UNDERSTANDING THE DRIVERS OF EFFICIENCY AND INEFFICIENCY IN THE PUBLIC HEALTHCARE SECTOR; A QUALITATIVE INVESTIGATION

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DECLARATION

This research project report is my original work and has not been presented for any award in any other University

Signature..... Date.....

JAMES CHEGE MBIU

X53/67985/2013

This Masters Research project has been done under my supervision as the University supervisor

Signature..... Date.....

DR. URBANUS KIOKO

DEDICATION

To my wife Rachel and son Carsten

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I would like to thank the many people who offered support to me at various stages of this Masters project. Foremost, I am greatly indebted to my supervisor, Dr Urbanus Kioko for his invaluable guidance and suggestions.

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ABSTRACT

Introduction

The Government of Kenya developed Vision 2030, a long-term development plan which aims to have a country that is prosperous, globally competitive and has a high quality of life of its citizens by the year 2030. While seeking to improve the overall livelihoods of the people, the country aims to have a healthcare system that is efficient, integrated and affordable. The promulgation of the new constitution in the year 2010, brought major changes in the health sector. The responsibility to deliver essential health services was devolved to the 47 counties while the national government is responsible for policy making and the management ofthe national referral hospitals. While all these are notable strategies, the fact is that the available public health sector resources are limited and the challenge is to make sure they are used in an optimal manner to provide healthcare services to as many people as possible.

The World Bank, whose goal is to end extreme poverty and promote shared prosperity, is constantly supporting countries especially the developing economies to find sustainable and efficient ways to manage the scarce resources. This study, through the support of the World Bank, sought to better understand factors influencing efficiency and inefficiency in the public health sector facilities in Kenya.

Methodology

This was a descriptive qualitative study using in-depth key informant interviews as the data collection tool. A total of 8 facilities were conveniently sampled from Nairobi, Nyeri, Kiambu and Kajiado Counties. Key informants were selected using purposive sampling technique. The data was analyzed using systematic and rigorous content analysis to identify themes and categories of the key drivers of efficiency and inefficiency and the interaction among them.

Findings

Several factors were identified to influence the output from the various facilities. This were summarized into ten themes and these were; Availability and welfare of the healthcare workers, procurement and use of medical commodities, availability and use of medical equipment, infrastructure development and use, leadership and supervision, governance and strategic planning, data management and performance evaluation, media and Communication, care coordination and community related factors. These factors affected the output from both the supply and demand sides of healthcare.

Conclusion and recommendations

To increase staff motivation for better performance, there is need to develop appropriate schemes of service, have competitive compensation packages and strategies for career growth. It would also be important to build the capacity of the facility managers on effective leadership and supervision to promote better implementation of governance policies and strategic plans for improved healthcare output. The governments should again ensure availability of adequate and timely medical commodities and reliable basic equipment in the facilities to enhance utilisation of healthcare.

To promote proper performance evaluation of both the inputs and the outputs, there is need to improve the data management systems to generate accurate, timely and reliable data and ensure the workers are well trained on how to utilise this information to improve decision making. Traditional and emerging media can be used to improve demand for the services and enhance teamwork among the health workers. There is need to adopt effective management strategies in the facilities to constantly improve patient flow, save time and resources and improve patient satisfaction. Social economic and cultural factors that may affect demand for the services should be identified and managed appropriately. Finally, it would be important to analyse facilities on case by case basis as each has its unique factors that either promote or limit efficiency in the delivery of care.

ABBREVIATIONS

AIE	Authority to incur expenditure
ART	Antiretroviral Therapy
DEA	Data envelopment analysis
GDP	Gross domestic product
HIV	Human Immune-deficiency Virus
KHHEUS	Kenya household health expenditure and utilization survey
KIPPRA	Kenya Institute of Public Policy Research and Analysis
KNBS	Kenya National Bureau of Statistics
KSh	Kenya Shillings
MCH	Mother to Child Health
MOH	Ministry of Health
MOH	Medical Officer of Health
NHA	National health accounts
NHIF	National Hospital Insurance Fund
NHSSP	National health sector strategic plan
OECD	Organisation of economic cooperation and development
OPD	Outpatient Department

THE	Total health expenditure
US$	United States Dollars
WHO	World Health Organization

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1 INTRODUCTION

1.1 Background

The Government of Kenya developed Vision 2030, a long-term development plan which aims to have a country that is prosperous, globally competitive and has a high quality of life of its citizens by the year 2030. While seeking to improve the overall livelihoods of the people, the country aims to have a healthcare system that is efficient, integrated and affordable. (Government of Kenya, 2007). The country promulgated a new constitution in the year 2010, which brought with it major structural changes in the manner healthcare services are both managed and delivered. The responsibility to provide essential health services that include among others, primary healthcare, county health facilities, pharmacies and ambulance services was devolved to the 47 counties while the national government was left with the responsibility of making policies and the management of the national referral facilities (Kenya Law Reports, 2010)

Under the Constitution, All Kenyans have a fundamental right to life and the right to the highest attainable standard of health. The right to highest attainable standard of healthincludes quality healthcare, availability of water that is adequate and safe, emergency care, good sanitation, clean food and a health environment. The national strategic and investment plan in the health sector 2012-2018, emphasises promotive healthcare policies, better curative treatment and care in hospitals and restructuring of the healthcare delivery systems to make them more efficient.

The country continues to make efforts to attain universal health coverage. The National Health Accounts (NHA) 2012/2013,reported that the country's total health expenditure (THE) was 234

billion Shillings (US$2,743 million), compared to 163 billion Shillings (US$2,155 million) in the previous report of 2009/10. The total spending on health for the year 2012/13 was 6.8 percent of gross domestic product (GDP), compared to 5.4 percent in 2009/10. When the government spending on health was compared to the total government expenditure, it was observed to have increased to 6.1 percent in 2012/2013 compared to 4.6 percent in 2009/10. The per capita expenditure on health was higher in 2012/13 at KSh 5,680 (US$67) compared to KSh 4,232 (US$56) in 2009/10.

There are three major sources of money that is used to finance health. These are the households, the government and the development partners. The private sources were still the major contributor at 40 percent of THE in 2012/13. This was higher than the 37 percent reported in 2009/10. Again, the contribution of the government sources had increased by 17 percent over the same period to 34 percent of THE. The contribution of donors declined from 35 percent of the THE in 2009/10 to 26 percent in 2012/13. The role of the public sector as a financing agent increased to 42 percent in 2012/2013 from 37 percent in the year 2009/2010. In the year 2012/13, the private and non profit institutions as agents had control of 38 percent and 21 percent of the THE respectively. In the year 2012/13 the public facilities utilised 39 percent of THE, down from 47 percent in 2009/10 (MOH, 2015)

Despite efforts to bring services closer to the people and enhance efficiency in the delivery of care and accountability through devolution, the country still facesa number of serious problems that include widespread poverty, high burden of communicable and non communicable diseases and income inequality (KNBS, 2014). About half of Kenyans are poor (KIPPRA, 2013) and out

of pocket spending is still high with the risk of catastrophic spending and pushing people further down into poverty(KNBS, 2013)

Projections from the national census of 2009 show that Kenya has a population of over 40 million people. The country continues to make efforts to improve the lives of its people despite the rise in the level of illnesses in the population. The level of reported illness (KNBS, 2013) had increased over the years from 15% in 2007 to about 19% in 2013. The report also showed that, overall, malaria and diseases of the respiratory system that include pneumonia were the most common illnesses reported. The utilisation rate had also increased from 2.6 visits per capita per year in 2007 to 3.1 in 2013. There is need to strengthen the counties' healthcare delivery system because as noted in KHHEUS (2013), people residing in the rural areas were more likely to use public sector providers at 65.3% of visits than those in the urban areas at 43.2% of visits. The people in poorest quintile were most likely to use public facilities compared to the richest quintile. The report also implied that there was improved access to health services over the ten year period of the surveys i.e. 2003 to 2013. The number of households that reported catastrophic spending fell from11.4% in 2007 to 6.2% in 2013. Despite this decline, many households in the country continue to be pushed further down into poverty through health related expenses (KNBS, 2013)

To attain sustainable development goals and ensure universal coverage, it would be important for countries to ensure the available resources are used in the best manner and there is value for money. The World health organization (2000)recognizes that improved efficiency should be a key goal of the health system.There are opportunities to do more with the same resources available in respective countries no matter their income level. However, this would require an

initial assessment of the nature and of the factors that possible cause the local inefficiency. The nature of inefficiencies varies and can at times be due to insufficient as compared to too much spending on health. There are opportunities to save the countries up to 5 percent of the THE by reducing unnecessary expenditure on medicines and using them in a rational manner through improved quality control. (WHO, 2010)

Several proposals have been promoted to enhance efficiency. One of them is the devolution of healthcare planning and decision making to lower levels (Mills *et al*, 1990). This is because of the assumption that the local managers are aware of the consequences of use or misuse of the resources allocated to them. Other possible strategies have been the reorganization of the health structure to give autonomy to large public hospitals. This is reported to have led to some gains in service provision (World Bank, 1993). In a summary of the potential institutional drivers that would promote efficiency in delivery of public services by Organisation for economic cooperation and development, (OECD),(2007), the factors included, practices that are result driven with performance measurement strategies, decentralisation of decision making and methods to enhance competition like privatization. Other drivers include strategies to improve the working environment for the health workforce. It is also possible to have gains in efficiency through the increase in the scale of operations. This is a strategy attributed to economies of scale.

Inefficiency has been an issue of great concern to international organizations and many countries and has precipitated a number of initiatives. There are several quantitative studies that have been done in Kenya on the technical efficiency of the public sector facilities (Kirigia *et al*, 2004; Kioko, 2013) and have reported that there are varying levels of efficiency and inefficiency among the different facilities. This study builds on the World Bank commissioned quantitative

study (Kioko, 2013) on the public sector efficiency. It is a qualitative study that sought to identify, to explore and to better understand the factors that influence efficiency and /or inefficiency in the healthcare facilities to help inform decision making.

1.2 Problem statement

Kenya continues to struggle to provide healthcare services to the growing population using the limited resources available. Several reforms have been initiated to improve health care in Kenya and include devolution of healthcare delivery, free maternal services and recently leasing of medical equipment. Quantitative studies that have been done using data envelopment analysis revealed varying levels of efficiencies and inefficiencies among the facilities in the public sector in Kenya (Kirigia *et al*, 2004; Kioko, 2013).

Though the studies attempted to do second stage regression analysis on the factors influencing inefficiency using the scores generated from data envelopment analysis (DEA) as categorical dependent variables, the data on these possible factors was limited. This study sought to build on the information obtained from a study commissioned by World Bank (Kioko, 2013) on the evaluation of technical efficiency of selected hospital facilities in Kenya. Despite efforts to evaluate technical efficiency of these selected facilities, there was no critical qualitative analysis of the factors that can explain the varying performance of these facilities. This study sought to fill this gap by seeking to identify and better understand drivers of efficiency and inefficiency.

1.3 Research questions

i. What are the factors that promote efficiency in the delivery of healthcare in public facilities?
ii. What are factors that promote inefficiency in the delivery of healthcare in public facilities?
iii. What are the possible strategies to improve efficiency in the public healthcare facilities?

1.4 Objectives

The main objective in this study was to identify, to explore and to better understand the factors that influence efficiency and inefficiency in the public sector healthcare facilities in Kenya.

The specific objectives

i. To identify and to explore factors that promote efficiency in the public healthcare sector facilities
ii. To identify and to explore factors that promote inefficiency in the public healthcare sector facilities
iii. To make policy recommendations on improving efficiency in healthcare delivery in the public sector.

1.5 Justification

The resources available for the provision of healthcare services are inadequate and there is thus the need to improve efficiency in the delivery of healthcare (WHO, 2000). Most Kenyans, especially in the rural areas, continue to seek healthcare services in public facilities (KNBS, 2013) and there is thus the need to ensure that the country uses the limited resources available to provide quality healthcare to the greatest number possible and that there is value for money.

This study provides detailed information on the different factors that influence the efficiency of the public healthcare facilities. This information demonstrates and can be used to help understand why some facilities perform better than others. The lessons learnt about the best performing facilities can then be shared with the others to enhance healthcare delivery. Performance monitoring is very important and understanding of these factors can assist in the conceptualization and designing of ways to improve and monitor healthcare delivery. This information can be used by policy makers and health planners to plan and allocate healthcare resources in a manner that maximizes the health outcomes.

2 LITERATURE REVIEW

2.1 Theoretical literature review

Healthcare is a derived demand (Grossman, 1972). People seek healthcare to improve health. Healthcare is thus an intermediate product. Efficiency looks at the relationship between the resource inputs that include labour, capital and equipments and either intermediate outputs like waiting time, numbers seen at the clinic and number of discharges, or, the final health outcomes that include the life years gained, lives saved or Quality adjusted life years (QALYS).

There is growing demand for healthcare services and this poses a challenge of reconciling this demand with the limited resources available (Williams, 1988). Health economists agree that decision makers should strive to achieve greater efficiency and this should be a priority while planning. Efficiency measure value for money in the use of the available healthcare resources (Williams, 1988)

Efficiency can be broken down into multiple concepts. These include technical efficiency that addresses the use of the available resources to obtain maximum possible output, productive efficiency where you choose different combination of resources to try and achieve the maximum health benefit for a given cost. The other concept is allocative efficiency that looks at the right right mixture of healthcare programs to maximise the welfare of the community (Drummond, 2005). Weinstein (1977) notes that the society should adopt criteria of economic efficiency and make choices that maximise outcomes gained from the available resources.

2.2 Empirical literature review

The WHO lists the main objectives of the health care system as to improve health, to be responsive to the health needs of communities and to provide financial protection to households (WHO, 2000). Most developing economies are faced with the twin problem of high diseases burden and inadequate resources. And as noted by taskforce on international financing for health system in 2009, there was need to identify and evaluate possible ways to expand the resources for health and on how to spend them efficiently.

The study by Afzali*et al*, (2011) evaluated factors that affect inefficiencies in the various hospitals under the Iranian Social Security Organization. Purposive sampling was used to identify key informants who would elicit their perspectives regarding the institutional and other factorsthat influence efficiency. Among the factors reported were the budgeting and payment system that was in use in the facilities and the managerial skills of the individuals in positions of leadership. Those interviewed stressed the importance of reforms in the organisational and regulatory framework of the facilities to enhance efficiency. There were a number of participants who also recommended the concept of splitting the funders from the providers.

In a study done on the district hospitals in Ghana (Osei *et al*, 2005) to evaluate their technical efficiency, the input data showed that these hospitals lacked homogeneity. 70% of them were found to be inefficient and this was attributed to pure technical and scale inefficiency.75% were found not to operate at optimal size and were thus scale inefficient. It was found that 76% of hospitals could increase their outputs while using the present level of inputs to operate as efficiently as their peers.And another study, that sampled healthcare facilities in Nigeria

(Wouters, 1993) to assess both the technical and economic efficiency, it was reported that many public and also private facilities were inefficient and that public facilities the most affected and were not using cost minimising strategic combinations of health workers.

A study in Uganda, which can serve as an example, reported varying levels of technical and scale efficiency among the facilities in the districts of study. In some of the inefficient facilities, it was reported that actually the health personnel could be reduced and this would not affect the quality or quantity of services (Yawe, 2010).

Quantitative studies done in Kenya, on the technical efficiency of public healthcare facilities, revealed varying levels of efficiencies and inefficiencies among them (Kirigia *et al*, 2004; Kioko, 2013). The research commissioned by World Bank in Kenya (Kioko, 2013) on technical efficiency reported that, among the public health facilities sampled,there were those using more resources than necessary for producing the outputs. The average efficiency level of public district hospitals was estimated to be 72.6%. out of these, about half (48%) were run efficiently while nearly a third (32%) were run less efficiently compared to most efficient peers in the sample. In regard to the referral hospitals in the public sector, the average efficiency level was 82.1%.Nearly two thirds (64%) of the sampled referral hospitals were observed to be efficientwith technical efficiency scores of 100%. When a comparison of the efficiency scores was done between private and public hospitals, it was found that the private were more efficient with one third of public hospitals (33%) having an efficiency score of less than 50% comparedto only 1% among their private counterparts. The study attempted to disaggregate the analysis at county level, and the findings suggested that hospitals in seven out of the sixteen counties studied needed to improve technical efficiency.

Table 1. Distribution of technical efficiency scores for district hospitals

Efficiency brackets	Number of hospitals in various constant returns to scale technical efficiency brackets (%)	Number of hospitals in various Variable returns to scale technical efficiency brackets (%)	Number of hospitals in various scale technical efficiency brackets (%)
1-10	0 (0)	0 (0)	0 (0)
11-20	1 (4)	1 (4)	0 (0)
21-30	2 (8)	1 (4)	0 (0)
31-40	5 (20)	2 (8)	1 (4)
41-50	0 (0)	2 (12)	0 (0)
51-60	1 (4)	0 (0)	0 (0)
61-70	0 (0)	1 (4)	1 (4)
71-80	2 (8)	2 (8)	1 (4)
81-90	1 (4)	0 (0)	3 (12)
91-99	1 (4)	0 (0)	7 (28)
100	12 (48)	15 (60)	12 (48)
TOTAL	25 (100)	25 (100)	25 (100)

Table 2. Technical efficiency of referral facilities

Referral hospital	Constant returns to scale technical efficiency	Variable returns to scale technical efficiency	Scale efficiency
1	1	1	1
2	1	1	1
3	1	1	1
4	0.394	0.629	0.621
5	0.322	1	0.322
6	1	1	1
7	1	1	1
8	0.532	1	0.532
9	1	1	1
10	0.783	1	0.783
11	1	1	1
Mean	0.821	0.966	0.842

Further analysis showed a larger number ofthe inefficient hospitals exhibited increasing returns to scale indicating the potential to increase the current level of outputs without increasing inputs.The health centres were found to be less efficient with 18% of them having a technical efficiency score that was less than 50%. However, public health centres were more efficient compared to their private sector counterparts. On analysis of the dispensaries, most were found to be inefficient. Only 21% of the sampled facilities were found to be technically efficient with efficiency scores equal to 100% while 58% had scores of less than 50%.

Table 3. Output oriented DEA efficiency scores for public health centres

Efficiency bracket	No. of hospitals in constant returns to scale technical efficiency bracket (%)	No. of hospitals in various variable returns to scale technical efficiency brackets (%)	Number of hospitals in various scale technical efficiency brackets (%)
1-10	4 (1)	0 (0)	4 (1.4)
11-20	8 (3)	0 (0)	1 (0.3)
21-30	14 (5)	6 (2)	7 (2.4)
31-40	12 (4)	5 (2)	8 (2.7)
41-50	14 (5)	2 (1)	11 (3.7)
51-60	9 (3)	11 (4)	15 (2.1)
61-70	16 (5)	0 (0)	18 (6.1)
71-80	10 (3)	0 (0)	12 (4.1)
81-90	24 (8)	5 (2)	26 (8.8)
91-99	17 (6)	0 (0)	26 (8.8)
100	167 (57)	266 (90)	167(56.6)
TOTAL	295 (100)	295	295 (100)

Table 4. Technical efficiency scores for dispensaries

Efficiency brackets	No. of hospitals in constant returns to scale technical efficiency bracket (%)	No. of hospitals in various variable returns to scale technical efficiency brackets (%)	Number of hospitals in various scale technical efficiency brackets (%)
1-10	2 (5)	1 (3)	1 (3)
11-20	6 (16)	3 (8)	0 (0)
21-30	9 (24)	6 (16)	2 (5)
31-40	5 (13)	7 (18)	2 (5)
41-50	2 (5)	1 (3)	0 (0)
51-60	1 (3)	2 (5)	0 (0)
61-70	3 (8)	1 (3)	2 (5)
71-80	2 (5)	3 (8)	4 (11)
81-90	0 (0)	1 (3)	9 (24)
91-99	0 (0)	1 (3)	8 (21)
100	8 (21)	11 (29)	10 (26)
TOTAL	38 (100)	38 (100)	38 (100)

Factors affecting the delivery of healthcare

Mills (1993) identified factors that would cause low efficiency in the public healthcare delivery. These included bureaucracy in decision making which is compounded by the management structure that is often weak in the developing countries and the lack of incentives for efficient resource use. The other possible factor is poor remuneration that results in low motivation of the work force and in other instances, workers diverting their time to private works to make some extra money.

Birdsall and James (1993) put across possible explanations for observed inefficiencies in the allocation and use of resources. They noted that in most countries, the medical profession dominates in health decision making and there is also the lack of political voice by the remote populations and are thus unable to let the government notice their needs. There is also the weak policy making process since there is lack of adequate and reliable information on both costs and effectiveness in most ministries of health. They also noted that donor interventions may not necessarily promote a cost effective mix of interventions especially when they prefer to fund their projects directly. They also noted that public choice theory can also explain some misallocation that may occur where individuals or groups which are more influential divert resources to services that benefit upper income groups at the expense of providing basic services to the poor where you achieve a much higher social rate of return.

In studies to evaluate costs of healthcare facilities in the provision of care, a wide variation is seen in the unit costs of services in the same type of facility. This is evidence that would strongly suggestthe presence of inefficiency (Berman, 1993; Gilson, 1992). Studies (World Bank, 1993; Berman, 1993) on inputs specifically staff numbers and use, and drugs have showed varied levels of efficiency. The productivity of the staff in the public sector was low and there was complementary gross lack of adequate resources to enable the officers to work. Inefficiency has also been documented in various drug supply and distribution systems (Foster, 1993) that occur through purchasing of expensive drugs, distribution systems that are weak and inconsistent with leakages, poor prescribing of drugs and poor patient compliance. Efficiency in care delivery has also been affected by donor preferences for programmes that are highly visible and vertical

especially in the poorest nations that are dependent on their funds. This has not assisted in improving capacity (World Bank, 1993)

The Kenya anti corruption commission (2010) did a research on the public healthcare delivery in Kenya. The study sought to assess the magnitude, nature and impact of corruption in the public healthcare sector. Some of the findings were that there was inadequate performance monitoring systems in the sector. The procurement systems are often compromised and most policies have not been operationalised due to lack of resources, both financial and human. The management of the facilities was noted to be ineffective and was manifested by absenteeism of clinicians. The hospital management who most often happen to be clinical personnel are poorly trained on management. This coupled with poor record keeping contributed to poor management of these facilities.

2.3 Overview of literature review

Healthcare is one of the inputs in the production of health. People seek healthcare to improve their health status so that they can feel better and be able to participate in their daily activities. Healthcare facilities utilise different resource inputs that include personnel, equipments and medicines to produce healthcare. Since theses resources are limited, health economists agree on the need to improve efficiency and produce the maximum output from these resources.

Studies done in different regions in the world have showed that public health facilities have varying levels of efficiency even when the resource inputs are the same. The inefficiencies have been attributed to several factors that include the capacity of the management of these facilities, the organisational structure and matters related to procurement strategies. The health workers

play an important role in the production of healthcare and their level of motivation influences the performance of these facilities. Donors as stakeholders in healthcare have been shown to introduce inefficiencies through emphasis on vertical programmes in certain regions. From the literature review it is demonstrated that improvement of efficiency requires to be addressed from multiple angles as multiple stakeholders are involved. The healthcare worker plays a central role in this and there is thus need to enhance their capacity and willingness to deliver service efficiently.

Most of the studies done are quantitative in nature and report the levels of efficiency and inefficiency in the facilities but fail to give a critical review of the factors that influence this performance. More qualitative studies would help in identification and in depth review and assessment of the factors that limit or that would improve the delivery of care.

3 METHODOLOGY

3.1 Conceptual framework

Healthcare facilities should seek to provide quality healthcare. Quality has different aspects that include healthcare which is effective and safe, timely and patient centred, efficient and equitable. (WHO, 2006). This study will adopt the Donabedian conceptual framework that is used to evaluate different aspects of quality of healthcare (Donabedian 1966, 1980). The framework explores quality, in which efficiency is one of the dimensions, as an interaction of these three elements;

1. Structure - this refers to the setting in which healthcare takes place, it's nature, tools and resources available and the way they are organised
2. Process – this refers to what is done as an interaction between the provider and the patient.
3. Outcome – this refers to the changes in a patient's health status.

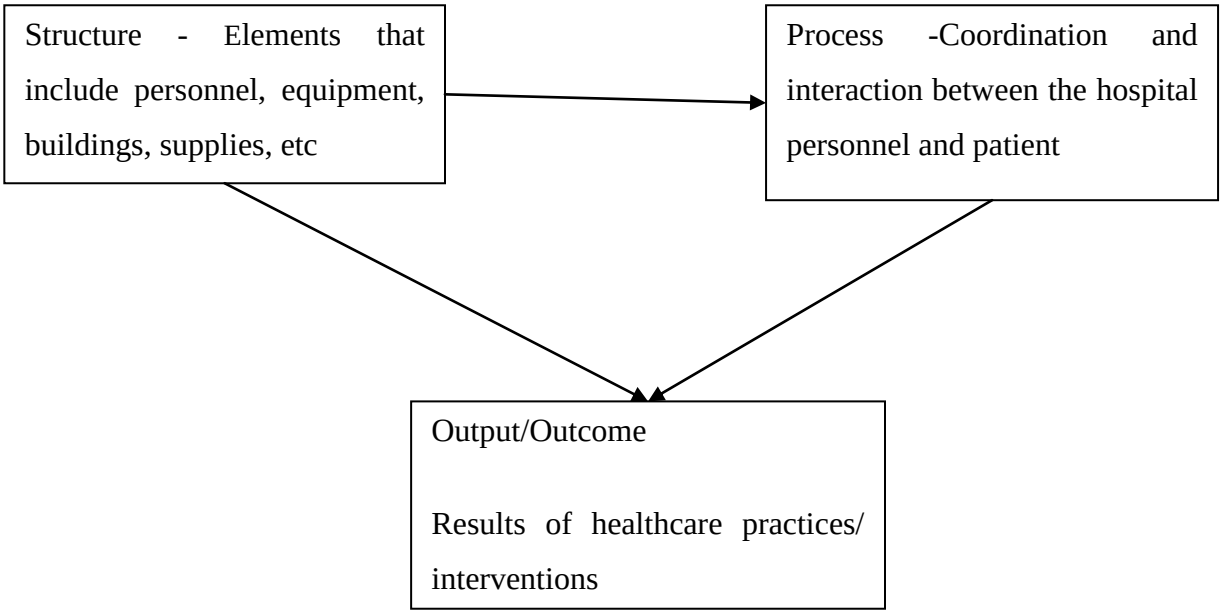

Figure 1.Conceptual framework for assessing the quality of medical care.(Adopted from Donabedian, 1966)

Healthcare resources are limited in quantity and choices have to be made on what and how to provide services.The performance of the facilities as units of the health system is influenced by both the health system and non health system determinants (Murray & Frenk, 2000). In the delivery of healthcare, there is generally interaction of five key actors that include populations who receive care, the providers, the state; which is a mediator and a provider, the institutions whose work is to generate resources for use in the provision of care and the other sectors that produce services with influence on health like education (Frenk, 1993). The inefficiency and efficiency in the use of healthcare system resources, is dependent on the interactions among them and other technical and institutional organisational factors.

3.2 Study design

3.2.1 Introduction

This was a descriptive qualitative study using selected public health facilities as cases. A qualitative study,as a research methodology, can be used by the researchers to enable them answer “how” and “why” type of questions, while at the same time take into consideration the influence of the context to the issue under study. (Baxter & Jack, 2008).

Case studies as a research technique can be used to achieve various goals and include to test or generate theory or to provide description (Eisenhardt, 1989). This study sought to provide a critical description of the possible factors that influence efficiency and inefficiency in the public sector facilities.

3.2.2 Sampling

The sample was obtained from the healthcare facilities included in the World Bank commissioned study (Kioko, 2013). A few of these hospital facilities were selected as cases. The facilities were classified into referral hospitals, county hospitals, health centres and dispensaries. One efficient and one inefficient facility, according to the efficiency scores, were conveniently selected from each of the categories.

Key informants were selected using purposive sampling technique. This is a non probability sampling technique and was well suited for the overall objective of this study. This is because those identified, through their positions and responsibilities in the facilities, would contribute most meaningful information with regard to the healthcare delivery process, the inputs, outputs

and outcomes associated with their respective facilities. The key informants included the medical superintendents in the hospitals or the officer in-charge in the health centres and dispensaries. The other informants were the facility administrators and heads of departments. Officers in the County health department were also sampled. The different informers were to add to the richness and validity of the data collected.

3.2.3 Data collection

The data was collected by use of semi structured interviews of the key informants. This method of data collection provides reliable and comparable qualitative data (Bernard, 1988)

All the interviews were done by the principal researcher. The interview guide was drafted to obtain data on Socio demographic profile, understanding of inputs and expected outputs, factors that promote efficiency or inefficiency in the delivery of care and strategies to improve performance.

The interview guide was drafted in two stages to ensure its clarity and comprehensiveness. In the first stage, a list of draft questions that would elicit the interviewee's views and perspectives on the drivers of efficiency and inefficiency was made. In the second stage, the interview guide was piloted three times with identified hospital staff. Revisions and refinement were then be made and these were based on the feedback that was obtained from these "mock" interviews.

The interviews done were conducted face to face by the principal researcher and audio recorded. Notes were taken for participants who were reluctant about voice recording

3.3 Data analysis

The audio recordings of all the interviews were transcribed and later summarised to obtain key themes, categories, illustrative quotes and the interactions among them.

3.3.1 Analytical framework

The study used Framework Analysis method, as proposed by Ritchie and Spencer (1994), as the analytical framework. This is a framework where the analysis process of the qualitative data has systematic and visible stages, so that researchers, funders, policymakers and other actors can understand the process used to obtain the results from the data. Although the general approach is inductive, Framework analysis allows the inclusion of a priori and the emergent concepts during the coding process. This is a very important aspect in most applied qualitative studies, because there could specific issues the stakeholders would want to be addressed.

The method has 5 key stages. The researcher can collect all the data before analysis begins or have the collection and analysis take place concurrently.

These key stages are;

i. Familiarisation- this entails the whole or partial reading and transcription of the collected data.
ii. Identifying a thematic framework - this refers to the initial coding where the researcher uses both apriori and emerging issues from the familiarisation stage. This is then developed and refined progressively in the subsequent stages.

iii. Indexing – this entails the application of codes; bothnumerical or textual codes to identify themes

iv. Charting – the researcher uses the themes obtained to create charts. The charts can either be for each theme across the cases or the researcher can arrange by case for each respondent across all the identified themes to allow easy reading of the whole data set.

v. Mapping and Interpretation – this involves actively looking for association, patterns or explanations of concepts in the data. This can be aided by visual display or plots. The researcher can at this stage aim to map the range and nature of phenomena, define concepts, find associations or provide explanations. The areas the analyst decides to focus depend both on the emerging themes and the original research question(Ritchie & Spencer, 1994).

An a priori concept used to assist both in the development of the interview guide and in identification of themes is the ten leading sources of inefficiency as reported in World health report, 2010. These are

i. Medicines - underutilization of generic drugs and the unnecessarilyhigh prices for medicines.

ii. Medicines - the provider using medicines that are substandard

iii. Medicines –the inappropriate and ineffective use of drugs

iv. Health-care products and services – where there isoversupply or overuse of equipment, investigations and procedures

v. Health workers - unmotivated workers, inappropriate or costly staff mix

vi. Healthcare services - inappropriate admissions and length of stay in the hospitals

vii. Healthcare services - inappropriate facility size, low use of the available infrastructure

viii. Healthcare services - suboptimal quality of care and medical errors

ix. Health system leakages - corruption and waste

x. Health interventions - inappropriate strategies/ inefficient mix

3.4 Limitations

The findings of this study may be difficult to generalize as they are obtained from a small sample of facilities. This was minimized through in-depth and critical analysis of the data

The categorization of the information obtained by the researcher is dependent on their individual skills and may also be influenced by their personal biases. However this was controlled through expert reviews and by ensuring all the data obtained was recorded and transcribed to enable an independent evaluation if ever needed.

The presence of the researcher during data gathering, which was unavoidable, could have affected the responses of the interviewees. The researcher tried to be as neutral as possible while asking the questions.

3.5 Ethical considerations

This was an operational research and authority was sought from the offices of the county directors of health and informed consent was also obtained from the informants before data collection.

4 RESEARCH FINDINGS

4.1 Findings

A total of 23 respondents (n=23), 12 males and 11 females were purposively sampled from 8 public healthcare facilities in Nyeri, Kiambu, Nairobi and Kajiado counties. Only one respondent was uncooperative. The interviews sought to identify and understand the factors that influence the quantity of output from the facilities and opportunities that are available to make efficiency gains.

Table 5: List of the respondents

RESPONDENT	AGE	GENDER	FACILITY	DESIGNATION
1	49	M	Referral	Surgeon
2	54	M	Referral	Administrator
3	30	F	Referral	Pharmacist
4	45	F	Referral	Nursing officer
5	42	M	Referral	Dentist in Charge
6	48	M	Referral	Physiotherapist
7	40	M	County Hospital	Medical Superintendent
8	30	F	County Hospital	Medical officer
9	41	F	County Hospital	Nursing officer
10	31	F	County Hospital	Medical officer
11	32	M	County Administration	Pharmacist
12	48	M	County Administration	Director
13	34	M	MOH	MOH
14	33	M	MOH	MOH
15	36	M	Health centre	Clinical Officer
16	29	F	Health centre	Nursing officer
17	35	M	Health centre	Lab Technician
18	44	F	Health centre	Nursing officer
19	32	M	Health Centre	Clinical Officer
20	30	F	Dispensary	Nursing officer
21	29	F	Dispensary	Nursing officer
22	39	F	Dispensary	Nursing officer
23	32	F	Dispensary	Clerk

The respondents said that devolution of health services that occurred officially after the 2013 general elections has had greatly effected on the delivery of healthcare in most of the public facilities. This is majorly because the responsibility to manage the health system resources including the personnel was taken up by the counties while the national government was left with policy issues and management of national referral facilities.

The factors influencing the efficiency in the delivery of care identified from the interviews were summarised in to 10 themes. These were;

Table 6: List of the Themes

	THEME
1	Availability and welfare of the healthcare workers
2	Procurement and use of medical commodities
3	Infrastructure development and use
4	Availability and use of medical equipment
5	Leadership and supervision
6	Governance and strategic planning
7	Data management and performance evaluation
8	Media and Communication
9	Coordination between departments
10	Community factors

Availability and welfare of the healthcare workers

The health personnel play an important role in the delivery of healthcare. Most of the respondents reported that generally the facilities were understaffed and there was need to increase the health personnel. This was because of the increasing population and increasing burden of diseases. A nurse respondent reported that the output from them is often reduced due to burn out from overwork.

"We are doing our best and we are so much stretched since there isn't enough manpower, so we get burnt outs and work for long hours"

The lack of optimal levels of the different cadres was reported to reduce output by other cadres who work together. An example is the output of a surgeon which is dependent on the availability of supporting staff like nurses and anaesthetists

"You find like now the surgeon may want to have another patient called into the theatre, but there are no nurses who are supposed to assist him, the few present give excuses, for example ' I am tired, give me one hour' implying that even if you are at work, you will not be able to work"

There are departments that could be having adequate staff and the challenge would then be to increase the demand for the services. A pharmacist in a referral hospital said;

"In my opinion, we can serve more people, because the number of personnel we have is adequate. The hospital should work towards increasing the demand for our services for us to be optimally utilised"

Staff motivation is a key determinant of how they deliver patient care. The healthcare workers were generally not motivated due to issues related to their pay. These issues were pronounced after the devolution and management of health personnel was taken up by the counties. The pay is said to be often delayed and unpredictable. These make them feel unappreciated as professionals. It was reported the issue of delayed payment has precipitated a number of strikes in different counties thereby affecting delivery of care in the facilities.

"Again with the county government there have been these issues of delays of the monthly payment and they always tell us the national government has not released the money and especially for this county it has been a big problem because you are never sure when you will be paid"

Due to the availability of opportunities to advance in education, a number of healthcare workers have gone back to school; however, they felt that the public service system does not recognize this despite the improved clinical or managerial skills. Often they are told that the upgrade is not recognised in the scheme of service. This discourages the workers

"Like me, I did my Bachelor of nursing and have never been upgraded it's still the registered community nurse and this is the third year.... I took my papers there and was asked 'who told you to go back to class?' so I had to go back with my papers, I can never go back to school"

However, one of the officers said that salary can never be enough in the eyes of most of the health workers and motivation has much to do with their attitude.

"Remuneration is about attitude, I look at a cleaner. They are the poorest paid, but clean with a very good heart. The more people are paid the more the attitude is not projected to work, the more you get more money the more you do other projects"

The respondents were also asked about the role and performance of the subordinate staffs. Facilities either had these group employed directly or outsourced. The outsourced employees were said to perform better especially in the larger facilities because of ease of supervision. This is because the contract had objectives and deliverables and there was an incentive to perform so that this contract can be paid or be renewed.

"This one the job security is a bit risky, when you report it they take immediate action than when the person has entered the system and when you outsource because it's a contract they have to perform to the specifications"

However there were challenges and one identified was the interruption when a worker resigned or was transferred by the company. If it happened too often this affected team play and could tire the officer who had to keep training the new people posted to their departments. The lower level healthcare facilities had the workers employed directly by contract from the county government. Officers felt this was better because they had control over these people and could engage them in other jobs that are not related to their scope of work like porting of patients, record keeping in dispensaries, making tea and even dispensing where medical personnel is seriously limited. A nurse in one of the dispensaries said;

"I have a clerk, she is the one doing the cleaning, she does the records and dispenses for me, she is the one who cooks tea; we should have a records officer"

PROCUREMENT AND USE OF MEDICAL COMMODITIES

The quantity of drugs and the consistency of their supplies were reported to affect the delivery of care especially number of patients seen. Most of the respondents said that the drug supplies were inadequate, inconsistent and unpredictable. This in some facilities got worse with devolution of health services. A pharmacist in a regional referral facility talked of the way they were unable to deliver efficient pharmacy services due to several challenges.

"We have problems when it comes to our ordering cycles, they are very long, then long lead times, they are actually unpredictable; then there is also changes in consumption that the current procurement structure does not accommodate"

This was majorly caused by the procuring system adopted by most of the counties. Money collected goes to the counties and the facilities do not have resources to purchase emergency and other essential supplies. However in counties where the facilities had access to some funds even with strict control of use, they could use these funds to purchase emergency and some essential commodities ensuring smooth delivery of care. An officer in such a facility said;

"You know now there is something called AIE, and we get it from the county. This helps us to purchase emergency supplies when they get finished as we wait for the county to deliver the bigger supplies"

The information on lack of medical supplies especially drugs spread to the public and this reduces the number of people seeking healthcare.

"What I have seen is this, patients especially in rural setting are like a family, if they come and today they find that there are no drugs, they go tell their neighbours there are no drugs there, so even if someone is sick they won't come until there is a time they will hear that there is someone who went and actually got treated and got the prescription and the drugs"

INFRASTRUCTURE DEVELOPMENT AND USE

The size and organisation of the physical infrastructure affects the delivery of care. Most of the respondents said that there was need to expand the infrastructure to enhance efficiency and to increase the type and amount of care offered. This includes more room for both the clinician and the patients. A nurse in one of the health centres said;

"They should extend the facility so that we have more services to be offered; like where I am seated, is the MCH, is the OPD, is the dressing and the injection, we need more space"

From the interviews it was reported that the devolved governments had made efforts to improve the infrastructure. However, there were a number of challenges in term of what and how it was done. These included lack of stakeholder engagement, especially the user, in the design and construction leading to wastage of resources. An officer talking about infrastructure development of a new dental department said;

"Even when they are doing the infrastructure they need to ask, as the user, how do you need this other one? How much space? Like now we have told them you have to break all this windows to bring more light and air"

AVAILABILITY AND USE OF MEDICAL EQUIPMENT

Equipment for diagnosis and treatment are important in the delivery of care. It was reported that there was lack of some basic equipment in some facilities leading to fewer services being offered even when the demand for these services and the personnel are available

"We offer family planning services but cannot insert an IUCD because I do not have a steriliser, there is demand, I usually send several to the health centre"

There are efforts both by the national and the county governments to improve the equipments in the facilities. However, there are a number of challenges that affect their use and these include; lack of planning for equipment maintenance and necessary consumables. A clinical officer in a health centre said;

"I believe in maximising what you have but you find that every so often the re-agents have run out, and you cannot do even the simple tests like pregnancy"

The other challenge reported was the procurement of substandard equipment. This was reported to happen due to corruption at the procuring offices. The purchase would be done without adequate stakeholder engagement.

"The county bought some machines for eye department but they did not ask the department the kind of machines they would want. When they come you find that they are not the best"

LEADERSHIP AND SUPERVISION

Good leadership and supervision are important in healthcare delivery. One area where the respondents felt there was need to address is the role of the heads of the facilities and those of departments and their level of decision making. One of the respondents said that, there are no clear criteria on how one becomes a head of department. You therefore find heads of departments who may not have the best leadership qualities that enhance output from the workers.

"Most of the time I think here is lack of training in leadership. There is lack of a clear guideline on who would be the head of department, what is their training.....like you see someone is made the head of department because you have been there for long, there is no special training. Some have the training but are new to the facility and cannot be made the one in charge"

Supervision is important in the delivery of care. Support supervision to the lower level facilities is required in improving care delivery. The counties have made attempts to strengthen supervision and where this has happened the staffs are able to deliver care more efficiently and effectively. As one nurse in a dispensary said

"Our supervisors really support us; we call them when we need them. They help us improve our work by correcting us when we make mistakes. But they are some things we need but they cannot help us because they come from the county"

It was reported that in some areas, supervision seems to have weakened leading to low quality work. A Pharmacist in a referral facility said;

"Supportive supervision not there, it has not been there since the beginning of the county government, which has actually been a very big challenge. We see it because we are a central site for ART, we serve several health centres and dispensaries and the kind of reports they bring are, sorry to speak substandard, but you see there should be supportive supervision to such facilities"

The respondents said that external supervision is important in order to improve services. There are different stakeholders who often visit the facilities to assess these services and include the Quality Assurance department from the Ministry of Health, the National Hospital Insurance Fund and donor partners. Their partnership with the facilities should be strengthened especially the NHIF which is a significant payer and whose role has increased with the roll out of outpatient services for the general population. An interviewee said;

"Like the NHIF if it gets to know that services are not being given it should withhold and stop any further disbursement to that institution which is not giving service. They should have powers to monitor that their clients are comfortable"

GOVERNANCE AND STRATEGIC PLANNING

Good governance encompasses policies and strategic plans with effective regulation, oversight, partnerships and collaborations that integrate all the units in the health systems to improve health outcomes.This ismainly characterized by competently and sustainably directing the use of the available health system resources and the participation of stakeholders towards the goal of improving health outcomes.

Facilities generally did not have widely disseminated strategic plans that guide their work and their expansion plans. It was reported that the devolved governments had made efforts to improve the infrastructure. However, there were a number of challenges in term of what and how this was done. These included lack of stakeholder engagement, especially the user, in the design and construction leading to wastage of resources. There was also lack of proper planning before procuring some of the equipment. You get a situation where the item is procured but there is no space or supporting infrastructure in the facility. At other times, even the personnel to operate the equipment have not been planned for. This leads to sub optimal use of the available resources

"We have some equipments for x-ray that are lying there because we can't get space, there is a wall that would need to be demolished but they say there is no money"

DATA MANAGEMENT AND PERFORMANCE EVALUATION

Performance evaluation is important in order to improve the making of decisions in the delivery of healthcare. The respondents underscored the need for proper data management by ensuring the availability of accurate, reliable and timely data. A nursing officer talked about how data had assisted in the management of patients and assessment of health of the population.

"Yes, I always do evaluation almost on a daily basis. Every morning when I come I examine what we did the previous day and write a summary. Even when the supervisors come we are able to discuss"

Most of the lower level facilities had manual record keeping. This had a challenge during compilation and analysis as is would eat into clinical time

"Now every end month I have a headache, throughout the whole day I do not see patients, I sit down here writing reports, then I waste another day taking them to the health centre but online I would just send"

Respondents working in the secondary facilities reported that they use a combination of both digital and manual record systems. The outpatient records are digital while the inpatient records are still manual. The digital records are easy to retrieve and develop reports. There were however some challenges like the software program breaking and lack of well trained personnel to manage the system.

"We have a software but not very reliable because we are not able to get some information. The problem is, we do not have well trained technical person who understands that system such that, if there is problem there is something they can do. They always have to call the developer"

An officer who routinely attends the health management team meetings talked about the need to have objectives based performance evaluation targeting better healthcare delivery.

"People here don't really value data and the evaluation done here is mostly about money and not about the quality and kind of services you are rendering"

Respondents reported the need to build the capacity of the officers to understand evaluation. This is especially with the introduction of digital data management systems where the health workers needed to be trained to better understand the operation of the software and interpreting the data generated.

MEDIA AND COMMUNICATION

Media plays very important role in the delivery of healthcare. Through the media, the community are well informed of their rights and the services that are available in the facilities. Media can be used to mobilise the public especially in mass health programs.

However, there have been negative effects of media and especially social media. Sometimes matters involving the patients that can be easily resolved are blown out of proportion leading to friction between the healthcare workers, the government and the public. This often causes demoralisation to the workers

"Now with this social media, something small which is not even the truth....when it goes to the press, the press wouldn't interrogate the issue and would just report"

Social media is playing a big role in the delivery of care. It is having both positive and negative effects. The positive effects include increased accountability by the workers for fear of being reported in local social media groups, better communication to the public and better communication and team play between the health workers especially through Whatsapp. You would find a Whatsapp group formed among the members of the health management team or a department in the facility. An officer asked this had influenced efficiency in the delivery of care said;

"It has influenced it positively, the information reaches people faster and the number of people reached by the information at any one time is much higher and that enhances supervision and team play"

Social media had even assisted in timely redistribution of drug supplies in one of the areas. A pharmacist in a referral facility said;

"The Whatsapp group that is there is for the entire county, that is where we share the information on who has an excess of what who does not have, then we do some redistribution"

The internet also played a role in obtaining information to assist in decision making while managing different patients. The only challenge was most public health facilities do not have internet for use by the health workers.

"If I want to Google something, may be a patient comes with a weird diagnosis before I call somebody I first Google, if I am not sure of a drug, I Google"

CORDINATION BETWEEN DEPARTMENTS

When patients visit facilities they are managed in different departments by different cadres. The coordination and movement of the patients affects the waiting time, number of clients that can be seen and influences patient satisfaction. A respondent asked about coordination of care said

"I cannot say it is efficient because every time in a day you will find five patients asking for the direction of a particular place. I think it can be done in a better way"

Respondents said there may be need to establish or strengthen the public relations office with designated officers to manage various patients' needs and especially in the bigger facilities.

"There is the need to establish public relations department. Most patients waste a lot of time in the lab and the x-ray"

Departments have service delivery charters that indicate the amount of time one would spend while seeking the service. It was reported that this was often not followed and patients end up spending a lot of time in some departments. A nursing officer who worked in MCH said;

"We send antenatal mothers to the lab, when they go, some get the results as late as 3pm and they are expected to come here and we do the necessary, some even get them the following day"

In the smaller facilities there were challenges in coordinating care especially when there is need to clarify an issue about a patient and there is no telephone line. The officer would have to

physically move to another department. This leads to wastage of clinical time and the officer may even forget about that client.

"Even if you wanted to consult anything about that patient you cannot. Actually, you have to go there personally. If someone is busy he may say 'this one I will ask later'. They then may forget and the patient has to wait"

COMMUNITY FACTORS

Factors related to the community influenced their demand for health in the facilities. In some of the facilities sampled, demand was reported to be mainly affected by the economic status of the society, including seasons in the year.

"Here I would say some people are very poor. You send them to take an x-ray and they have to pay. This is made worse when services are not available in the public health facilities and they have to seek from private providers. Since this is more expensive, the patient can postpone the treatment often to appear when very critical, almost dying"

In some other facilities demand was reported to be affected by the practices and cultural beliefs where the members of the community would first attempt to manage diseases using traditional home remedies only to appear in the facility when critical leading to poorer health outcomes.

"Here villagers do funny things with those herbs and by the time they come to you they so sick and disease very advanced"

The respondents reported that public awareness also influences demand for the health services. Sustainable public awareness programs are necessary on the availability of services and even those that build their confidence on the services provided. Again, where the public are empowered and well enlightened they would be aware of their rights and can question the delivery of care especially what is on the service charter hence improving accountability.

"Public now aware of their rights, they can look at the service charter and query the charges; you have to do the right thing"

The people's representatives also had important roles that included promoting investment in the facility by the national and county government and promoting accountability by the healthcare workers. An officer said;

"I think the political interference has two aspects some is good, you see when the politician wants to really know what is happening in the facilities, they are more concerned about the care the patient is receiving, they put the management of the hospital on their toes that they have to deliver to the people, so it's like a watchdog for the people, because the patient may not have a voice but the politician has a voice"

Health workers mentioned that demand for healthcare by the population could also be potentially affected by other factors that are not related to the facility, like transport.

"For the patient to come here he has to plan, you see they have to pay a motorbike fifty bob or a hundred bob...and this money for transport is a problem"

4.2 Discussion

Health system resources are limited and efforts must be made to utilise what is available in the most efficient manner. This study sought to build on the information obtained from an efficiency study conducted in Kenya, in 2013, with the support from the World Bank (Kioko, 2013) that evaluated technical efficiency of sampled healthcare facilities. Data envelopment analysis was used in this study to estimate the technical and scale efficiency using multiple inputs to produce multiple outputs. Health workers were used as one of the inputs while analysing the performance of the various facilities. Most of the respondents pointed out that they are not adequately compensated for their good performance and this reduces their morale and limits their output. Also failure to provide opportunities in career development and recognition of career advancement significantly impacts on the provider's output and hence a cause of inefficiency.

In a study (Ojakaa, 2014) of healthcare workers at primary healthcare facilities in Kenya that sought to understand factors that influence their motivation and retention, pay and work environment including transport and housing were cited as very important, especially in marginalized areas like Turkana. In a systematic review of existing evidence (Willis *et al*, 2008) on the effect of financial and other incentives on retention and motivation, it was found that these factors are usually country specific. However, financial incentives, career recognition and development are highly influential in health worker motivation. The availability of adequate tools and requisite infrastructure to work in also improves the morale significantly.

Medical supplies that include pharmaceuticals and non pharmaceuticals are very essential in the delivery of quality healthcare to improve health outcomes. As reported by the various respondents, the lack of adequate and predictable supplies had greatly affected the quality of care given and also has an effect on the utilisation of healthcare. It was observed that when patients learnt that a facility does not have the supplies they usually avoid visiting the facility. In the previous study (Kioko, 2013) there was wide variation in the output of the different facilities and especially the primary healthcare facilities. The reputation of these facilities in the community in as far as availability of drugs could potentially influence the utilisation health services.

There is need to improve the organizational performance of the healthcare supply chain. Modern supply chain management techniques can bring benefits in all the counties. A study done (Shou, 2013) showed that the supply chain dimensions that include specifications and standards, the relationship with suppliers, delivery and after-sales service have an effect on the quality of services provided. In this study it was reported that procurement process is at times not observed and financing is a major problem. In some instances the process is bureaucratic and long leading to inconsistency in obtaining supplies. There is need to review the procurement process and develop a framework to reduce corruption and bureaucracy.

The efforts of the government, both National and the Counties, on improving infrastructure must be appreciated. Kioko (2013) used bed capacity as a proxy for the size of infrastructure. Several respondents reported that, the lack of adequate space in the facilities limited their output in terms of the number of patients served and the variety of services offered. Again, the layout of infrastructure on the ground would need to be well planned by considering the arrangements of other complementary departments, the number of staff present and the flow of patients' right

from registration to exit. This would help in maximising the outputs especially from the available personnel. The mindset of the service providers is also influenced by the physical work environment. This affects their ability to innovate in delivering expanded services and their efficiency in doing it. A work environment that is disorganised impairs the healthcare team.

Proper and reliable equipment are paramount in the delivery of efficient services. There is need to involve all the stakeholders in decisions while procuring these items. A number of officers had complained of lack of consultation by the procurement offices while making purchasing decisions. In another study by Hinrichs *et al* (2013) on the challenges affecting the main stakeholders for purchasing who were identified to be staff from clinical engineering, device users and device trainers, they displayed varied characteristics in terms of interpretation of their own roles, competencies for selecting devices, awareness and use of resources for purchasing devices, and attitudes toward the purchasing process. The role of clinical engineering department was seen by these stakeholders to be critical in mediating between training, technical, and financial stakeholders but not always recognized in practice. Indeed as reported by the respondents in this study, there was general lack of proper planning and consultation with all the stakeholders leading to purchasing of sub standard equipment. It is important that decisions to purchases are not tackled in isolation as this is not optimal. These decisions require knowledge that is currently distributed among different individuals working in different departments.

The gaps in the procurement and stakeholder interactions demonstrate weaknesses in policy development and implementation, which guide decision making. This often leads to delays and conflict. The facilities also did not have access to strategic plans to guide their work and ensure

resources are applied for the intended purpose to maximise their value.There is need to improve and strengthen policy implementation and promote development of facility strategic plans.

The significance of transformational leadership is becoming increasingly apparent in the delivery of healthcare. Evidence shows that this affects, not only the financial management, but also the quality of care provided (Firth, 2001). While the respondents appreciated the efforts of the facility managers, they also said there is need to build their capacity to improve care delivery. Good supervision of the primary care facilities, where present, was reported to improve the decision making of the workers and enhance efficiency. Mills (1993) identified factors that would cause low efficiency in the public healthcare delivery. These included bureaucracy in decision making which is compounded by the management structure that is often weak in the developing countries and the lack of incentives for efficient resource use.

In a systematic review of opinions on the meaning of supervision in health care(Bosch *et al* 2008);it was conceptualized as the connection between the central and the peripheral health workers and it's important in enhancing staff performance and their motivation. Supervision often includes reviewing of records, problem solving and observing the clinical practice. Attention at the top decision making level is crucial to put in place a systematic and structured process, which should be supported with adequate resources in order to improve the delivery of care at the primary healthcare facilities.

Despite the respondents indicating that data is vital in the performance evaluation, they also said that the available data systems were inadequate and there was need to strengthen them. All the stakeholders must understand the role and how to do an objective and goals oriented evaluation.

The recommendationfrom the technical efficiency study (Kioko, 2013) on the need to institutionalise health metrics remains valid. There is need, to routinely measure various variables, including both inputs and outputs in the healthcare delivery process. This helps in assessing performance and planning improvement strategies to reduce wastage of the scarce resources.

The media plays a big role in spreading information to the public. They can be used to create demand for health services. The increased use of social media has had both positive and negative effects. It has shifted patient empowerment from individuals to groups. Efforts should also be made to use social media to strengthen teamwork and coordination in the delivery of care in the facilities.

Most of the respondents said, since patients often visit several departments while seeking care, there is need for coordinated actions across the departments to enhance their flow and their satisfaction. Poor operation of one department greatly affects the efficiency in handling patients in the whole facility. Good coordination is affected by factors like the physical planning, the health information system in use plus the number of personnel available.It would be important to diagnose bottlenecks in the care coordination and plan to address them accordingly. One of the objectives being to reduce waiting times and remedies may include ensuring better communication between departments and strengthening of the public relations department among others.

There were factors related to the community that were reported to affect their demand for healthcare. Economic status was the major factor talked about by the respondents. The health seeking behaviour is affected by the poverty level with the poor avoiding or postponing going to the hospital. They then appear when the illness is advanced often with unfavourable outcomes. The respondents talked of the need to have efforts to enhance access of healthcare to a majority of people irrespective of their economic status. There is evidence that barriers that deter patients from obtaining treatment can come from either the demand or supply side. These barriers mainly affect the poor and other vulnerable populations where issues like lack of information, costs of accessing facilities and cultural barriers prevent them from benefitting from public spending.

4.3 Conclusion and policy recommendations

To increase staff motivation for better performance, there is need to develop appropriate schemes of service, withcompensation packages that are competitive and have strategies for career development. The implementation of governance policies should be improved to manage the decision making in the facilities, reduce conflict and enhance efficiency. The commodities supplies system should be strengthened through proper planning, allocation of adequate monies, timely and transparent procurement to ensure a predictable and reliable supply pattern to enhance utilisation of healthcare.

Facilities should also develop strategic plans to guide their operations and their expansion. The expansion,especially of infrastructure, should be objective and harmonised to the health needs of the population and also accompanied with supporting personnel and equipment. The purchasing of equipment should be well planned and there is need to engage all the necessary stakeholders

while making the purchases to understand their needs and develop specifications to avoid conflict and wastage. Availability of functional equipment would enhance utilisation of healthcare.

The national, county and other development partners should provide capacity building of the healthcare managers both in the facilities and in the county administration offices to enhance their output. There is also the need to strengthen supervision at both levels to promote accountability and efficiency.The National Hospital Insurance Fund continues to be the biggest payer of health services especially inpatient in the public healthcare facilities. Its role to supervise the quality of care in the facilities could again be strengthened considering its increasing influence as a payer, with the civil servants scheme and the new general social health insurance. It can set standards expected from the providers to ensure their clients are receiving efficient and effective care.

Proper data management is important in the delivery of care and there is a need to adopt data management systems that are affordable and user friendly in the facilities. Efforts should also be made to train more personnel to manage the digital systems,where available, to avoid or manage breakdowns. The workers should also be trained on analysing the data and using the information obtained to improve care delivery.There is also the need to institutionalize performance measurement in the country, where efficiency levels and other health metrics can be reported frequently to assist in decision making.

There is need to make use of both the traditional and emerging communication media to promote public demand for services and to enhance interaction and team work among the health workers. How care is coordinated and delivered in a setting affects the number of clients seen, their satisfaction and future utilisation of healthcare services in the facility. It would be important to address the challenges on a case basis to identify gaps and seek to strengthen the coordination and flow of the patients. Demand side barriers that could be social, economic or cultural are likely to affect mainly the poor and other vulnerable groups. These should be identified and efforts made to improve the demand for health services by those who require them.

Moving forward, there is need to analyse facilities on case by case basis to identify gaps as different facilities have different challenges affecting their output. Further in-depth research on each of the themes identified and how it affects efficiency in the delivery of healthcare is also recommended.

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APPENDIX

1. Interview guide

This guide provides a structure that will be used to obtain information from the interviewees. To be able to understand drivers of efficiency and in efficiency in the delivery of care, the interview will seek to obtain views and perspectives regarding the inputs used, the process of delivering healthcare and the outputs.

Facility -..... County.....

1. Socio demographics:
    a) Age
    b) Gender
    c) Specialisation
    d) Designation in the facility

2. Inputs

Input	Question
Medical personnel Doctors Nurses Pharmacists Pharmaceutical technologists Dentists	Can the facility obtain more output from the available personnel? What factors either promote or limit output from the personnel?

Community oral health officers Laboratory technicians Radiographers Clinical officers Medical engineers Specialists	
Non medical personnel Administrators Subordinate staff	What factors either promote or limit their output?
Contracting	Are there functions that have been contracted from a third party? How does contracting affect delivery of healthcare in the facility?
Drug supplies	What elements of drug procurement and prescription at the facility promote or limit output/outcomes
Non pharmaceutical medical supplies	What elements in procurement and utilization of non pharmaceutical supplies promote or limit outputs from the facility

Equipment for diagnosis and treatment	What factors related to equipment promote or limit output from the facility
Infrastructure- buildings, Land, Environment, Water, Electricity etc	What factors related to the infrastructure promote or limit output from the facility
Health information system/ data management	What factors related to the management of health data promote or limit output from the facility
Social Media	How does use of social media- Facebook, Whatsapp. Twitter- promote or limit delivery of care
Facility leadership and Supervision	What attributes of leadership in the facility promote or limit the output

3. Care process and coordination

Interaction between departments	What elements in coordination of care between departments promote or limit output from the facility

4. Factors outside the healthcare facility

	Question
Community	What factors related to the community- social, cultural, economic- promote or limit output from the facility
Political Influence	Does the political leadership influence delivery of healthcare in the facility

5. Performance evaluation
    i. Are there adequate tools or strategies to evaluate performance of the facility?
    ii. What are the challenges in conducting a successful performance evaluation in the facility
    iii. What are the possible strategies to enhance performance evaluation in the facility
    iv. Do you have any final comments or remarks as we come to the end of the interview

Thanks

2. Consent form

Title: **Understanding the drivers of efficiency and inefficiency in public sector**

You are hereby invited to participate in a study conducted by JAMES CHEGE MBIU. The main goal of this research is to identify, explore and better understand the drivers of efficiency and inefficiency in the public sector healthcare facilities and as a partial requirement for the degree of Masters in health economics and policy from the University of Nairobi. Your participation will involve giving personal information on among others, your age, area of specialisationand providing information on your understanding of factors that affect efficiency and inefficiency in the delivery of care.

Risks and potential benefits: This research does not have any known risks associated with it. The results obtained will assist in understanding the delivery of healthcare in facilities and can be used to improvepolicies in the allocation and management of resources in the healthcare sector

Protection of confidentiality;Your identity will not be revealed in any setting or publication resulting from this study.

Voluntary participation: There are no incentives and your participation is voluntary. You can choose not to participate and you can also withdraw your consent to participate at any stage.

Contact information: The contact details of the principal researcher are; JAMES CHEGE MBIU P.O Box 6526 – 00200 Nairobi. Cell;0723 396 322. If there are any questions, concerns or clarifications about your rights as a participant, kindly contact the Kenyatta National Hospital/University of Nairobi Ethics and Research Review Committee on (254) 020 2726300 Ext 44355

Consent: I agree that I have read and understood this consent form and have been given the opportunity to ask questions. I hereby give my consent to participate in this study.

Participant's signature: ..... Date: .....