong answers-all we are interested in is a number that best show the RESPONDENTS perceptions about the Facility.

9.1 Attributes of the health facility

How would you rate the following features of this facility?

(CIRCLE THE APPROPRIATE NUMBER)

	Excellent	Good	Fair	Poor	Dont know
Attitude of staff	1	2	3	4	99
Drug availability	1	2	3	4	99
Adequate & complete-ness of diagnosis	1	2	3	4	99
Cleanliness of waiting places /toilets	1	2	3	4	99
Confidentiality/privacy during diagnosis & treatment	1	2	3	4	99
Staff qualifications	1	2	3	4	99
Bed, bedding and linen	1	2	3	4	99

9.2 Why did you choose this particular hospital?

CIRCLE ALL REASONS GIVEN BY THE RESPONDENT

Drugs are availability	01
Staff attitude is good	02
Availability of doctors	03
Waiting time is short	04
Schedule/hours are adhered to	05
Staff availability	06
Cleanliness	07
If s the nearest facility to home	08
Services are cheaper	09
Referred from another facility	10
Suggested by others	11
Don't know	12

10. What are the most important things that you would want to see improved at this facility:

~~CIRCLE ALL IMPROVEMENTS DESIRED BY THE RESPONDENT.~~

- Drug availability _____01
- Staff attitude _____02
- Availability of doctors _____03
- Waiting time _____04
- Schedule/hours _____05
- Staff availability _____06
- Cleanliness _____07
- Reduce cost of services _____08
- Don't know _____09

11 How would you rate waiting time in this hospital?

~~CIRCLE THE APPROPRIATE RATING BY THE RESPONDENT~~

- Very short _____01
- Average _____02
- Too long _____03

13. How would you rate the overall services at this facility?

~~CIRCLE THE APPROPRIATE RATING BY THE RESPONDENT~~

- Excellent _____01
- Good** _____**02**
- Fair _____03
- Poor _____04
- Don't know _____05

14. Income

(1) Do you think the health services are too costly? Yes _____ No _____

(2) How much did you spend on health last year?

(3) What other areas did you spend your earnings on apart from health last year? LIST

AS STATE AMOUNT SPENT

1. Education
2. Food
3. Clothing
4. Others

15. Type of House the patient lives in.

WRITE ON PROVIDED SPACE

- Own/ rented _____01
- Type of roofing type of walls _____02
- Number of rooms _____03
- Ownership of land _____04

16. Do you have the following items at home?

INDICATE **IN WRITING** ITEMS STATED BY RESPONDENT AS AVAILABLE:

Car / motorbike/bicycle
Radio/ TV-set/internet/ telephone
Electricity
Sofa set

17. What was your income last year in Kenya shillings?

CIRCLE THE APPROPRIATE RANGE _____

0 - 25,000	_____	01
25,000 - 50,000		02
50,000 - 75,000-		03
75,000-100,000-		04
Over 100 000		05

16. When a member of house falls ill who makes the decision about the facility to go to?

CIRCLE THE APPROPRIATE RESPONSE

Mother		01
Father		02
Guardian (brother, sister, friend, cousin etc)		03
Spouse		04
Employer		05
Others (specify)	06	

Thank you for your time

Appendix 5: No of visits to facilities versus service fee

Fig. 1 appendix 5: Showing No of visits to facilities versus service fee paid by patients

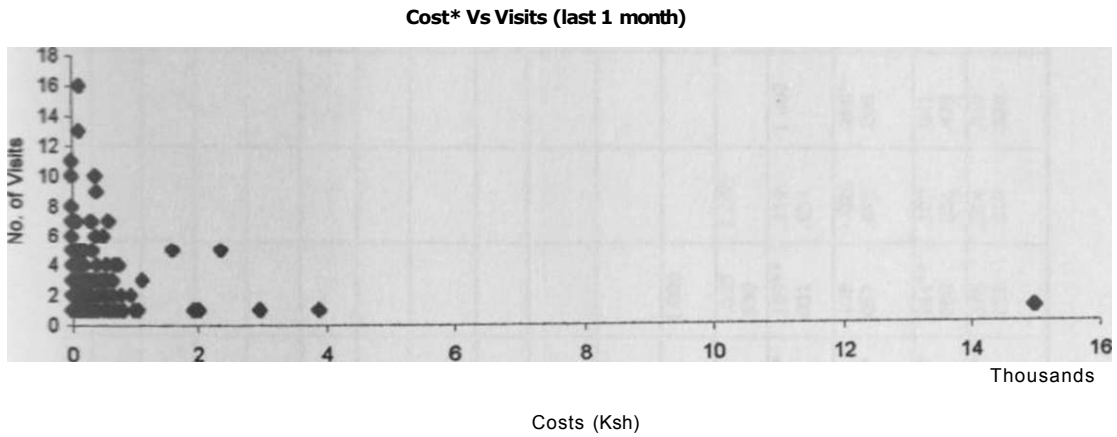
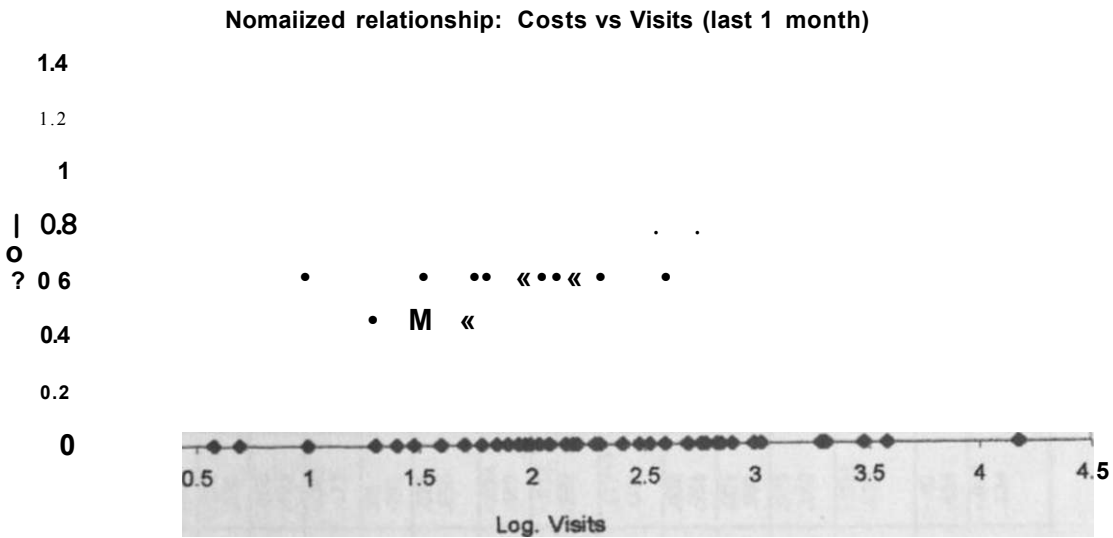


Fig 2 appendix 5: No of visits to facilities versus service fee paid by the patient using smoothed data



Appendix 6: Correlation matrix

Table 5.5.1: Petermlnant» of health care servicea utilisation- Correlation Matrix

Variable		A	B	C	D	E	F	G	H	1)	K	L	M	N	6	P
No. of visits	A	1.000															
Income (sh)	B	.071 .212	1.000														
Service fee	C	.032 .578	.021 .722	1.000													
Travel time	D	.058 .423	-.133* .018	.020 .733	1.000												
Sex of respondent	E	-.045 .423	-.033 .558	-.068 .234	0.18 .741	1.000											
Age of respondent	F	.60 .291	-.045 .427	.088 .124	.013 .822	-.125* .025	1.000										
Age of the Patient	G	.025 .656	-.008 .888	.259** .000	.078 .162	.256** .000	.722** .000	1.000									
Sex of the Patient (yrs)	H	-.024 .669	.009 .876	-.036 .535	.022 .686	.395** .000	-.045 .418	.047 .399	1.000								
Years In school	I	-.032 .589	.129* .028	.232** .000	-.132* .022	-.085 .139	.224** .000	-.052 .366	.026 .657	1.000							
Attitude of staff	3	.177** .002	.110* .052	-.079 .169	-0.101 .070	-.017 .762	.032 .561	-.015 .785	.000 .995	-.071 .220	1.000						
Completeness of diagnosis	L	.006 .981	-.062 .276	-.031 .589	-.044 .431	-.007 0.902	-.011 .841	-.036 .525	-.028 .620	-.068 .242	.026 .640	1.000					
Confidentiality	N	.001 .981	-.001 .989	.000 .995	.029 .606	.034 .544	-.013 .821	.018 .748	-.035 .534	.028 .627	.052 .351	-.035 .530	1.000				
Drug availability	K	.079 .162	-.017 .769	-.028 .633	-.036 .521	-.029 .599	.018 .748	-.035 .534	.084 .132	-.096 .100	.226** .000	.189** .001	.119 .034	1.000			
Cleanliness of facility	M	-.036 .530	-.052 .359	-.031 .597	0.138* .014	0.011 .847	-.005 .925	-.037 .508	.028 .615	.056 .333	.192 .001**	.108 .057	-.026 .645	.260** .000	1.000		
Staff qualification	0	-.40 .484	.031 .595	.075 .203	-0.093 .104	-0.028 .620	-0.036 .532	.010 .856	-0.035 .543	.040 .501	.165** .004	.241** .000	.107 .061	.041 .476	.142** .001	1.000	
Beds/ Beddings/Unen	P	-.073 .234	.010 .866	.017 .791	-.135* .025	.163** .007	.011 .857	.012 .857	.167** .006	.015 .818	.205** .001	.078 .205	.014 .819	.039 .520	.392** .000	.408" .000	1.000

Appendix 7: Other Research Documents

- A letter of Introduction by college of health sciences: Department of community health.
- Research authorization letter by Permanent Secretary: Ministry of Education, Science and Technology. MEDICAL LIBRARY
- Aptitude test DIVERSITY OF BLAL&QGF
- A letter that allowed the researcher to collect data from the health facilities in Nyeri District: by the medical officer of health Nyeri District.

UNIVERSITY OF NAIROBI

College of Health Sciences

DEPARTMENT OF COMMUNITY
HEALTH
Kisumu National Hospital
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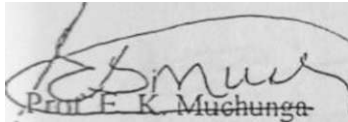
6/6/2003

TO WHOM IT MAY CONCERN

This letter is to introduce Dr. MaryAnne Ndonga who is pursuing her Master of Public Health (MPH) degree programme in this department

Currently, she is in the process of collecting data in the field as part of the requirement for the degree programme. Any assistance accorded to her will be highly appreciated

Yours sincerely,



Prof. F. K. Muchunga

Supervisor

c.c Prof. Violet N Kimani
Chair

Dept. of Community Health.

Prof M. A. Mwanthi

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

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JOGOO HOUSE "B"
HARAIMBEE AVENUE
P.O. Box 30040-00100
NAIROBI

4th. July. 20.03.

Dr. Mary Anne Njeri Ndong'a
University of Nairobi
P.O. BOX 30197
NAIROBI

*

Dear Madam

RE: RESEARACH AUTHORISATION

Following your application for authority to conduct research on 'Quality of Health care in Nyeri District, I am pleased to inform you that you have been authorised to conduct research in Nyeri District for a period ending 30th August, 2004.

You are advised to report to the District Commissioner, the District Education Officer and the District Medical Officer of Health Nyeri District before embarking on your research project.

You are further expected to avail two copies of your research report to this Office upon completion of your research project.

Yours faithfully

A handwritten signature in black ink, appearing to read 'A. C. KAARIA', written over a horizontal line.

FOR: PERMANENT SECRETARY/EDUCATION

CC

The District Commissioner
Nyeri District

The District Education Officer
Nyeri District

The District Medical Officer of Health
Nairobi

t

APTITUDE TEST

This aptitude test assessed the interviewees used in the study.

NAME

DATE

DATE OF BIRTH

EDUCATION:

School

Grade attained

Year left school

MARRIED/SINGLE

NO. OF CHILDREN

QUESTIONS

1. (a). Draw a circle round every 8 in the list below:

2 1 5 8 5 8 0 8 6 5 1 7 4 4 6 3 8 3 0 3 1 8 5 6 3 2

7 1 9 2 4 6 9 2 6 8 4 7 1

- (b). How many sixes are there in the list?

2. Cross all the even digits below directly followed by an odd digit:

2 7 1 0 0 3 8 2 4 0 8 5 2 0 7 8 3 6 5 2 3

The following sentence is written backward, but one word has a mistake.
Draw a circle round the word with the mistake:

Ekatsim eno thiw sdrawkcab nettirw si ecnetnes siht

4. A woman tells you he has given birth four times, but has four surviving children of her own. Can she be telling the truth? If so, how can this be?
5. A man has three children by his first wife. Two of these are boys, of whom one died. By his second wife, he has four children. One of these is a girl, and all are alive. He has no other children. How many living sons does he have?

Sons

6. > A man said yesterday: " My wife had a baby girl two days ago".
Tomorrow is October 2nd. On what date did the wife deliver the

Date

Maximum score is 25 points

Dr. Maryanne N. Ndonga
P.O. Box 335
Narumoru

20th June 2003

Medical Officer of Health

Dear Sir,

REF: DATA COLLECTION FROM HEALTH FACILITIES IN NYERI DISTRICT

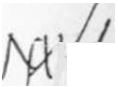
I'm a student in the community Health department of the University of Nairobi.

I kindly request permission to interview patients attending selected Health facilities in Nyeri District. The data obtained will be used as part requirement for the completion of masters in Public Health Degree Programme.

U>;

Yours faith fully

t ,



Dr. M . ^ ^ W g a

^ U - ^ ^

