INFLUENCE OF HOSPITAL OWNERSHIP AND GOVERNANCE STRUCTURE ON MATERNAL DELIVERY SERVICES

Dr. RICHARD TIMOTHY AYAH, MBChB; MSc

H80/98967/2015

A Thesis submitted to the School of Public Health, College of Health Sciences, University of Nairobi, in fulfilment of the requirements for the degree of Doctor of Philosophy

November 2018

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Supervisors' Approval

This thesis has been submitted with our approval as University Supervisors:

Dr. Dismas Ongore MbChb, MPH, PhD
Senior Lecturer
School of Public Health, University of Nairobi
dongore@uonbi.ac.ke

Signature……Date……

Associate Professor Alfred T.O. Agwanda BEd, MSc, PhD
Associate Research Professor
Population Studies & Research Institute, University of Nairobi
ataotieno@uonbi.ac.ke

Signature……Date……

Approval by the Director, School of Public Health, University of Nairobi

Professor Mutuku A. Mwanthi, BSc, MSEH, PHD
Director & Professor of Public Health (Environmental & Occupational Health & Safety)
Email:mmwanthi@uonbi.ac.ke

Signature……Date……

Dedication

To Violet Naanyu, unwavering support and drive all the time.

Craig, Hawi, Matthew, Maya and Ann each unique in your own way, every one of you inspiring.

Baba, kind of late doing this, but then again you did counsel me.

"A learned fool is more a fool than an ignorant fool."

— Moliere

Acknowledgements

I wish to thank my supervisors, Dr Dismas Ongore and Prof Alfred Agwanda for their patience, understanding and guidance through this process. I am indebted to Prof CF Otieno who constantly checked up on me, helped navigate the savannah and soothed the spirit when mauled by the wildlife. Thank you to Kellen Karimi for all the work you put in helping with data collection. Jane Mungai at the School of Public Health was quietly efficient with administration. At critical times, Prof Fred Were came in to support firmly the process, thank you. I would like to thank my research assistants who helped in collecting data. The study respondents especially the hospital chief executives and medical superintendents for allowing the study to be done at their facilities.

Lastly my family for the sacrifices made during this time.

Abstract

Background: In Kenya, hospitals are registered by ownership, not by function making it difficult to assess their performance. Governance theories, agency, stewardship and resource dependency have been used to suggest ideal governance structures for the health sector. Hospitals are critical in providing maternal delivery services, yet how their ownership and governance structures are associated with hospital performance measured by effectiveness and equity has been theorized but not examined through a study.

Objective: The study sought to explore the relationship between ownership, hospital governance and maternal delivery service outcomes (MDS).

Methodology: A cross sectional, mixed methods study of six primary referral hospitals, differentiated by ownership, was conducted from 10th June to 9th October 2015. Six key informant interviews, 40 questionnaire interviews were held with hospital in-charges, board members and management to determine the governance structure and processes. Hospital and patient data abstraction relating to maternal delivery services (MDS) was done to determine hospital performance in two dimensions: Effectiveness was measured by perinatal and maternal mortality; Equity was measured by the caesarean section rate and payment for services. Qualitative data was analyzed thematically. Tests of associations were used to correlate governance and hospital performance.

Results: From the three ownership types, two governance types labelled, public and corporate, were identified. Public governance hospitals had large boards (>8 members), diverse membership with no fiduciary responsibilities. Corporate governance hospitals had smaller boards (<8 members) with fiduciary responsibilities. Public governance hospitals were less effective with perinatal mortality 2.5 times that of corporate hospitals (31 vs 12 per 1,000 births). Having at least 40% of board members registered with the Medical Practioners & Dentist Board was associated with reduced perinatal mortality (P<0.001,OR= 3.08 95%CI: 2.6879-3.5362). However, in terms of equity the picture was mixed, a caesarean section was 1.45 times more likely to occur in a corporate hospital (P<0.001 95% CI: 1.3729-1.5410); however, they also charged an average of Kshs 30,818 per delivery (US$304), while public governance hospitals were free.

Conclusions and Recommendations: Governance structure is associated with hospital performance as measured by MDS outcomes of perinatal mortality. This study provides a new perspective on measuring hospital performance (perinatal mortality), in relation to organizational governance. No single theory alone explains hospital governance, however stewardship theory best describes the best performing hospitals. This study provides a fresh approach to implementing governance theories and therefore improving accountability of hospitals.

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Abbreviations/Acronyms

AAK	Architectural Association of Kenya
AIE	Authority to Incur Expenditure
ANC	Antenatal Care
AOP	Annual Operational Plan
ART	Anti-retroviral Treatment
BA	Bachelor of Arts
BP	Blood Pressure
BTR	Bed Turnover Rate
CAP	Chapter (law statute)
CBD	Central Business District
CEO	Chief Executive Officer
CHAK	Christian Health Association of Kenya
CS	Caesarean Section
EEC	Executive Expenditure Committee
END	Early Neonatal Death
FBO	Faith Based Organization
FMS	Free Maternity Services
FP	Family Planning
GDP	Gross Domestic Product
GOK	Government of Kenya
HF	Health Facility
HMC	Health Management Committee
HMSF	Hospital Management Services Fund
HMT	Hospital Management Team
HR	Human Resources

ICPAK	Institute of Certified Public Accountants of Kenya
IOM	Institute of Medicine
KEMSA	Kenya Medical Supply Agency
KEPH	Kenya Essential Package of Health
KHPF	Kenya Health Policy Framework
KNH	Kenyatta National Hospital
KRA	Kenya Revenue Authority
KRN	Kenya Registered Nurse
KSPA	Kenya Service Provision Assessment
LMIC	Low and Middle Income Countries
LSK	Law Society of Kenya
MBA	Master of Business Administration
MCA	Member, County Assembly
MDG	Millennium Development Goals
MDS	Maternal Delivery Services
Med Sup	Medical Superintendent
MMR	Maternal Mortality Ratio
MO	Medical Officer
MOH	Ministry of Health
MOM	Ministry of Medical Services
MOPHS	Ministry of Public Health & Sanitation
MP&DB	Kenya Medical Practioners' and Dentists' Board
NCK	Nursing Council of Kenya
NCPD	National Council for Population & Development
NEMA	National Environmental Management Authority
NFP	Not For Profit
NGO	Non-governmental Organization

NHA	National Health Accounts
NHIF	National Hospital Insurance Fund
NHS	National Health Services
NHSSP	National Health Sector Strategic Plan
NITA	National Industrial Training Authority
NSSF	National Social Security Fund
OBA	Output Based Approach
OECD	Organization for Economic Cooperation and Development
OOP	Out of Pocket
OSHA	Occupational Safety and Health Administration
PBO	Public Benefit Organization
PPB	Pharmacy and Poisons Board
RBA	Retirements Benefit Authority
RCO	Registered Clinical Officer
RDT	Resource Dependency Theory
RHS	Reproductive Health Services
SARAM	Service Ready Assessment
SDG	Sustainable Development Goals
SOP	Standard Operating Procedure
SVD	Spontaneous Vaginal Delivery
THE	Total Health Expenditure
UK	United Kingdom
UNDP	United Nations Development Program
UON	University of Nairobi
USAID	United States Agency for International Development
WHO	World Health Organization

Definition of Operational Terms

Chief Executive Officer: Highest ranking manager the facility, whose primary responsibility is to make major corporate decisions, manage operations and resources of the organization and acting as main point of communication between the board of directors and corporate operations.

Bed turnover ratio (BTR): A measure of bed capacity. Represents the number of patients treated per bed in a defined period of time (usually a year). BTR = Total patient admissions / Number of beds

Board of Directors/Trustees: Group of individuals elected as or elected to act as representatives of the owners or shareholders, to establish corporate management related policies and to make decisions on major institutional issues.

Direct Maternal Death: Are those resulting from obstetric complications of the pregnant state (pregnancy, delivery and postpartum), interventions, omissions, incorrect treatment, or a chain of events resulting from any of the above.

Early Neonatal Death (END): Death of a live newborn in the first 7 days (i.e., 0-6 days) of life.

Effectiveness of Maternal Delivery Services: The extent to which the hospital manages all major causes of maternal and newborn mortality as measured by the mortality rates.

Equity of Maternal Delivery Services: Hospital performance as measured by an adverse maternal or foetal outcome during delivery.

For Profit Hospital: A health facility registered as a company under CAP 486. In common parlance ‘private’ hospital.

Governance structure: The distribution of rights and responsibilities among the board members, management team, owners. Specifies composition, roles and procedures of boards, board meetings and senior management team and their meetings.

Health system: comprises all the organizations, institutions and resources that are devoted to producing health actions.

Hospital: "health care institutions that have an organized medical and other professional staff, and inpatient facilities, and deliver medical, nursing and related services 24 hours per day, 7 days per week"[1]. Licensing by Medical Practioners and Dentists Board (CAP 253) of the laws of Republic of Kenya

Hospital acquired infection: "An infection acquired in hospital by a patient who was admitted for a reason other than that infection"(World Health Organization, 2002).

Hospital Management Team: Senior most members of management in the hospital.

Hospital Performance: A measure of the effectiveness and/or equity of services provided.

Independent director: "Non-executive director of a companywho apart from receiving the director's remuneration, does not have any material pecuniary relationships or transaction with the company, its promoters, directors, senior management, holding company or its subsidiaries and associates, which may impact his/her independence".

[1] http://www.who.int/topics/hospitals/en/. Accessed 24th September 2016

Indications for caesarean sections: Reasons provided by doctor for the surgery; emergency, booked patient, obstetric history.

Length of Stay: Average length of stay is computed by dividing the number of days stayed (from the date of admission in an in-patient institution) by the number of discharges (including deaths) during the year.

Macro level health system: focuses at national level including overall policy development, coordination of health services and interactions of national and international agencies.

Maternal Death: The death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.

Maternal delivery event: An adverse maternal or foetal outcome that occurs during labour and/or delivery.

Maternal Delivery Services: Maternal Delivery Services: Delivery care services equal to comprehensive emergency obstetric care.

Maternal Mortality Ratio: calculated as the "All maternal deaths occurring within a reference period" x100, 000 divided by Total number of live births occurring within the reference period.

Medical Superintendent: Medical officer appointed to be administratively in-charge of a hospital.

Meso level health system: comprises the hospital at organizational level

Micro level health system: describes individuals such as health workers, patients and policymakers in the system and how they interact.

Non-profit hospital: “non-profit making organisation established in Kenya and which; is of a public character; and has been established for purposes of the relief of poverty or distress of the public, or advancement of education”.

Normal delivery: A normal delivery is one without induction, without the use of instruments, not by caesarean section and without general, spinal or epidural anaesthetic before or during delivery.

Patient admission: The formal acceptance of a patient for care into the hospital.

Patient readmission: Defined as any admission to the same hospital occurring within seven days after discharge to a maximum of six weeks after delivery.

Patients waived from paying: Voluntary action by the hospital in exempting the patient from paying all or part of the fees incurred by the patient during delivery.

Perinatal death: Deaths occurring from the 28th week of Gestation to the 28th day after birth in a given population. Can be further divided into foetal death (stillbirth) or an early neonatal death.

Perinatal Mortality Rate is calculated as: (Number of perinatal deaths / total number of births (still births + live births)) x 1,000.

Chapter 1:Introduction

This study explores the relationship between governance structures of hospitals and the association with hospital performance as measured by maternal delivery services. Hospitals as relatively large institutions sitting at the apex of the healthcare delivery system are often managed in isolation from the system below them and from each other. Furthermore, they often do not appear to be responsive to national health policies and strategies. They are categorized by ownership, whether public, not for profit or for profit, suggesting that there is an organizational governance theory that underpins their classification and conduct. Yet the wide range of performance of hospitals calls for a model to explain why some perform well yet others do not.

The major concern for this study was that despite hospitals utilising a large proportion of health expenditure, attention by policymakers and researchers on improving health system outcomes, has been mainly focused on the lower level health facilities. Hospitals from a governance perspective are autonomous or semi-autonomous institutions.

In developed economies, assessing hospital performance is common practice in order provide the public with information and support clinicians in better patient management (Groene, Skau and Frølich, 2008). The general theoretical literature on the subject of hospital governance, particularly in the African context, is thin and not much research has been done to explain the conduct of hospitals boards in delivering on desired patient outcomes.

Maternal delivery services are an ideal measure of hospital performance given that improved patient outcomes of maternal and perinatal mortality are key goals of health policy in Kenya. Kenya's maternal mortality ratio (MMR) is currently 362 maternal deaths per 100,000 live births, translating to about 5,500 deaths annually (Kenya National Bureau of Statistics & ICF Macro, 2015).

Few governance frameworks have been tested in relation to health service delivery performance and given the limited resources available to the health sector and weak governance structures there is a need to identify governance policies and strategies that can be used to improve health sector performance (Ministry of Health, 2012, 2014d; Pyone, Smith and van den Broek, 2017).

1.1. Background

1.1.1. The Health System

The World Health Organization (WHO) defines a health system as "comprising all the organizations, institutions and resources that are devoted to producing health actions"(WHO, 2000)(p.10). A health system can be defined either by what they are designed to do or by its elements (Gilson, 2012). To achieve its goals a health system must deliver effective health services equitably and efficiently, to the entire population, simultaneously protecting Health systems can operate at national (macro), district health system or hospital (meso) and individual (micro) levels (Damme *et al.*, 2010). individuals from catastrophic health care costs(de Savigny and Adam, 2009).

A common framework for analysing the health system is the WHO framework that divides the health system into six building blocks namely: Health Service delivery; Health workforce; Information; Medical products, vaccines, and technologies; Financing and Leadership and governance (World Health Organization, 2007). Within this framework, governance operates in its own right in the system as well as being a part of every other building block(Mikkelsen-Lopez, Wyss and de Savigny, 2011). The framework provides a means to assess the performance of the health system by looking at the two or more building blocks and how they interact in meeting the overall system goals set(de Savigny and Adam, 2009).

However it is critical to keep in mind that the health system is a complex one and understanding how the system behaves requires an exploration of the relationships of the parts of the system rather than reviewing each block on its own (Adam and de Savigny, 2012). Nevertheless service delivery function relates directly to health outcomes and governance and stewardship affects all the building blocks (World Health Organization, 2000).

Comparing health system performance in low income and high income countries can to a certain extent be explained by differences in funding levels; however a significant part of are due to governance and only a deeper understanding of the mechanisms involved can explain the differences (Mikkelsen-Lopez, Wyss and de Savigny, 2011).

The World Health Report 2000 on improving health system performance placed governance under stewardship. The report defined stewardship as “the careful and responsible management of something entrusted to one’s care” and noted that government had the specific role to play as steward of the entire health system (World Health Organization, 2000). However, this definition did not recognise the many different actors that make up the health system including government and health providers both private and public. Taking the plurality of health system actors into account, ‘governance’ can be defined “the rules that distribute roles and responsibilities among societal actors and that shape the interactions among them. The rules may be formal or informal, written or unwritten” (Baez-Carmago and Jacobs, 2011)(pp.7).

Leadership and management are often included as part of governance when the concern is implementing policies and decisions (Mikkelsen-Lopez, Wyss and de Savigny, 2011). Both management and leadership are critical for health service delivery and though similar in some respects, they involve different types of skills, behaviour and outlook. Leaders are tasked with having a vision of what can be achieved, strategizing and then communicating this to others; while managers ensure that the available resources are well organized and applied to produce the best results (Management Science for Health, 2010). Futhermore, ‘leadership’ is an individual trait – defined as ‘the ability to influence people towards attainment of organizational goals’ (Daft, Kendrick and Vershinina, 2010)(pp.564) – while ‘management’ is collective, defined as, “the attainment of organizational goals in an effective and efficient manner”(Daft, Kendrick and Vershinina, 2010)(pp.7).

Kenya's population was, in 2011, estimated at 41.1 million of whom 46 % lived below the poverty line (World Bank Group, 2015). Kenya's population is growing at an estimated 2.8% with life expectancy at birth an estimated 58.9 years (Kenya National Bureau of Statistics and ICF Macro, 2010).Kenya's current health policy framework (2014-2030) organises the country's service delivery system into a hierarchy that includes the national teaching and referral hospitals, county referral hospitals, county and sub-county hospitals and in the lowest tiers, health centres and dispensaries(Ministry of Health, 2014d). In 2013, 8,401 health facilities were registered in Kenya, with 49% being government owned, 16% private not-for-profit and 33% were private for-profit owned (Ministry of Health, 2014a). The second national health strategic plan introduced a life cycle approach to designing the Kenya Essential Package for Health (KEPH) which defined delivery of essential services including maternal health (Kenya Institute for Public Policy Research and Analysis, 2010).

The entire health system consumed an estimated $67 per capita equivalent to about 6.8 % of GDP in 2012/13 with the private sector the major financier of health expenditure at 40% with the public at 34% and donors contributing 26% (Ministry of Health, 2012). However, two-thirds of private sector spend is in the form of out-of-pocket expenditure (OOP) (Ministry of Medical Services & Ministry of Public Health and Sanitation, 2009).

For a country to achieve universal health, the health financing policy should provide universal protection, ensure equity while promoting effective, efficient and high quality service delivery (Kutzin, 2008). In Kenya's case the private sector financing in the form of out of pocket expenditure is inequitable. From the national health accounts 2012/13, Public hospitals (26%), utilized the largest share of total health expenditure, compared to private for profit hospitals (8.7%) and not for profit hospitals (4.8%)(Ministry of Health, 2012). Out of the none-pooled funds, hospitals consumed more than two-thirds of OOP funds with private for-profit hospitals (38 %) and public hospitals (30 %) (Government of Kenya Health Systems 2020 Project, 2009). Given that hospitals provide primarily curative care it suggests that the health financing arrangement does not protect vulnerable individuals from catastrophic health care costs incurred.

Policy makers have a keen interest to ensure that hospitals continue to provide services to vulnerable groups especially those who cannot pay and also for hospitals to provide those services classified as public goods such as medical education, unique or specialized care and various community programs. However, problems arise as to how this can be achieved equitably. Yet, the country does not have a comprehensive health financing policy to meet these principles.

1.1.2. Health Service Delivery Goals

Health service delivery incorporates three aspects of, choosing the appropriate intervention mix, organising for the intervention to be delivered at the right level and, aligning provide incentives to ensure performance (Murray and Evans, 2003). In this study hospitals at the primary referral level were selected and they were expected to have offer comprehensive emergency obstetric care (Ministry of Health, 2014a). Across sub-Saharan Africa comprehensive emergency obstetric care is often underutilised especially by the poor (Harrison and Goldenberg, 2016).

In the then Ministry of Medical Service's 2008-2012 strategic plan four broad principles of efficiency, equity and human rights, effectiveness and, partnership and collaboration were meant to guide service delivery operations(Ministry of Medical Services Kenya, 2008). Other than partnerships and collaboration, the other three principals of efficiency, equity and effectiveness can be used to develop direct measures of service delivery.

There is no single universal theory of equity. However, in common use equity suggests equality. Equity in health care requires that patients who are the same be treated in a similar manner (horizontal equity); while those who are different be treated appropriately but differently, (vertical equity) (Culyer, 2001). Equity and efficiency are often viewed as conflicting goals of the health system (World Health Organization, 2000). However, Reidpath et al(2012) argue that efficiency is not a final outcome of the health system, but a description of the relationship between inputs and outputs such as improved health status (Reidpath *et al.*, 2012).

Efficiency can be defined as “the allocation and use of resources in a manner that obtains the best health service outputs at the least cost” (Mwase, 2006)(pp. 3). Three types of efficiency are recognised; technical, allocative, and scale with technical efficiency important at the hospital organizational level (Mwase, 2006).

Technical efficiency is the production of a given output using minimum resources such as workers, drugs, and equipment. However, it is important to note that in the process of delivering healthcare not all input combinations used are technically efficient. Allocative efficiency aims at maximizing health gains by commanding resources to those activities that produce the most gain. This can be achieved by allocating resources among different socio-economic groups, geographical areas (urban/rural), types of services (curative/preventive), levels of care (tertiary, secondary and primary), types of diseases and patients for maximum health gain. In achieving economies of scale, the aim is to control unit costs as the volume of production increases. It is then possible to find the best possible range of bed numbers, inpatient days, or outpatient visits at each level of facility, below and above which average costs will increase.

Kenya Health Policy 2014-2030 outlines six policy goals related to service outcomes with policy strategy 4ii outlining the need to ensure provision of quality essential healthcare (Ministry of Health, 2014d). Quality of care is one of the most researched components of effectiveness of health services (Farris *et al.*, 2007; Doyle, Lennox and Bell, 2013). Poor quality health care can be due to overuse, underuse, and or misuse of available healthcare resources,

Healthcare organizations with a focus on quality are expected to measure their performance from process to health outcomes (Institute of Medicine, 2001). If this is done then quality indicators can be designed to monitor poor care due to the healthcare delivery structure, the processes or achieved outcome, thereby guiding the process of quality improvement (Vos *et al.*, 2009). The availability of standard operating procedures that monitors quality of care is therefore important in measuring effectiveness.

Indicators of health system performance are mainly process output indicators(Ministry of Medical Services Kenya, 2008) and we have to relate these back to the main health system outcome of desired improvement in health status. This is critical because at the hospital level measuring efficiency and effectiveness, that is productivity, can be complex. Several issues have been identified that contribute to this complexity.

The first is in terms of approach, which can be either patient/disease centred or around the range of procedures provided by the clinical staff. Ultimately the goal should be patient centred.

The second is that much of hospital productivity analysis tries to assess productivity in terms of resource utilization with less attention paid to quality of care and patient outcomes.

A third issue is that almost all hospital productivity analysis focuses on the hospital as a whole despite the heterogeneity of patients and services (Osei *et al.*, 2005; Zere *et al.*, 2006). This reduces comparability from one hospital to another. Focusing on a specific service such as maternal health services allows for greater comparability (Blank and Valdmans, 2008).

1.1.3. The Hospital

A hospital, defined as "an institution providing medical and surgical treatment and nursing care for sick or injured people" (Mckee & Healy, 2000, pp.804), includes a wide variety of health care providing settings. These range from a small nursing home with visiting doctors to giant specialist and teaching health facilities with sophisticated diagnostics employing hundreds of highly qualified health professionals. The Kenyan Public Health Act (CAP 242) does not explicitly define a hospital, but states that the term 'hospital' can "include a dispensary and health centre"[2] (The Republic of Kenya, 2012h). The Medical Practioners and Dentists Board, defines a hospital as "a licensed health care institution that has organized medical and other professional staff, inpatient facilities, and delivers medical, nursing and related services 24 hours per day, 7 days per week"(The Republic of Kenya, 2012e).

[2] PUBLIC HEALTH (DISTRICT HEALTH MANAGEMENT BOARDS) RULES, 1992
[L.N. 162/1992, L.N. 170/1998.]
1. These Rules may be cited as the Public Health (District Health Management Boards) Rules, 1992.

Hospitals are registered first according to their ownership. Six main categories of health facility ownership are recognised in Kenya namely; (1) National, under Ministry of Health (MOH), (2) county, under county governments;(3) other government;(4) Faith-Based Organisations;(5) Non-Governmental Organizations; (6) private (Republic of Kenya, 2010; NACPD, 2011).

The different facilities are licensed and then accredited differently depending not only on their facility ownership but also how they relate to other various regulatory bodies in the health sector such as the Ministry of Health, Medical Practioners and Dentists Board and non-health sector acts such as the company act (The Republic of Kenya, 2009, 2012e; Ministry of Health, 2014e).

Hospitals collectively account for about 50% of overall health care expenditure in Kenya and are therefore an important constituent of the health care system(Ministry of Medical Services & Ministry of Public Health and Sanitation, 2009). However, apart from standalone facilities, there are also multi-site vertically integrated health facilities, which fall under one hospital name. therefore the current classification of health facilities can make it difficult to define a hospital leading to problems in making direct comparisons between one health facility and another or over a period of time (NACPD, 2011).

The current Kenya '*Human Resources for Health Norms and Standards Guidelines for the Health Sector'* report outlines the norms and standards for service delivery around physical infrastructure and human resources. Three service units are outlined, community, primary care facilities and hospitals. Hospitals are divided further into primary, secondary, or tertiary referral units, and are meant to manage cases referred from lower level facilities (Ministry of Health, 2014c). According to these standards, primary referral hospitals would manage one complicated delivery a day covering a population of 100,000, while secondary referral hospitals would serve a population of one million possibly cutting across counties (Ministry of Health, 2014c).

1.1.4. Hospital Governance

Governance consists of the procedures and processes by which the organization is controlled while enabling the achievement of social and organizational objectives(Health Governance and Transparency Association, 2014). Governance is concerned with the formal and informal rules that define the decision making procedures and practices of the board, senior management and clinical management (Murphy and O'Donohoe, 2006). Appreciating the governance of the hospital entailed understanding the composition of the board, their backgrounds, how power is shared and the processes by which they manage the operations of the hospital.

It is widely held that corporate governance is a major determinant of organizational performance (OECD, 2005). Governance has been shown to affect the efficiency and quality of care provided by a hospital. However, the relationship is not a straightforward one and the particular historical circumstances of a country can affect the governance styles (Ditzel, Štrach and Pirozek, 2006).

The type of governance structure determines governance at the level of a hospital. Based on organizational elements these structures have been hypothesized to affect hospital conduct. A study of hospitals in four Latin American countries identified four governance types namely: Budgetary unit of government; Autonomous unit of government; Corporate unit of a private conglomerate or broader, private hospital system; and lastly a private and autonomous unit (Bogue, Hall and Forgia, 2007)(p iii). In Kenya, in comparison, six main categories of Health facility ownership are recognised namely; (1) National, under Ministry of Health (MOH), (2) county, under county governments;(3) other government;(4) Faith-Based Organisations;(5) Non-Governmental Organizations; (6) private (Republic of Kenya, 2010; NACPD, 2011).

At the level of the hospital board, several domains have been reported as having influence on the quality of a hospital's performance. These domains including regular evaluation of the chief executive's performance and boards; trained and devoting time to monitoring quality as a priority issue; explained the difference between high- and low-performing hospitals (Jha, Orav and Epstein, 2011).

1.1.5. Maternal Delivery Services

Globally, in 2010 there were approximately 287 000 maternal deaths and more than 750,000 intra-partum related, perinatal deaths, mostly in low-income countries (World Health Organization, 2012). The globally agreed millennium declaration in 2000 had two explicit goals related to maternal health, while the Sustainable Development Goal three aims to reduce maternal and perinatal mortality(UNDP, 2010; United Nations, 2016). As at 2014, the maternal mortality ratio (MMR) in Kenya was estimated to be 362 maternal deaths per 100,000 live births (Kenya National Bureau of Statistics & ICF Macro, 2015). This is about three times the number of maternal deaths expected when Kenya's population is compared to the global population maternal average death rate[3].

Kenya's national reproductive health strategy 2009-2015 adopted a multi-sectoral approach to align the sector with Vision 2030 and the MDGs (Ministry of Public Health and Sanitation & Ministry of Medical Services, 2009). Maternal health is organized around the four pillars of family planning, skilled birth attendance, emergency obstetric care and immediate post-natal care for mother and newborn (Van Den Broek and Graham, 2009). Under current national health policy, reproductive health is deemed an essential priority with roughly one third of 363 interventions listed in the KEPH focusing on reproductive health(Ministry of Public Health and Sanitation, 2008).

[3] Every day in the world in2015, about 830 women died due to complications of pregnancy and childbirth. Almost all of these deaths occurred in low-resource settings, and most could have been prevented.
http://www.who.int/gho/maternal_health/mortality/maternal_mortality_text/en/. Accessed 6th August 2016

In Kenya, health facilities level four and above are expected to provide comprehensive emergency obstetric care, which includes all basic emergency obstetric care interventions as well as the ability to perform caesarean sections and blood transfusion (NCAPD *et al.*, 2010). Despite these strategies being in place, Kenya did not meet the Millennium Development Goal (MDG) target for maternal deaths calculated at 147 per 100,000 by 2015 (Ministry of Health, 2014d).

1.2. **Statement Of Research Problem**

The concept of governance is well researched at national government and business organizational levels, however it remains a relatively new concept in health systems research, particularly in low income countries (Bennett *et al.*, 2008; Kaufmann, Kraay and Mastruzzi, 2010; World Bank Group, 2010a; Adam and Savigny, 2012). Few governance frameworks have been examined through a study, especially in sub-Saharan Africa(Pyone, Smith and van den Broek, 2017). The appropriate governance frameworks for hospitals in Sub-Saharan Africa is not well known.

One major problem in traditional reductionist health research have been the efforts to isolate and analyse one sub-system, within a building block, that then ignores the systems view required by policy makers looking to improve health systems performance (Swanson *et al.*, 2012). Health systems research by addressing any or all building blocks can overcome this narrow focus (Remme *et al.*, 2010).

Service delivery is directly linked to health outcomes, while leadership and governance affects every part of the health system (World Health Organization, 2000). This study explored using a health systems building blocks approach, which governance model is best applied in primary referral hospitals in Kenya.

Organising and integrating hospital services within the health system is one of the most difficult tasks policy makers face in any country (World Health Organization, 2000). Hospitals form a major part of the health system, yet much of the work on governance as focused on the entire health system recognising the weaknesses of leadership and governance especially at the national level (Luoma *et al.*, 2010; Ministry of Health, 2014d).

Studies that look at ownership of hospitals or health facilities have had the aim of demonstrating which ownership type provides better quality healthcare without giving reasons why, one type of ownership would lead to better or worse healthcare outcomes(Widmer *et al.*, 2011; Dambisya, Manenzhe and Kibwika-muyinda, 2014; Olivier *et al.*, 2015). Where such research exists it has been conducted primarily in developed countries (Alexander and Lee, 2006; Jeurissen, 2010; Wachterman *et al.*, 2011; Pedraza *et al.*, 2015).

Given that health systems research is contextual in nature, the research gap that arises in low and middle income countries is whether such countries can assume that models imported from developed countries will work in these low resource settings (Herrera *et al.*, 2014). An understanding of the mechanism by which hospital ownership influences patient outcomes is important in order to have evidence based policy making that considers the context and enables hospitals to deliver equitable and effective healthcare.

Kenya did not meet the Millennium Development Goal (MDG) target for maternal deaths of 147 per 100,000 by 2015 (Ministry of Health, 2014d). As at 2014, the maternal mortality ratio (MMR) in Kenya was estimated to be 362 maternal deaths per 100,000 live births (Kenya National Bureau of Statistics & ICF Macro, 2015). Maternal delivery service outcomes, both maternal and infant mortality, which incorporates perinatal mortality are judged to be sensitive indicators of the effectiveness of the whole health system (Goodburn and Campbell, 2001; Graham, 2002; Dogba and Fournier, 2009; Mills *et al.*, 2009). How effective hospital maternal delivery services are is not well documented.

Furthermore, maternal delivery service indicators, for example skilled delivery levels and coverage of caesarean sections are proxies for overall health system strength (Bhutta *et al.*, 2010). A key goal of the health system is equity, however the extent to which primary referral hospitals provide equitable care is not well established.

Few of the governance frameworks suggested have been examined and therefore whether maternal delivery service outcomes would be a good measure of hospital performance in terms of equity and effectiveness has not been explained(Pyone, Smith and van den Broek, 2017). Furthermore, these governance frameworks have focused at national level and not at the hospital level. It is not well understood if these same indicators are useful in measuring performance, that is effective and equitable service delivery, and what the association is with ownership types and governance structures at the hospital level. This study sought to explore the association between governance and hospital performance as measured by maternal delivery service effectiveness and equity.

1.3. General Objective

The overall objective of the study was to determine the relationship between ownership, hospital governance and maternal delivery service outcomes (MDS).

1.3.1. Specific Objectives

The specific objectives of this study were to:

1. Describe the governance structures of different hospital ownership types;
2. Determine the equity of hospital maternal delivery services;
3. Assess the effectiveness of maternal delivery services in the hospital;
4. Examine the relationship between ownership types, governance structure and maternal delivery service.

1.4. Significance of Study

Assessment of governance of the health system is still in its infancy with just five frameworks having been applied out of 16 developed since 1994 (Pyone, Smith and van den Broek, 2017). Almost all are focused at the national governance level. This relatively narrow approach to governance ignores other health system actors, which apart from government include private and not for profit organizations, groups and individuals with different levels of authority and capacity to deliver health services and exert influence over decisions (Abimbola *et al.*, 2014). This study explores governance in relation to performance at the hospital (meso level of the health system), rather than at the national (macro level) (Damme *et al.*, 2010).

In order to understand how governance affects hospital performance it is necessary to evaluate who makes decisions, how they make them and what the effects of those decisions are (Bogue, Hall and Forgia, 2007). There is limited understanding why well intentioned policies and management decisions do not result in improved health system performance (Mikkelsen-Lopez, Wyss and de Savigny, 2011; Atun, 2012).

Hospitals consume considerable health system resources, much of it public resources and therefore have to be accountable to policymakers and the public. It is not clear, which type of hospital ownership and governance structure are best placed to deliver effective and equitable health services. Hospitals are categorized by ownership yet studies that look at ownership of health facilities have not demonstrated unequivocally why one type of ownership would lead to better or worse healthcare outcomes (Widmer *et al.*, 2011; Dambisya, Manenzhe and Kibwika-muyinda, 2014; Olivier *et al.*, 2015). Where such research exists it has been conducted primarily in developed countries (Alexander and Lee, 2006; Jeurissen, 2010; Wachterman *et al.*, 2011; Pedraza *et al.*, 2015).

Given that health systems research is contextual, the research gap that arises in low and middle income countries is whether policymakers in LMIC can rely on ownership models imported from developed countries to hold hospitals accountable (Herrera *et al.*, 2014). The extent to which ownership and governance of hospitals may contribute to inequity has not been assessed. This study sought to measure the equity of MDS at hospitals by ownership and governance structure.

Health system governance assessments have been conducted at national level while separately hospital performance assessments have been done using different indicators. A good indicator of health system effectiveness should be sensitive to outcomes under the control of the health system (Allin and Grignon, 2014). This study explored whether, outcome based indicators of maternal and perinatal mortality which are judged to be sensitive indicators of the effectiveness of the whole health system were also useful measures of hospital effectiveness in relation to their governance (Goodburn and Campbell, 2001; Graham, 2002; Dogba and Fournier, 2009; Mills *et al.*, 2009).

Furthermore, the study identified which of the two indicators maternal or perinatal mortality was useful in measuring hospital effectiveness and therefore performance. These results allow policymakers and hospital boards to relate hospital performance to overall health system effectiveness.

This study by providing research data on the relationship between MDS and governance adds valuable evidence from the perspective of a developing country. The study in its specific objectives sought to identify weak governance, while providing the context within which hospitals ownership and governance relates to provision of effective and equitable maternal delivery services.

The results of this study will be communicated to policy makers, practioners and hospital administrators to enable them to formulate ownership, governance and service delivery policies/guidelines for boards and hospital management teams to provide equitable and effective health care.

Chapter 2:Literature Review

Introduction

This literature review examines the relationship of hospitals' ownership, governance and maternal delivery service outcomes. This chapter attempts to synthesize research in three areas of knowledge beginning with various frameworks of health system governance and hospital ownership. Thereafter, the health system goals of equity and effectiveness are discussed. To complete the theoretical context within which hospital operate, are explored. The chapter then continues with a review of Kenya's health system and delves deeper into maternal delivery services to provide a country context for the study. Health systems goals of effectiveness and equity can be operationalized to measure performance in terms of two separate dimensions of health outcomes of mortality and morbidity defined as an adverse maternal or foetal outcome during labour or delivery; and health equity (Olafsdottir *et al.*, 2011).

2.1. The Health System

Generally a health system is defined either by what they are designed to do or by its elements (Gilson, 2012). However the World Health Organization (WHO) defines a health system as "comprising all the organizations, institutions and resources that are devoted to producing health actions"(World Health Organization, 2000, pp.10). Health systems can operate at national (macro), district health system or hospital (meso) and individual (micro) levels (Damme *et al.*, 2010).

The health sector in Kenya comprises of the public system (MOH, parastatals and local government) and the private sector, which includes private for profit, non-governmental organizations and faith-based organizations. All are provided for by the Kenyan constitution that stipulates "every person has the right to the highest attainable standard of health". It further outlines that "a person shall not be denied emergency medical treatment" and that "the State shall provide appropriate social security to persons who are unable to support themselves and their dependents"(Republic of Kenya, 2010, pp.31).

The sector is guided by the Kenya Health Policy 2014-2030 developed under the direction of the government, delivery of health services is organised into four tiers (Ministry of Health, 2014d). Under the previous Kenya Health Policy Framework, the second National Health Sector Strategic Plan introduced the concept of the Kenya Essential Package for Health (KEPH)[4], based on a life-cycle approach with six cohorts and five interventions (Kenya Institute for Public Policy Research and Analysis, 2010).

Under current health policy health service delivery is to be organized around four tiers; community, primary care, primary referral and tertiary referral services.

1. *Community services will focus on creating appropriate demand for services.*
2. *Primary care services will comprise all dispensaries, health centres and maternity homes of both public and private providers.*
3. *County referral services will include hospitals operating in, and managed by a given county both public and private. Together, all these hospitals in a given county form the County Referral System.*
4. *National referral services will include the service units providing tertiary / highly specialized services including high level specialist medical care.*

4 Kenya Essential Package of Health, Levels of Healthcare. Source: (Ministry of Health, 2006)

Laws and regulations, and how they are enforced, provide the context within which the various stakeholders power and actions in governance processes can be understood (Baez-Carmago and Jacobs, 2011).

The legal framework of the health sector is not well coordinated with over twenty laws and statutes and critical elements of the main act, the Public Health Act (Cap242), not operationalized (Muthaka, Kimani and Manda, 2004; Transparency International-Kenya, 2011). The constitution (chapter 1 section 2:4), states that any law that is inconsistent with the constitution is void to the extent of the inconsistency meaning that many laws created before 2012 are no longer valid (Republic of Kenya, 2010). There have been attempts to create one regulatory framework but to date parliament has yet to pass the necessary bill [5,6,7].

The various professional bodies including doctors and dentists, nurses, pharmacists, clinical officers and laboratory technologists each have their own act (Malkin and Keane, 2010; The Republic of Kenya, 2012e, 2012f, 2012a, 2012g). However the training of health workers falls partly under the education act and consequently the Ministry of Education and the Ministry of Health under the semi-autonomous Kenya Medical Training College (The Republic of Kenya, 2012c, 2012b).

[5] http://www.heraf.or.ke/kenya/the-health-service-commission-the-key-to-addressing-issues-of-health-workers-and-health-care-delivery-in-kenya.html. Accessed 18th May 2017
[6] http://www.the-star.co.ke/news/2015/08/19/governors-reject-health-bill_c1189377. Accessed 18th May 2017
[7] https://www.standardmedia.co.ke/health/article/2000165719/ministry-under-fire-over-new-health-bill. Accessed 18th May 2017

The Kenya Service Availability and Readiness Assessment (SARAM) of 2013 identified 8,401 health facilities in Kenya, out of which 49% were public, 16% private not-for-profit and 33% were private for-profit owned (Ministry of Health, 2014a). Out of all the health facilities 607 were classified as hospitals(Ministry of Health, 2014a).Hospitals as distinct actors are not explicitly recognised in the institutional framework in the current Kenya Health Policy, which identifies actors as state, non-state actors (including faith based and for profit) and development partners (Ministry of Health, 2014d). Under this arrangement therefore hospitals despite being major players are not explicitly held accountable for national health outcomes as outlined in the Kenya Health Policy (Ministry of Health, 2014d).

In 2012, Total Health Expenditure (THE) was estimated at $67 per capita equivalent to about 6.8 % of GDP, with private sector the major financier, followed by government and donors (40%, 34%,26% respectively) (Ministry of Health, 2012). However, two-thirds of private sector spend is in the form of out-of-pocket (OOP) expenditure, which even though there has been a reduction as a proportion of THE it still remains high and therefore is a major source of inequity (KIPPRA, 2010; Chuma and Okungu, 2011).

Health system inequity may be greater at hospital level where in terms of how THE is utilized, public hospitals as at 2010, utilized the largest share at 36.3 % (Ministry of Medical Services & Ministry of Public Health and Sanitation, 2009). Private for profit hospitals and NFP hospitals consumed 7.6 and 4.9 % respectively adding up to 48.8 % of THE.

Hospitals consume two-thirds of OOP funds with private for-profit hospitals consuming 38 % and public hospitals 30 % (Government of Kenya Health Systems 2020 Project, 2009). Given that hospitals provide primarily curative care it suggests that the health financing arrangement does not protect individuals from catastrophic health care costs incurred and is therefore inequitable.

The WHO's building blocks framework divides the health system into six namely: Health service delivery; Health workforce; Information; Medical products, vaccines, and technologies; financing and leadership and governance (World Health Organization, 2007). Interventions to improve health status and ensure health system goals of equity and effectiveness are met depend on the well functioning of the six building blocks collectively (Parkhurst *et al.*, 2004; Dickson *et al.*, 2014; Van Lerberghe *et al.*, 2014).

2.2. **Equity in the delivery of Maternal Delivery Services**

Equity in health care requires that patients who are the same be treated in a similar manner while those who are different be treated appropriately but differently, that is horizontal and vertical equity respectively. Horizontal equity is defined as "the like treatment of like individuals" while vertical equity is "the unlike treatment of unlike individuals in proportion to the differences between them"(Culyer, 2001)(pp.276). In this study in order to qualify as having horizontal equity, all patients were expected to receive maternal delivery services as outlined in the Kenya Essential package for Health.

Furthermore, if patients who required differentiated services due to their medical condition received it, then there was vertical equity. A third definition of equity is to have “equal treatment outcomes for people in equal need” (Boeckxstaens *et al.*, 2011)(pp.2). To qualify as equitable, maternal delivery services needed to benefit patients in proportion to their need; while simultaneously ensuring that the financing mechanism is progressive, with those with the lowest incomes contributing proportionately less (Ensor T, Ronoh J. 2005). Under this definition patients who were unable to afford services, would still receive services, with mechanisms in place to manage the financial costs incurred.

Kenya’s health system is highly inequitable; 29% of health care expenditure is from user fees resulting in the needs of the poor and vulnerable not being protected adequately (Chuma *et al.*, 2009b). Furthermore, user fees make up a large proportion of hospital revenue (Amone *et al.*, 2005).

Equity can be measured at the patient outcome level through standard health statistics such as infant and maternal mortality which describe average health in the population (Starfield, 2011). However measuring equity especially in maternal delivery services can be difficult with health disparities, such as differences due to patient age, sex and education interacting with provider factors (Say *et al.*, 2007). In the case of the healthcare provider some of these factors such as the services provided are associated with the governance structure and therefore ownership.

Vulnerable groups especially suffer most from inequity in service delivery because they are often not well integrated into the health care system because of various characteristics including economic, geographic, or health differences (The Urban Institute, 2010). Pregnant women, especially those who live far from a health facility are among those commonly considered as vulnerable. Because of the characteristics of vulnerable groups, disease is more likely to occur among them and they are more likely to suffer complications (Starfield, 2011).

Despite these limitations, maternal mortality has traditionally been used as a proxy indicator for health system performance because of the complex multifaceted character of the interventions involved in maternal delivery services (Luoma *et al.*, 2010). Maternal mortality is a relatively rare event and therefore may not be useful for everyday monitoring of equity. One of the key functions of a primary referral hospital is to provide comprehensive obstetric care, which includes caesarean section. Whether a patient who requires a caesarean section receives it or not is a good indicator of vertical equity.

To be considered an effective intervention for maternal and newborn health the WHO considers caesarean section (CS) rates of 5–15% to be the optimal range (WHO, 1985) ; below five per cent there is unmet need while above the recommended rate suggests improper selection(Chu *et al.*, 2012). At population level, caesarean section rates higher than 10% are not associated with reductions in maternal and newborn mortality rates (World Health Organization, 2015).

Although very unevenly distributed, 15% of births worldwide occur by CS. Latin America and the Caribbean show the highest rate (29.2%), and Africa shows the lowest (3.5%). In developed countries, the proportion of caesarean births is 21.1% whereas in least developed countries only 2% of deliveries are by CS (Betrán *et al.*, 2007). Poor identification of the common indications for Caesarean section are some of the major reasons for this low figure in developing countries (Chu *et al.*, 2012).

2.3. **Effectiveness**

In developed economies, assessing hospital performance is common practice motivated by government and other funders who wish to ensure hospital board accountability, provide the public with information and support clinicians in better patient management (Groene *et al.*, 2008). Effectiveness measures whether the health services or interventions achieve the desired results.

The mechanisms to measure effectiveness in relation to governance have been drawn from different perspectives including public financial management, budgeting and clinical governance. In many countries there are well developed standards for public financial management across all sectors to ensure accountability and incentives that ensure performance (Lewis and Pettersson, 2009). Key public financial management functions include employee compensation, buying of goods and services and capital expenditure, while governance weaknesses include the lack of clear rules, irregular audits and weak management systems (Lewis and Pettersson, 2009). However, these standards are not directly related to hospital patient outcomes.

Of the total reproductive health expenditure in Kenya, households contribute 40%, donor partners 19%, government 27% while, health insurance schemes and employers add up to 10% (Ministry of Health, 2012). An important tool for a hospital board to have oversight on how well the hospital is performing is to approve and monitor the organizational budget. Yet, donor funding, health insurance funds and user fees which are often managed outside the strategic budget process (World Bank 2006). Such funding therefore potentially makes management more powerful in terms of budget control compared to the board, reducing the impact of board decisions in shaping maternal delivery services.

Significant changes in the senior personnel and clinical staff (doctors and nurses) of hospitals have been found to influence the long term effectiveness of interventions, requiring correct interpretation of any health system intervention outcomes to include a comprehensive contextual description (English *et al.*, 2009).

Ensuring organizational and board effectiveness is one of the fundamental principles of good corporate governance (Private Sector Corporate Governance Trust, 2000). Hospital board accountability requires adequate and timely information about how effective the clinical services are. Clinical effectiveness links individual clinicians to best practice to ensure ideal patients outcomes (Health Governance and Transparency Association, 2014).

High performing and low performing hospitals as measured by quality of care ratings have been shown to have significant differences in board activities (Jha and Epstein, 2010). However it is not clear how hospital board activities influence clinical effectiveness (Botje, Klazinga and Wagner, 2013).

2.3.1. Hospital Efficiency

Efficiency measures whether healthcare resources are being used to get the best value for money and is therefore closely linked to effectiveness. The cost of health service delivery, economies of scale, scope of service being provided and the method of paying the provider determine efficiency. Other than organizational factors, the overall size of the health system directly affects efficiency.

Below a per capita expenditure of approximately US$ 80, health systems appear efficient but are generally not effective (Evans and Etienne, 2010). A number of African studies on hospital efficiency found 47 – 76.2 % of hospitals were technically and scale inefficient (Tlotlego et al., 2010; Osei et al., 2005). Per capita health expenditure in Kenya was about $67 per annually indicating that the country was at the threshold where effectiveness should begin to count (Ministry of Health, 2012).

The hospital sector represents approximately 45-69% of government health expenditure in sub-Saharan Africa and therefore the effectiveness of hospitals is a major driver of overall health system effectiveness (Zere *et al.*, 2006). Operationally a hospital is considered efficient if it is able to maximize output for a given set of inputs or to minimize inputs used to produce a given output(Hussey *et al.*, 2009). The cost per case is a common measure that usually includes the drugs, personnel, diagnostics, hospital beds, surgical supplies and other recurrent costs for providing a full course of treatment for a condition (Bryce J, et al. 2005).

Research in Vietnam, for example, demonstrated that provincial general and specialty hospitals were not as efficient as district hospitals in terms of their costs per case given their number of beds (Weaver M, Deolalikar A. 2004). Similarly, the costs per case for maternal delivery services in Uganda were higher when performed in hospitals versus health centres (Weissman E, et al 1998).

How the provider is paid can influence the level of efficiency. A study of England's National Health Service reforms, which forced public hospitals to compete among themselves and with private sector providers for care delivered to publicly funded patients, found that the increased competition between public hospitals did lead to improved productive efficiency(Cooper *et al.*, 2012). A review of 1,500 general hospitals in Germany found that private and non-profit hospitals were on average less cost efficient and less technically efficient than publicly owned hospitals (Frohloff, 2008).

A meta-analysis of 317 published works on efficiency measures concluded that public provision was potentially more efficient than private (Hollingsworth, 2008). The evidence would therefore suggest that public hospitals are more efficient when compared to private not for profit or for profit, except when subject to competition from the private sector. However, levels of pooled funds in Kenya remain low(Ministry of Health, 2012). Overall where the health system is grossly underfunded, effectiveness and equity are compromised. However, Kenya is close to the threshold and therefore effectiveness can be measured.

2.4. **Health System Governance**

The quality of governance has been identified as an important structural determinant of health systems performance (Olafsdottir *et al.*, 2011). Governance in the health sector can be defined as “The systems and processes by which health bodies lead, direct and control their functions, in order to achieve organisational objectives and by which they relate to their partners and wider community” (Rudrum, 2010, pp.8). At meso-level, each organization is required to have good corporate governance with boards of directors responsible for the governance of their companies”(USAID LMG PROJECT, 2012, pp.7).

Governance therefore addresses the leadership role within an institutional framework by looking at the processes, systems and practices that govern institutions; the manner in which rules and regulations are followed; the relationships that these rules and regulations determine or create, and the nature of those relationships. Good corporate governance entails the five basic tenets of accountability, efficiency and effectiveness, integrity and fairness, responsibility, and transparency will be upheld (Centre for Corporate Governance 2003). One research question is whether governance models developed for corporate for profit, non-health sectors can also be applied in the hospital setting(Abor, 2015). Ensuring accountability to the national level therefore requires translation of national health indicators such as maternal mortality into outputs and outcomes of the hospital with clear benchmarks for comparing performance of hospitals as healthcare providers taking into account the heterogeneity of hospitals (Cornforth 2003).

In Kenya, six main categories of health facility ownership are recognised; (1)National health facilities under Ministry of Health (MOH), (2) county health facilities under county governments; (3)other government; (4)Faith-Based Organisations; (5)Non-Governmental Organizations; and (6)private (Republic of Kenya, 2010; NACPD, 2011).

Licensing and accreditation depends on the relationship of the facility owner and the various regulatory bodies in the health sector. For example, facilities owned by MOH are gazetted through the Chief Health Administrative Officer in the ministry and the facilities owned by private practice nurses will be licensed by the Nursing Council of Kenya whereas private medical practioners are licensed by the Medical Practioners & Dentists Board (MP&DB-Kenya, 2013).This licensing structure is ideal from a perspective of accountability for professionals. Professional cadres report to their respective professional organizations.

However, from a health system goals perspective the rationale for the multiple forms of ownership and licensing procedures is not clear. The different licensing procedures create different types of facilities with possibility for diverse social impact.

2.4.1. Assessing Health System Governance

Over the last twenty years several frameworks for assessing governance and health systems have been suggested. An ideal governance framework would evaluate health system performance, while considering the local context and provide practical solutions to identified governance issues. Furthermore, it would distinguish between weak governance, technical inefficiency and where lack of financial resources are the main problem.

Lewis and Petterson 2009, argued that in order to improve governance and consequently the performance of health systems it was important to establish and measure, efficiency and effectiveness performance indicators, that could then be related back to governance (Lewis and Pettersson, 2009).They identified five areas: budget and response management, individual providers, health facilities, informal payments and corruption perceptions from which individual key indicators would be derived. For health facilities, they noted, “hospitals and clinics were often “black boxes” due to the lack of information on performance and patient outcomes (pp.43). Facility performance was the main issue with key indicators being mortality rates, average length of stay, bed occupancy and patient satisfaction ratings(Table 1).

Table 1: Governance and Health Facility Performance Indicators

Governance Fundamentals	**Health Facility Performance**	
	Key Indicators	**Key Sources**
Standards, Incentives, Information, Accountability	Average Length of stay, bed occupancy, infection rate, Mortality rate, Patient Satisfaction ratings	Official administrative records, facility records, facility surveys

Adapted from (Lewis and Pettersson, 2009)

Siddiqi et al 2009, building on the UNDP governance principles noted that at the time there were no tools available for assessing governance within the health system at sub-national level. Their health systems governance included ten governance principles namely: strategic vision, participation and consensus orientation, rule of law, transparency, responsiveness, equity and inclusiveness, effectiveness and efficiency, accountability, intelligence and information, and ethics (Siddiqi *et al.*, 2009).

Using the principal-agent theory as their basis, Brinkerhoff and Bossert developed a governance framework that focused on how various actors fulfilled their roles and responsibilities and what incentives promoted good governance and health system performance (Brinkerhoff and Bossert, 2013).

A major problem in assessing governance is operationalizing the term into dimensions and indicators that are measurable. Baez-Carmago and Jacobs 2011 divided components of governance into three namely: 1) Inputs – the rules by which institutions in the health system are constructed; 2) Processes - implementation of the rules and administrative procedures; 3) Outcomes – the qualities of health system outputs when the processes are in place (Baez-Carmago and Jacobs, 2011). The governance frameworks described above aim to characterise governance at the national level often with the Ministry of Health as the primary focus.

A multilevel framework by Abimbola et al (2014) looked at issue from a primary healthcare perspective, particularly where government institutions were weak. They conceptualised governance at three levels, depending on who influenced supply and demand of healthcare, that is; operational governance, collective governance and constitutional governance (Abimbola *et al.*, 2014).

Only three frameworks by Sidiqqi et al (2009), Brinkerhoff and Bossert (2013), and Abimbola et al (2014), have been used to assess governance at all levels of the health system demonstrating the complexity of assessing health system governance (Pyone, Smith and van den Broek, 2017). However there have been studies relating ownership and service delivery.

A meta-analysis of US hospitals reviewing service delivery outcomes found consistent differences by ownership with higher mortality rates in for-profit hospitals and even higher adverse events in for profit nursing homes (Hyman and Sage, 2006). However in Kenya, private hospitals are mainly urban, relatively small in size and so rural areas end up being underserved by private for profit providers and therefore the context of service provision for different ownership types may be significantly different (Luoma *et al.*, 2010).

In the national referral strategy, primary referral hospitals, irrespective of ownership are expected to offer curative and promotive services in support of community health units and; act as primary care facilities within the county referral system (NACPD, 2011; Ministry of Health, 2014e). In addition, the performance indicators in national policy and strategy documents are almost all input based rather than output/outcome based making it difficult to compare performance of hospitals (Ministry of Health, 2014d).

2.5. The Hospital: Ownership and Governance

Ownership of a health facility in Kenya begins from the time of initial registration and depends on who is deemed to be the owner. Seven different categories are recognised; public (national and county government); State corporation; Faith-based; private practice- medical practioners, private practice-nurse; private practice-clinical officer and; private practice- laboratory technologist (Table 2) (Ministry of Medical Services & Ministry of Public Health and Sanitation, 2010a).

The different health facilities are licensed and accredited differently depending on the facility ownership and how they relate to the various regulatory bodies in the health sector. For example, MOH owned facilities are gazetted through the Chief Health Administrative Officer in the Ministry of Health, while a facility owned by a Nurse with a private practice certificate, is licensed by the Nursing Council of Kenya (Table 2).

Table 2: Health Facility Regulation and Licensing by Ownership

Health Facility Owner	Regulatory Function	Licence/ gazetted by
State Corporations	Legal Notices	State Corporations Act.
Ministry of Health	Gazetted	Ministry of Health
Christian Health Association of Kenya Kenya Episcopal Conference-Catholic Secretariat Supreme Council for Kenya Muslims Other Faith Based	Registered	Medical Practioners & Dentists Board (institution)
Private Practice – General Practitioner Private Practice – Medical Specialist	Licensed	Medical Practioners & Dentists Board (private practice)
Private Practice – Nurse/Midwife	Licensed	Nursing Council of Kenya (private practice)
Private Practice – Clinical Officer	Licensed	Clinical Officers Council of Kenya (private practice)
Private Practice – Lab Technologist	Registered	Kenya Laboratory TT Board

Source adapted from: (The Republic of Kenya, 2012e, 2012d, 2012a, 2012f, 2015)

The body responsible for registering and supervising private hospitals is the Medical Practitioners and Dentists Board, however it is often handicapped due to lack of adequate funds and focuses mainly on registering doctors and dentists (Muthaka, Kimani and Manda, 2004; MP&DB-Kenya, 2013).

Despite the provisions for regulation described above, there are serious weaknesses in oversight in both private and public healthcare provision. The law governing much of public health is the Public Health Act (CAP242), but key parts of the act such as the Central Board of Health which is meant to advise the minister on all public health matters has never been constituted (Muthaka, Kimani and Manda, 2004; The Republic of Kenya, 2012h).

Ownership is meant to confer organizational control. In the classic model of ownership of any firm, the formal control of the firm is through possession of certain proprietary rights. These proprietary rights have been defined as the right to receive residual profits after payment of all the firms obligations, the right to revise or terminate ownership of the firm and lastly the right to sell the rights of the preceding proprietary rights (Jeurissen, 2010).

Ownership alone may not make much difference when it comes to hospital performance. A meta-analysis of US hospitals compared financial performance by ownership and found similarities in revenue and profits between government, for profit or not-for-profit hospitals (Shen *et al.*, 2005).

In most developed economies there has been over many decades, the separation of ownership from organizational control. This happened through several phases:(1) control through ownership, (2) majority control, (3) control through legal device, (4) minority control and (5) management control (Chambers *et al.*, 2013a). The resulting governance practices underpin the management structures and determine the activities and outputs of the organization.

Hospitals can be typified into four based on the their governance structure namely; (1) budgetary unit of government; (2) autonomous unit of government; (3) corporate unit of a private conglomerate or broader, private hospital system; or (4) a private and autonomous unit (Bogue, Hall and Forgia, 2007). This classification is reflected in Kenya's classification of facilities by ownership(NACPD, 2011). Six main categories of health facility ownership are recognised in Kenya namely; (1) National, under Ministry of Health (MOH), (2) county, under county governments;(3) other government;(4) Faith-Based Organisations;(5) Non-Governmental Organizations; (6) private (NACPD, 2011).

Health-care governance can be defined as the "shared process of top-level organizational leadership, policy-making and decision-making of the board, hospital management and clinical team leaders" (Abor, 2015, pp.110). Within the hospital, the term 'governance structure' describes the structural aspects of a board incorporating: the board size; the types of board committees; board rules on member recruitment and retirement and lastly; board self-evaluation (Goeschel et al., 2010).

Even though they dominate the rest of the health care system, hospitals are often managed individually as separate institutions within the health system (Edwards, Wyatt and Mckee, 2004). Like most other corporate entities, hospitals at their highest level of governance have a hospital board of directors or trustees. The board has traditionally two primary responsibilities; the first is linking the organisation to its stakeholders or the community and secondly being legally accountable for the financial and quality of clinical performance (Molinari *et al.*, 1993). The ownership structure influences which of the two roles predominate.

A critical role of the board, which should influence the composition of the hospital board is oversight of management's decision making (Molinari *et al.*, 1993). Board members need to be provided with timely information about the hospital operations and have the ability to assimilate the information in order to fulfil their mandates. Because ownership does influence healthcare related outcomes (Herrera *et al.*, 2014), the ownership structure and the expected hospital conduct from theory raise the question as to whether any board is able to monitor hospital performance sufficiently.

Agency theory arises from the split between ownership and management because managers may not always act in the interests of the organization and so boards are given the responsibility of mitigating the risks inherent in this separation. The main function of the board under such circumstances is then to gather the necessary information to hold managers to account(Jiang, Lockee and Fraser, 2012).

Other than agency theory which is often equated to being the 'governance theory', that is holding people to account(Carver, 2010), there are other theories that attempt to explain how owners exert their influence. This study describes two other major theories, the resource dependency theory and stewardship theory.

The Resource Dependence Theory (RDT) holds that organizations depend on each other for their survival as well as for resources(Mori and Olomi, 2012). The RDT perspective predicts that successful organizations will develop strategies that take advantage of the available resources in their environment, for example a hospital in a poor rural area would behave differently to one in a rich urban area. The theory suggests that boards exist to gain resources or minimize external dependence of the firm by managing external relationships, thereby reducing uncertainty in executing strategy and managing operations (Hillman, Withers and Collins, 2009).

Under RDT, board members are chosen for their different backgrounds, skills and networks(Chambers *et al.*, 2013a). However in healthcare the theory's predictive value is relatively low; A systematic review of empirical studies of the external environments of hospitals, nursing homes and medical practices found that only 26.8% resulted in findings that supported the RDT-predicted hypotheses (Yeager *et al.*, 2014).

In stewardship theory, the interests of the owner are maximized where the roles of management and the board are shared; with the assumption that managers are motivated not by their own individual goals but just like the board, act as stewards aligned to the goals of the owners (Lex Donaldson and Davis, 1991; Davis, Schoorman and Donaldson, 1997). Under stewardship theory, unlike agency theory where the management and board have to be separate, the board and managers work together to develop strategy and monitor performance (Van Puyvelde *et al.*, 2012).

Performance in much of corporate governance research is measured by financial indicators. However, for hospital performance, patient outcomes are just as important as financial outcomes. Furthermore, hospitals are often led by medical personnel, who may have the expertise and an inclination to focus on patient outcomes in contrast to just financial performance. Under these circumstances, stewardship theory becomes attractive in explaining board composition.

However, hospitals like other corporates, face multiple agent problems with conflicting objectives of the stakeholders within(Donaldson, Preston and Preston, 1995; Van Puyvelde *et al.*, 2012). The majority of hospital expenditure are as a result of doctor's decisions and treatment preferences rather than patient demand (Blank and Valdmans, 2008; Cutler *et al.*, 2015). Therefore, the owner has to set up the hospital to maximize doctor utility, and create incentives for the doctor to see the kind of patients the hospital wants or employ only medical cadres that the hospital can control.

In the case of the former the board of the hospital may not be serving the interests of the owner but rather that of the medical staff. Particularly a private hospital without the means to employ expensive full time medical doctors may face this conflict leading to reduced effectiveness and equity. There is often a conflict between efficiency and equity with efforts to be more efficient seen to reduce equity for certain groups, while attempts to provide healthcare for specific groups leading to overall inefficiency (Lai and Leung, 2010; Reidpath *et al.*, 2012).

Against that argument, hospitals that have lower costs should be more efficient and therefore be able to provide more effective care than those with higher costs. Agency theory can be used to explain various points at which hospital inefficiency occurs leading to reduced effectiveness and inequity(Ludwig, Van Merode and Groot, 2010). The net effect is that the agent of the hospital, whether the doctor, a department or simply management optimizes their own utility function first thereby leaving the principal (hospital owner) with a residual cost (Van Puyvelde *et al.*, 2012).This inefficiency may be reflected as ineffective service delivery, inequitable care or high costs (Lin, Xirasagar and Tang, 2004; Himmelstein *et al.*, 2014). Governance structures therefore have a critical role to play in ensuring various stakeholders' interests within the hospital are aligned.

2.5.1. The Public hospital

A public hospital is one that is owned and funded by government. There are various theoretical advantages to public (government) ownership of hospitals. These include maximizing social benefit and the difficulties in establishing a healthcare market and fostering competition to ensure effectiveness (Nemec, Meričková and Štrangfeldová, 2010). Managing social welfare is usually thought to be best done by government and therefore public ownership of a hospital maximizes public social benefit (Herr, 2009).

In Kenya, the majority of hospitals are publicly owned, a consequence of government health policy since independence to expand service coverage (Wamai, 2009). One of the strategic objectives of NHSSP I was decentralisation, where districts were the administrative units responsible for health services delivery. Each district had a hospital at the apex of service delivery pyramid, providing clinical care and referral services for all health facilities and programs beneath them (Ministry of Public Health and Sanitation & Ministry of Medical Services, 2011). Depending on the level services available and their responsibilities hospitals were divided into three groups: primary hospitals (e.g., district hospitals), secondary hospitals (e.g., provincial hospitals), and tertiary hospitals (NACPD, 2011).

In many developing countries governance of public hospitals is often assumed to be weak because of unclear goals, weak supervision and political interference (Bogue, Hall and Forgia, 2007). Weak supervision and the lack of governance structures and tools by the Ministry of Health in Kenya has been well documented (KIPPRA, 2010; Ministry of Health, 2014d).

The policy work done by the Ministry of Health has focused mainly on establishing district health management boards (now sub-county) and enhancing the management capacity of senior hospital administrators with less emphasis on hospital governance (Nzinga, Mbaabu and English, 2013).

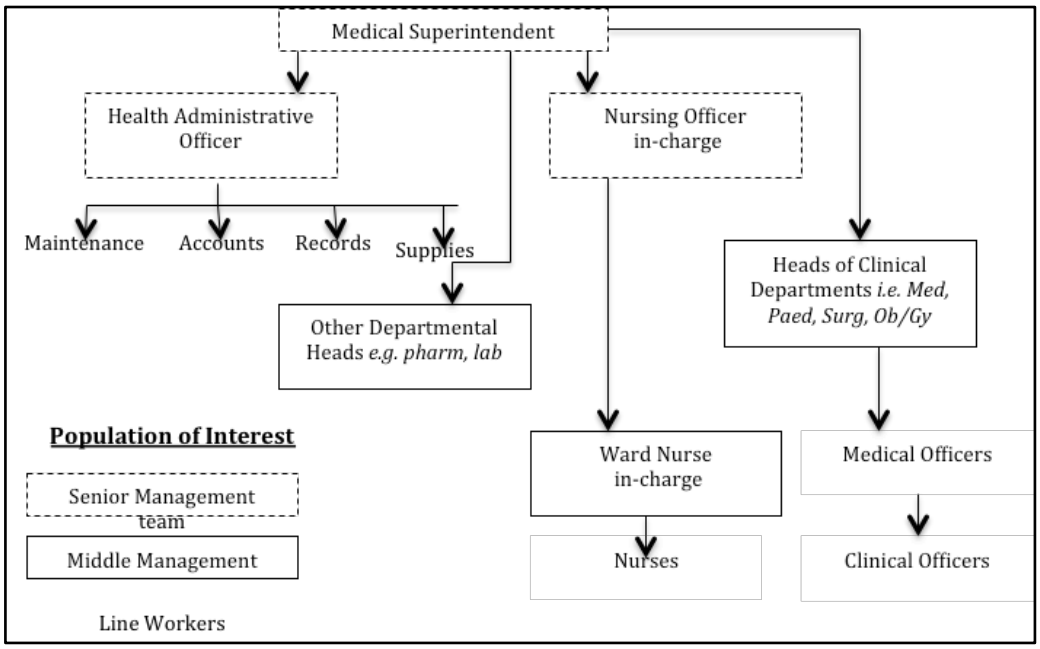


Figure 1: Generic organogram of sub-county hospitals in Kenya.
Adapted from (Nzinga, Mbaabu and English, 2013)

In the public sector, the hospital board is designated as the Health Management Committee (HMC) and its' functions are governed by a legal notice[8]. In the private for profit sector the hospital is a company under the Companies Act Chapter 486 while an organization which is not for profit should be registered under the Public Benefit Organizations Act (The Republic of Kenya, 2009, 2013a).

[8]*Legal Notice 155,* The Government Financial Management (hospital Management Services) Regulations, 2009

The advent of devolution in 2013 presents a mixed picture with potential for attention to governance of health facilities, but also the likelihood of greater political interference coupled with weaker management and governance capacity at county level (WORLD BANK, 2012).

Theoretically, one can assume that the public owned hospital maximizes output because of the budget constraint it faces and is therefore likely to be efficient and ultimately effective. However too severe a budget constraint leads to reduced effectiveness. Government owned hospitals comprise 58% of all hospitals but used 26% of current health expenditure in 2012/13 suggesting that they face considerable budget constraint (Ministry of Health, 2012, 2013). This budget constraint may reduce their ability to provide equitable health services

However as discussed earlier it is known that any hospital faces multiple principal agent problems (Van Puyvelde *et al.*, 2012). These still exist in the public hospital and therefore how public goods are provided and how the problem of information asymmetry is handled remain relevant (Horwitz *et al.*, 2007). Especially in public hospitals the interests of major stakeholders, including administrators, staff, management boards, suppliers and communities may play a major role in determining how the hospital is governed.

2.5.2. Not For Profit Hospital

Legally, NFP hospital cannot distribute surpluses and so must invest any surpluses generated in the fulfilment of the charitable mission for which they were registered(The Republic of Kenya, 2013b). Within the health sector, not for profit organizations command a significant market share with one of every six health facilities being faith based or non-governmental and therefore non-profit making (Ministry of Health, 2014a).

Like public hospitals, NFP hospitals can be faced by a situation where control rights are not clearly vested leading to weak external pressure to perform (Brickley, Van Horn and Wedig, 2010). The inability to distribute profit to owners and management provide NFP hospitals with theoretical advantages and disadvantages. NFP hospitals theoretically have little financial incentive to compromise on the quality of care they provide and may therefore be popular with patients because they have a special role in signalling quality in a context where information is scarce (Hansmann, 1980).

This contrasts with for-profit organizations, which because of the profit motive, have financial incentives to maximise on shareholder wealth by engaging in opportunistic behaviour, especially when they know the patient does not have adequate information on the quality and cost of care available (Song and Reiter, 2011). It can therefore be hypothesized that where an NFP hospital exists in relative geographical isolation and low competition, it will offer higher quality of care, and therefore be more effective compared to a similar for-profit hospital, especially where government regulation and supervision is weak as has been the case in Kenya (Horwitz *et al.*, 2007; KIPPRA, 2010).

However, NFP hospitals cannot distribute profits and may therefore have difficulty in motivating management, as its agent, to improve on efficiency and effectiveness. This principal-agent problem termed a non-distribution constraint arises from weak property rights inherent in the non-profit stature of the hospital (Santerre and Vernon, 2005).

Faith based organisations, the main form in which NFP exists in Kenya, health facilities have traditionally struggled to retain health workers particularly those well qualified, and therefore effectiveness and equity of care maybe reduced in such facilities when compared to either public or for profit facilities (Ministry of Health, 2014b).

Because of the theoretical difficulty in motivating management to align to the owner's mission, managers in not for profit are more likely to pursue personal goals and objectives, such as construction of hospital buildings and purchase of expensive medical equipment, which may in turn lead to inefficient and expensive provision of medical care services with less attention paid to the effectiveness of care. Under such circumstance, property-rights theory predicts that a non-profit hospital would at the same level of effectiveness be more expensive and therefore less equitable compared to a comparable for-profit hospital (Santerre and Vernon, 2005).

A Kenya study reported mission hospitals as having significant cost differences for management of the same condition, partly attributed to the advanced diagnostic capacity of the mission facility, despite available national treatment guidelines (Ayieko *et al.*, 2009).

The rural areas are more likely to be served by NFP and public facilities. Faith based organizations especially are likely to be the only health facilities in poor communities offering services that may not necessarily always be profitable. Because they may have fewer policies (compared to for profit) that screen less profitable patients they are better at ensuring access to care and therefore equity.

A meta-analyses comparing single hospital services with well defined health outcomes found consistent ownership-related differences, with NFPs more likely to be innovators; using charity and cross-subsidising those services where demand was not yet fully developed and would therefore not justify being offered purely on commercial grounds (Schlesinger and Gray, 2006).

2.5.3. For Profit Hospital

In Kenya, for profit hospitals are often called 'private' hospitals, however the term can be confusing as the term 'private' encompasses both for profit and not for profit and therefore the term 'for profit' is used in this study. The conduct of for–profit hospitals by assuming that it is just like any other profit maximising firm, can be explained using property rights and agency theory(Lin, Xirasagar and Tang, 2004; Jeurissen, 2010).

In a for-profit hospital the need to adjust to the market provides the financial and clinical discipline needed(Song and Reiter, 2011). For-profit hospitals like any other private firm have well defined control rights and therefore have strong incentives to control costs by innovatively improving on effectiveness and maximising profits rather than being more efficient(Devereaux *et al.*, 2002).

It is usually believed that due to the profit motive, the private sector is more efficient compared to the public sector (Lin, Xirasagar and Tang, 2004). For profit hospitals have been shown to pursue lower costs compared to public hospitals when the former are paid using a cost reimbursement system thereby maximising profits(Lin, Xirasagar and Tang, 2004). For profit hospitals will therefore not be cheaper to the patient but will seek to have higher revenue, lower costs and thereby be less effective while offering services that may not be equitable (Horwitz and Nichols, 2009; Street *et al.*, 2010).

However studies in Germany that compared non-profit or public with private ownership of hospitals, associated higher cost inefficiency and higher technical inefficiency with private ownership (Frohloff, 2008; Tiemann, Schreyogg and Busse, 2012). One of the factors that may explain this apparent contradiction is the response of hospitals to how healthcare is financed which is discussed in greater detail below.

2.5.4. Hospital Financing

Apart from the ownership, how a hospital earns its income whether directly from the patient (out-of-pocket payments); through charitable cash or material donations (development partners); volunteers providing in-kind services and indirectly through; government funded services (tax); and or voluntary private insurance and compulsory insurance has a major impact on the services it provides, how it is organised and the possible outcomes (Mills *et al.*, 2012; Maina, Chen and Perales, 2014). Depending on how a hospital is paid it can reduce the supply of certain services (supply side moral hazard), or change the average severity of patients seen (cherry picking patients).

Furthermore, hospitals will react to the market environment, responding to various competition factors such as the number of providers in the same market and forms of payment (Dranove and Satterthwaite 2001). In Kenya, however, the healthcare market is fragmented with government financing 32%, households 29%, donors 19% with health insurance (private and public) 14% and the rest 6% (Ministry of Health, 2012).

The type of health financing mechanism rather than provider competition is often the major influence on hospital conduct from a financing persspective. The hospitals desire to cross-subsidise certain services can create a divergence between community health and financial goals leading to reduced equity and possibly effectiveness (Harding and Preker, 2000). Therefore, competition among hospitals in Kenya is likely to be relatively low based on financing mechanisms.

2.6. **Maternal Delivery Services**

In 2014, the Kenyan maternal mortality ratio was estimated at 362 maternal deaths per 100,000 live births (Kenya National Bureau of Statistics & ICF Macro, 2015). This was three times the expected maternal deaths comparing Kenya's population to global maternal mortality averages[9]. Maternal health is organized around four pillars of family planning, skilled birth attendance, emergency obstetric care and immediate post-natal care (Van Den Broek and Graham, 2009). The Millennium Development Goals three and five and Sustainable Development Goal three were explicitly related to maternal and perinatal health (UNDP, 2010; United Nations, 2016).

Under current national health policy, reproductive health is deemed an essential priority with roughly one third of 363 interventions listed in the KEPH focused on reproductive health(Ministry of Public Health and Sanitation, 2008). Two broad intervention areas namely; essential antenatal and obstetric care and family planning directly link to maternal and perinatal mortality. Reproductive health services in Kenya are delivered by many implementing partners using a multi-sectoral approach with oversight provided by the Division of Reproductive Health in the MOH (Ministry of Public Health and Sanitation & Ministry of Medical Services, 2009).

[9] Every day in the world in2015, about 830 women died due to complications of pregnancy and childbirth. Almost all of these deaths occurred in low-resource settings, and most could have been prevented.
http://www.who.int/gho/maternal_health/mortality/maternal_mortality_text/en/. Accessed 6th August 2016

There are significant differences in provision of RH services depending on facility ownership; with 95% of public health facilities, 84% of private offering modern FP services in contrast to just 44% of faith-based facilities (NACPD, 2011). In 2014, about 60% of family planning (FP) users obtained their methods from public facilities, while 34% were supplied by private facilities, while the remaining 6% obtained supplies from other sources, such as shops(Kenya National Bureau of Statistics & ICF Macro, 2015).

Whereas the majority of health facilities in Kenya offered antenatal care, 79% of dispensaries and 17% of health centres, did not offer normal delivery services. Hospitals (95%) remained the facilities best equipped to offer normal delivery services across the country. Even then, Caesarean section services were available on a 24 hour basis in just over half of Kenyan hospitals and maternity designated facilities (NACPD, 2011).

Despite these strategies being in place, Kenya achieved limited success in meeting the Millennium Development Goal (MDG) target for maternal deaths calculated at 147 per 100,000 by 2015(Ministry of Health, 2014d). The major direct causes of maternal deaths in Kenya remain haemorrhage, hypertensive disorders, sepsis, obstructed labour, abortion complications and indirect causes(Ministry of Health, 2016). Just 61 % of Kenyan women delivered in health facilities in 2014 (Kenya National Bureau of Statistics & ICF Macro, 2015).

Geographically there is considerable disparity in proportion of women having caesarean section. The KDHS 2014 reported Nairobi and Kiambu Counties had the highest proportion of skilled deliveries at 89.1% and 89.7% of all births respectively. The two counties also had the highest proportion of caesarean sections 20.7% and 20.1% respectively. All the other regions in Kenya had caesarean section rates less than 15% (Kenya National Bureau of Statistics & ICF Macro, 2015) (Table 3).

Table 3: Maternal Delivery Services by Facility Ownership and Region

Region	% of Skilled Deliveries	% Caesarean	Where delivery occurs		
			Public Health Facility	Private Health Facility	Home
National	61.8	8.7	46.0	15.2	37.4
Nairobi	89.1	20.7	50.1	38.6	10.1
Central	89.7 (92.6)	15.7 (20.1)	64.2 (53.4)	26.1(40.0)	8.6 (5.4)
Coast	58.2	7	48.2	9.5	41.1
Eastern	83.3	11.7	45	17.7	35.3
Nairobi	89.1	20.7	50.1	38.6	10.1
North-Eastern	32.4	2.9	26.1	3.2	68.6
Nyanza	65	5.1	54.8	10	33.1
Rift Valley	51.3	5.6	38.5	11.7	48.6
Western	47.8	4.3	40.8	6.2	51.3

Source: (Kenya National Bureau of Statistics & ICF Macro, 2015)

On average in 2014, 62% of women gave birth with the assistance of a skilled provider compared to 43% in 2008-9. The average masked significant disparities with women in Central and Nairobi regions (89%), three times more likely to deliver with the assistance of a skilled provider North Eastern region (32.4%) (Kenya National Bureau of Statistics & ICF Macro, 2015).

While all the components of the health system require improvement in effectiveness and efficiency, two building blocks, financing and human resource, contribute significantly to the relatively low levels of RH service. RH services are financed through a mix of public, private, and donor resources(Ministry of Medical Services & Ministry of Public Health and Sanitation, 2009). However, 75 to 80% of the total FP service delivery-related costs are met by the government through provision of personnel, facilities, and other infrastructure and support activities. Yet,, despite MOH fee guidelines that RH services are to be provided free, in practice, only one out of five women using a modern contraceptive method received the method free of charge (Ministry of Medical Services & Ministry of Public Health and Sanitation, 2009).

Overall, government spending is still below the Africa Union recommended Abuja Declaration's goal of ring-fencing 15% of all public spending for health(Ministry of Medical Services & Ministry of Public Health and Sanitation, 2010b).

2.7. **Conceptual Framework**

Ownership is meant to confer organizational control. Governance outlines the rules and processes by which ownership is exerted. However, the split between ownership and management has given rise to what type of governance structure should be used to control the affairs of the organization. In this study, three theories of governance; agency, stewardship and resource dependency are examined in relation to hospital boards and whether there is an association between the ownership, governance structure and hospital performance in terms of maternal and perinatal mortality.

In agency theory often termed the 'governance theory', managers are held to be agents of the owners, as represented by the board. It is theorized that managers may not always act in the interests of the organization and so boards have the responsibility of mitigating the risks inherent in this separation, by gathering information necessary to hold managers to account (Carver, 2010; Jiang, Lockee and Fraser, 2012).

Under agency theory, therefore, organizational performance is dependent on the methods by which principals and agents define their respective roles (Bogue, Hall and Forgia, 2007). Under stewardship theory the board and managers develop strategy and monitor implementation jointly, in contrast to agency theory where the management and board have to be separate entities (Van Puyvelde *et al.*, 2012).

In stewardship theory, the interests of the owner are maximized where the roles of management and the board are shared(L. Donaldson and Davis, 1991). Contrary to the agency theory, stewardship theory replaces the lack of trust to which the agency theory refers with the respect for authority and inclination to ethical behaviour (Abor, 2015).

Current laws and regulations that govern the conduct of health professionals in healthcare delivery rely mainly on stewardship theory to resolve the issue of trust at higher levels of governance. The Nursing Council of Kenya has to have as the majority of members, nurses; and the same structure is followed by medical practioners (The Republic of Kenya, 2012f, 2012e, 2012h).

In the hospital, governance and therefore ultimate fiduciary responsibility should lie with the hospital board. The primary duty of the board is “to ensure that organization remains true to its core mission” (Alexander & Lee, 2006, pp.733). The type of ownership a hospital has determines how the hospital is registered as either public (government), not for profit or for profit. The governance structure set up will reflect the owners mission in setting up the hospital and can be explained by the various theories of governance.

Sustainable Development Goal three is clear on the need to reduce maternal and perinatal mortality (United Nations, 2016). However various studies and theory have left policymakers with limited understanding of how ownership, governance and health service delivery performance, specifically maternal delivery services are related.

Understanding whether ownership types; public, not for profit, and for profit and the resulting governance structures are related to hospital performance is important for ensuring hospital accountability and assessing whether hospitals can as part of the broader health system meet the goals of effectiveness and equity.

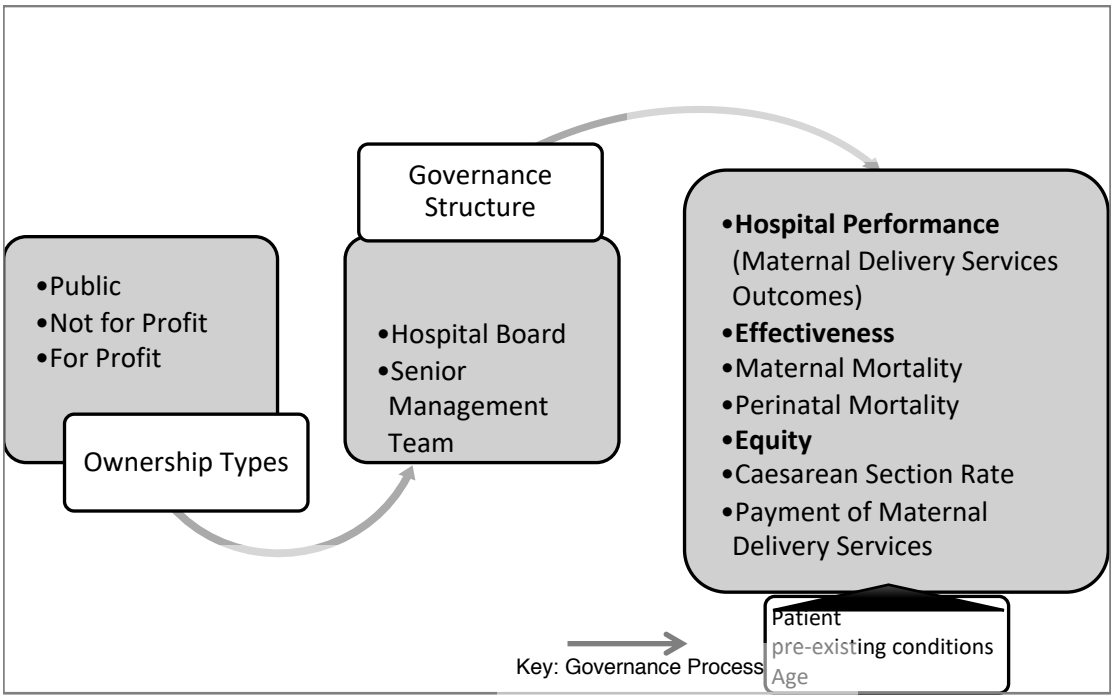


Figure 2: Conceptual Framework. How does Ownership Types, Governance Structures of Hospital Influence Maternal Service Delivery

Adapted from: (Baez-Carmago and Jacobs, 2011)

In the typical organizational governance structure, the board of directors define the strategy and mission of the organization then delegate power to execute the strategy to the chief executive officer and management.

The context within which the organization operates may influence how the strategy is operationalized. Senior management may also influence organizational outcomes. Significant changes in the senior personnel and clinical staff (doctors and nurses) of hospitals have been found to influence the long term effectiveness of interventions, requiring correct interpretation of any health system intervention outcomes to include a comprehensive contextual description (English *et al.*, 2009).

The type of ownership and the governance structure that arises should therefore be related to hospital performance as measured by patient outcomes of maternal and perinatal mortality. However, we cannot assume that any single governance theory will explain hospital performance, as measured by maternal delivery services equity and effectiveness outcomes.

Chapter 3:Research Methodology

Introduction

This chapter describes the research design and methods used in the study. The design for this exploratory mixed-method research, comprised a quantitative component that used a data abstraction tool to determine the perinatal and maternal mortality in each hospital; while the qualitative component involved interviews with hospital board directors and senior management questionnaires and informant guides. Sample population, sampling technique are described followed by the data collection and data analysis done. The chapter concludes with a description of how the ethical issues encountered were managed.

3.1. Study Design

This was a cross sectional study, using a mixed method design, integrating both quantitative and qualitative data. The study design was chosen to enable a better understanding of hospital ownership, the governance structures that arise and the association with hospital performance as measured by health service delivery, specifically the effectiveness and equity of maternal delivery services (Ivankova, Creswell and Stick, 2006).

3.2. **Study Area**

The study was carried out in six health facilities in Nairobi and Kiambu Counties. Kiambu County occupies an area of 2,543.4 Km^2 and is divided into seven sub-counties namely Kiambaa, Limuru, Ndeiya, Githunguri, Kikuyu, Lari and Kiambu Municipality. In 2013, Kiambu County was estimated to have a population of 1,838,397 including 59,191 pregnant women (Ministry of Health, 2014a). In Kiambu, there were six faith based, one private and four government hospitals[10].

Nairobi County occupies an area of 694.9 Km^2 and is divided into eight sub-counties namely Dagoretti, Embakasi, Kasarani, Kamukunji, Langata, Makadara, Starehe and Westlands. Nairobi County's population in 2013 was estimated at 3,554,261 including 172,143 pregnant women (Ministry of Health, 2014a). Nairobi had four faith based, seven private and two government hospitals [10].

National average facility density in the most recent SARAM report was 2.04 facilities per 10,000 persons. Kiambu matched this average while Nairobi was above average at 2.44 facilities per 10,000 persons. In terms of distribution of health facilities by tier, hospitals were 15% of all facilities in Kiambu compared to 9% in Nairobi against a national average of 8%(Ministry of Health, 2014a).

10 http://kmhfl.health.go.ke/#/home, accessed 19th November 2014

Kiambu and Nairobi County were chosen for this study because compared to the national averages, health facilities in Kiambu and Nairobi counties had below average health governance indicators, but above average maternal health service readiness (Table 4).

Table 4: Service Assessment Readiness levels, Governance and Maternal Health Services in Kiambu and Nairobi County

Service Assessment Readiness Indicator	Kiambu	Nairobi	National
Health Governance Mean Readiness	28%	18%	36%
Fully constituted board/health facility committee	38%	21%	54%
Maternal Health Services Readiness	40%	48%	32%

Source: adapted from Kenya Service Availability and Readiness Assessment Mapping (SARAM) (Ministry of Health, 2014a)

As shown in Table 5, census data analysis of the county MMR estimated Kiambu and Nairobi at 230 and 212 per 100,000 live births respectively, roughly half the national average (Kenya National Bureau of Statistics & ICF Macro, 2015).

Table 5: Maternal deaths, Maternal Mortality Ratio in Nairobi and Kiambu County

County	Number of Maternal Deaths	Maternal Mortality Ratio (per 100,000 live births)
National	6,623	495
Nairobi	533	212
Kiambu	192	230

Source: Kenya National Bureau of Statistics 2012. 2009 Kenya Population and Housing Census, Analytical report Volume VI

3.3. **Study Methods**

Three methods of data collection were used in this study including key informant interviews, questionnaire administration and data abstraction. Key informant interviews (KIIs) were held with the health facility in-charges of the six hospitals. This was exploratory in nature to allow for an understanding of views, opinions and attitudes that exist and to obtain and contextualise information collected (Varkevisser, Pathmanathan and Brownlee, 2003; Gilson, 2012). The KIIs were used to gather information on type of health facility, roles and responsibilities, governance structure, incentives, investments and challenges encountered in providing MDS.

In the second method, questionnaires were administered to board members and members of the hospital management team. The goal of this method was to raise data on type of facility, board composition and processes, investments and management structures.

The third method involved data abstraction at each of the six hospitals spanning 2012-2014. There were two levels namely: patient and hospital data abstraction. Patient data abstraction covered the period 2014 and focussed on maternal delivery services and payment matters. The hospital abstraction covered 2012-2014 and focussed on type of health facility and maternal delivery services therein.

3.4. Study Population

The study population were level four hospitals in Kiambu and Nairobi Counties registered in the Kenya Master Health Facility list. There were a total of 24 level four Hospitals in the two Counties registered with the Ministry of Health[11].

3.5. Sampling and Sampling Size

All the level four health facilities were picked from the list of level four hospitals in the two counties. The hospitals were grouped according to ownership, government, not for profit faith-based and for profit hospitals. In the two counties there were six public, eight private and ten faith-based hospitals. Hospitals that did not offer maternal delivery services were excluded.

A list of all relevant government health facilities was developed and computer generated random numbers were used to select three government hospitals. Consequently, hospital bed capacity was used to select and match one private and two faith based hospitals to identified government facilities.

Within each hospital there were three sources of data namely; board members, members of the hospital management team, and files of patients admitted to the maternal delivery service in the past one year. Six key informant interviews were held with the health facility in-charges (one at each facility).

[11] http://kmhfl.health.go.ke/#/home, accessed 19th November 2014

Additionally, 40 questionnaire interviews were held with board members and members of the hospital management team. Efforts were made to ensure a minimum of three board members (including the chair, chief executive and one other to ensure representation) were interviewed. Consequently, the combined participants from the six facilities provided at least 40 interviewees - an adequate medium size sample pool of interviews (Baker and Edwards, 2012).

A total of 1,200 files of patients who had been admitted to the maternity unit of each selected hospital in the period 1st January 2014 – 31st December 2014 were used in this study. Approximately 15% of all pregnant women develop complications that call for skilled delivery and possibly major obstetrical intervention such as a caesarean section (World Organization Health (WHO), 2017). Such level of care should be routinely available in a primary referral Hospital (level 4). This was therefore established as the threshold for determining effectiveness and equity of MDS in a primary referral hospital. A sample size of 195 patient files per facility was determined using the following formula for proportions:

$$n = Z^2 [P (1-P)]/d^2$$

n = 195;
z = significance level of 95%, is 1.96;
p = 15% (the estimated proportion of all pregnant women at risk of a serious obstetric complication that usually cannot be predicted or prevented in advance(Ministry of Public Health and Sanitation & Ministry of Medical Services, 2009)
d = margin of error at 5%.

To the sample of 195 per hospital, an additional five files were added to cater for incomplete files, resulting in abstraction of 200 files per hospital.

3.6. **Inclusion and Exclusion Criteria**

The following inclusion criterion was used in this study:

- Level 4 hospitals in Kiambu and Nairobi
- Health facilities that were offering maternity services
- Key informants who have been in their current positions for more than 3 months

Those excluded from the study included:

- Hospitals not registered as institutions e.g. health facilities owned by a single practitioner
- Participants who did not give consent/ show willingness to participate in the study

3.7. **Study Variables**

The following socio-demographics were collected from key informants: age, sex, education, cadre, and category (Board member/management). For extracted patient data, age and parity were key characteristics of interest. Three study instruments were used to collect data. Variables specific to each of these tools and to study methodologies are presented.

Appendix three was used to collect data from key informants (Health facility in-charges). The tool had six domains: 1) Type of health facility - Government, faith-based, and for profit; 2) Roles and responsibilities - Current job position and whether the job description was based on a legal framework; 3) Governance structure of the hospitals - Governance structures, roles of each structure, importance of the different structures, legal rights to acquire and dispose assets; 4) Incentives - Whether there are any incentives provided by MoH to the health facility; 5) Challenges - Challenges in providing MDS at the health facility and challenges associated with MoH; and 6) Investment: Types of investments in service delivery, sources of the investment capital, tax status of the health facility, and distribution of surpluses generated.

Appendix four provides the hospital governance questionnaire was used to collect data from board members and members of the hospital management team. This questionnaire was adapted from the Sample Governance Audit Questionnaire of the Governance Centre of Excellence, Ontario Hospital Association (appendix five) (Governance Centre of Excellence, 2014).

There were four main question domains: 1) Type of facility - Ownership, types of licensing, and regulatory oversight; 2) Board composition and processes - Board member profession and cadre, fiduciary responsibilities, and board decision making; 3) Management structure and processes - Cadre and qualification of management members, types of management meetings, and management decision making; and 4) Capital investment - Types of investments, sources of the investment capital, tax status of the health facility, and distribution of surpluses generated.

Abstraction of health facility data was undertaken through two ways: Patient data abstraction and hospital data abstraction. For the former, two domains were involved: 1) Maternal delivery services - Type of delivery, length of stay, and outcome of delivery and 2) Payment for maternal delivery services - Cost of service, method of payment, and presence/absence of waiver. The latter included two sections namely: 1) Type of health facility - Government, faith-based, and for profit and 2) Maternal delivery services - Cadre and number of staff, bed capacity, number of patients admitted, number of maternal deaths, number of perinatal deaths and number of readmissions (Table 6).

Table 6: Summary of Specific objectives, Primary Outcomes and Variables

Specific Objective	Variables
Describe the governance structures of different hospital ownership types.	Ownership types, Governance structure of the hospitals - Governance structures, roles of each structure, importance of the different structures, legal rights to acquire and dispose assets; Board composition and processes - Board member profession and cadre, fiduciary responsibilities, and board decision making; Management structure and processes - Cadre and qualification of management members, types of management meetings, and management decision making; Capital investment - Types of investments, sources of the investment capital, tax status of the health facility, and distribution of surpluses generated
Determine the equity of hospital maternal delivery services.	No of patients admitted for MDS, Age, parity of patients, No of patients normal delivery, caesarean sections, Indications for caesarean sections, No of patients paying or not paying for MDS, method of payment, No of patients waived from paying
Assess the effectiveness of maternal delivery services in the hospital.	No of patients admitted for MDS, No of maternal and perinatal deaths, Average length of stay of patients admitted for MDS, No of patients readmitted within six weeks of delivery
Examine the relationship between ownership types, governance structure and maternal delivery service.	Governance structure of the hospitals, ownership types Maternal delivery services - Cadre and number of staff, bed capacity, number of patients admitted, number of maternal deaths, number of perinatal deaths, No of patients normal delivery, caesarean sections, No of patients paying or not paying for MDS, method of payment and number of readmissions.

3.8. **Data Collection Procedure**

The data collection occurred from 10th June 2015 to 9th October 2015. Data was collected in Metropolitan Hospital and Mbagathi District Hospitals in Nairobi County. In Kiambu County data was collected from Gatundu District Hospital, Nazareth Hospital, Kiambu District Hospital, and Kijabe Hospital**.**

Twelve (12) research assistants with a background in medical field were recruited to assist in data collection. The principal investigator conducted training for research assistants. The training involved discussion of the study objectives, study procedures, ethical considerations and techniques for data abstraction and interviews. Soon after, the principal investigator contacted the hospital in charges of the selected six hospitals to introduce the study and obtain administrative permission to undertake the study in their health facilities.

All interviews were conducted by trained research personnel at a quiet office venue convenient to the study participants. Prior to every data collection activity, informed consent was sought and documented in writing. All key informant data collection sessions were facilitated by a moderator and a scribe who helped with data recording. The information obtained from KIIs and questionnaire administration sessions were audio recorded alongside field note taking. Where participants were uncomfortable recording their responses in audio format, only field note taking was done. All interviews were conducted in English and lasted approximately 25 - 60 minutes.

Key informant face to face interviews were conducted with the six in-charges – one from each participating hospital (appendix three). The in-charges also provided names of interviewees needed from board members and members of the hospital management team. The in-charges, board members and members of the hospital management team were all engaged in a face to face interview during which the hospital governance questionnaire was administered (appendix four).

At each of the six hospitals, 200 patient files were selected for data abstraction (appendix one). The total patient files available for the 2014 period in the hospitals were: Metropolitan Hospital 321, Mbagathi District Hospital 4,042, Kiambu District Hospital 7,678, Gatundu District Hospital 3,714, Nazareth Hospital 4,153 and Kijabe Hospital 2,413. To identify the patient files in each facility, the patient register was used to tabulate the total number of discharges in 2014; 200 file numbers were then randomly selected using a random number generator. Selected patient files were then retrieved and data abstracted. Where a randomly selected file from the random generator was not available, the next file number was chosen and retrieved.

At the end of each day of data collection, debriefs were carried out among research team members to openly share the day's successes and any challenges encountered. They involved verbal presentation of data collection sessions completed, consenting summaries, any postponed interviews and personal reflections and experiences from the day's work.

3.8.1. Data Quality Assurance

In this study, several data quality control measures were applied. Research assistants were trained for two days on data collection techniques and consenting. Training was conducted to ensure all research assistants had a uniform understanding of the tools. Routine debriefs were carried out daily among research team members and data checked for completeness. They involved verbal presentation of emergent findings and experiences from the day's work. Debriefs ensured much valuable real-time insight was not lost.

For the key informant interviews, transcription was done verbatim, and the findings coded inductively to ensure that the insights were drawn from the data (Gale *et al.*, 2013). Using a priori codes emanating from the interview guide (appendix three), a code book was developed that provided a working analytical framework that was then used to code the transcripts. Two independent coders reviewed the transcripts and consequently agreed on emergent codes and resultant thematic findings.

3.9. Data Processing and Analysis

Prior to data collection, the research assistants were trained on the data collection tools in a level 4 hospital in a neighbouring county and the tool revised for minor errors. On a daily basis, the completed data collection forms were checked for completeness and consistency before data entry and analysis. Inconsistencies or missing information were corrected by making a repeat visit to the hospital.

Qualitative data was transcribed, word processed and cleaned before coding. Validation of data involved checking the typed transcripts against the audio-recorded interviews before data analysis. Two trained research assistants transcribed the audio recordings and each transcript was then reviewed by the investigator and also compared to the written notes to check for consistency. Initially one transcript from each facility was taken and reviewed line by line inductively, comparing the key themes emerging over successive interviews to extract recurrent themes across the data to develop the initial code book. For consistency, the investigator reviewed the generated codes against the research questions. This initial code book was then used to code all the transcripts. The process of refining codes and describing properties of each continued until no new concepts emerged and theoretical saturation was achieved. The final code book developed (appendix six) was then used to review the transcripts again.

Where illustrative quotes of key informants are provided, they are cited as follows. The hospitals' names were arranged in alphabetical order, Gatundu, Kiambu, Kijabe, Mbagathi, Metropolitan and Nazareth, then abbreviated (Gat, Kia, Kij, Mba, Met and Naz respectively. Key informants were in three categories namely board (BM), hospital management team (HMT) and maternity management (MT).

Descriptive statistics of totals, mean, median, standard deviations and confidence intervals was used to summarize hospital MDS admissions; patient age, pre-existing conditions of patients and patients paying or not paying for MDS, method of payment; patients with normal delivery, caesarean sections and assisted deliveries; length of stay; cadre and number of staff, bed capacity.

The perinatal mortality rate was calculated as: (No. of perinatal deaths / total No. of births (still births + live births)) x 1000. The maternal deaths were tabulated for each hospital and a rate calculated as maternal deaths/MDS admissions x 100,000.

The odds ratio, tests of associations of chi-square (X^2) were used to show the relationships between MDS patients, their age, pre-existing conditions, whether they paid for MDS length of stay; cadre and number of staff, bed capacity and intermediate outcomes of normal, assisted deliveries, caesarean section; and perinatal and maternal mortality.

Multivariate Poisson regression was used to show the relationships between ownership, governance structures, perinatal and maternal mortality. Data was analysed using the Statistical Products and Service Solutions (SPSS) and Excel.

3.10. **Ethical Considerations**

Ethical clearance was obtained from Ethics and Research Committee of Kenyatta National Hospital and University of Nairobi (P128/03/2015, appendix eight). To facilitate carrying out the study, administrative consent was obtained from the Kiambu County and Nairobi County to facilitate access to the hospitals (appendix nine-sixteen).

Before starting data collection at each hospital, an appointment was booked with the medical superintendent/CEO of each health facility. The abstract of the study together with ethical consent was sent and a verbal presentation done outlining the goals and methodology of the study. Consent was then obtained to interview staff and board members and carry out data abstraction of patient files in the maternity unit. Interviews were done at their convenience and at a site of their choice. Each respondent was given the option to decline or opt out at any time during the interview.

The study did not involve any physically invasive procedures and all respondents in the study were asked to provide informed written consent before being interviewed.

Data abstracted from patient files did not include their names or any other data that could be used to identify individual patients. All the data collection tools were safely stored, locked by the principal investigator. All data collected was treated confidentially and not disclosed to any person not involved in collection, data entry or analysis. Respondent names were not entered into the computer and unique identifiers of records such as respondent number used only during data cleaning for identification of records.

Chapter 4:Results

Introduction

The results chapter is presented in order of the specific objectives of the study. A description of the governance structure of the hospitals, highlighting their similarities and differences is provided. The governance structures are described in terms of the board; board composition, members, board processes and power. Below the board the senior management are described in term of how they link with the board, senior management characteristics including qualifications, experience and management processes used to coordinate maternal delivery services. How effective the maternal delivery services are then described. Patient outcomes for maternal delivery services are described as measured by maternal and perinatal deaths. The results of how equitable the maternal delivery services are presented in terms of how different types of patients received equitable or non-equitable care and whether patients paid for the services and whether there were differences in the patient outcomes. Lastly the relationship between the governance structures described and the maternal delivery service outcomes are determined.

Two hospitals, Kiambu and Gatundu did not have boards. Of the 40 interviews done, nine were independent board members (22.5%), seven were executive directors (17.5%), and 15 MDS management (37.5%). Kijabe board had 12 members with Mbagathi, Nazareth and Metropolitan having 11,9,5 board members respectively. Kijabe had two female board members, Mbagathi, Nazareth and Metropolitan, four, three and two respectively.

4.1. Hospital Characteristics

Of the six hospitals, county governments owned three, one by a public for profit company and the last two were owned by Anglican and Catholic churches respectively. The bed capacity ranged from 52 beds in Metropolitan hospital to 363 at Kijabe hospital, with an average/median bed capacity of 210 beds. Private hospitals belonged to at least one hospital association, either the Christian Health Association of Kenya, The Kenya Association of Hospitals or the Catholic Health Commission of Kenya. However government hospitals did not report being members of any association (Table 7).

Table 7: Hospital Classification and Ownership Characteristics

Hospital	Owner	Total Bed capacity	Classification	Association
Gatundu	Kiambu County	107	Government	n/a
Kiambu	Kiambu County	316	Government	n/a
Kijabe	Africa Inland Church (AIC) Kenya	363	Faith based-Public not for profit	Christian Health Association of Kenya
Mbagathi	Nairobi County	200	Government	n/a
Metropolitan	Metropolitan Hospital ltd.	52	Public for profit	Kenya Association of Hospitals
Nazareth	Congregation of the Franciscan Sisters of the Immaculate Heart of Mary	220	Faith based-Public not for profit	Catholic Health Commission of Kenya
n/a – Not Available				

4.2. Governance structure of Hospitals

The governance structure of each hospital consisted of the board, the hospital management, how power was shared and the processes by which they managed the operations of the hospital.

4.2.1. Board Composition

Four of the six hospitals had boards. However, Gatundu and Kiambu hospitals did not have boards constituted, respondents explained because the county government were still in the process of passing the necessary gazette notices.

"…yeah in fact right now the process of their appointments is on-going. Their names are being presented into the county assembly for approval, so once this is done and the Assembly approves now the county government through CEC for health or the governor. We have what we call the hospital management committee, previously they were called boards, they provided oversight to functions of the hospital, …currently we don't have one… Guess due to the transitional issues" [BD2,Kia]

"…The senior most management team in the hospital is called the ECC (Executive Expenditure Committee)…." [HMT,Gat]

The public hospitals had relatively large boards (8+ members) with more diverse representation of professionals when compared to the private hospital.

Just under two thirds (62%) of board members belonged to a professional body, with half of those professionals belonging to the Medical Practioners and Dentists board (MP&DB). In all hospitals with a board, there was a minimum of two board members registered with the MP&DB, at least one board member registered with the Nursing Council of Kenya. The church was also represented in every board except in the for profit hospital. Other professions found on the boards included the Law Society of Kenya, Institute of Certified Public Accountants and Architectural Association of Kenya (Table 8).

Table 8: Distribution of Board Members by Professional Affiliation

Hospital		Kijabe	Mbagathi	Metropolitan	Nazareth
Medical	MP&DB	2	2	5	2
	NCK	1	1	1	1
Non-Medical	Church	1	1	0	1
	LSK	0	1	1	1
	ICPAK	1	1	0	0
	AAK	0	1	1	0
	Other	6	4	0	4
Total No. Board Members		11	11	8	9
No board constituted for Gatundu and Kiambu Hospitals					

Other than in the private hospital where shareholders elected board members, in the other hospitals an appointing authority nominated the board members to represent particular constituencies. While public hospitals had a process of gazetting board members, thereby defining term limits, more common were members who served without defined limits. For example, even in public hospitals, the medical superintendent a board member by virtue of position is not appointed for a specific term of office.

While respondents stated that board term limits existed these seemed to be honoured in the breech with members staying for many years on boards or leaving because the institution that they represented had assigned them elsewhere.

"…I represent the interests of the health department, County…I'm not sure about the term limit but it should be 3 years, I don't know... You know for me it is irrelevant because it is the office , once I leave…"[HMT,Kij]

"…The term limit for the board members is five years two times. '…but if you are doing a good job, they will just give you another term…"[BD3,Kij]

No board paid any of its members to attend meetings. However, some were paid travelling and sitting allowances.

"*…Sometimes back, we were not paid, we were serving voluntarily. But of late because of the diversity and the need for input from professionals we decided to be giving them mileage because they are coming from far, and for us who come from around who don't need to drive we give them sitting allowances…"[BD1,Kij*.

4.2.2. Governance Process

The governance process consists of the board, how it is constituted, how power is exercised through to the hospital management team. The study reviewed the composition of the board and hospital management team and how they conducted their operations.

The chairman of the board was in all cases non-executive, with the chief executive/medical superintendent as the secretary to the board. Other than in one facility, the secretary was therefore a medical doctor. In terms of board decision making most decisions were made on a consensus basis.

"…We vote at times, sometimes it reaches a time that we have to vote, but it is not very often..."[BD3,Kij]

"…The board has voting rights but we rarely exercise it..."[BD1,Mba]

When the 40 respondents were asked who was the final decision maker in terms of the strategic direction of the hospital just under half cited the board, while a third mentioned the CEO and a fifth the hospital management team.

"…The hospital board has the right to acquire and dispose assets…We have the legal right to acquire assets and dispose them…"[HMT,Kij].

However, when asked who was responsible for disposal of assets then the board was mentioned by just one out of five; In comparison, the hospital management team, including the CEO, were cited by two thirds of respondents. This indicated that actual power within the hospital lay with the hospital management team especially the CEO/medical superintendent and not with the board.

For public hospitals, there was an added layer because of involvement of the county health authorities in managing assets.

"…if funds are there…the medical superintendent authorizes and then the procurement officer does the purchasing. The med sup is the AIE holder"(HMT,Naz).

"….the chief officer for health services…is now the accounting officer for all health functions in the county…the accounting chief officer…So he is the one who will also approve of whether to dispose of an item or acquire…"(BD2,Kia).

"…The board will dispose the assets that are within here but when it comes to the major assets like vehicles and all that we do have policy how we interrelate with the church…"(HMT,Kij).

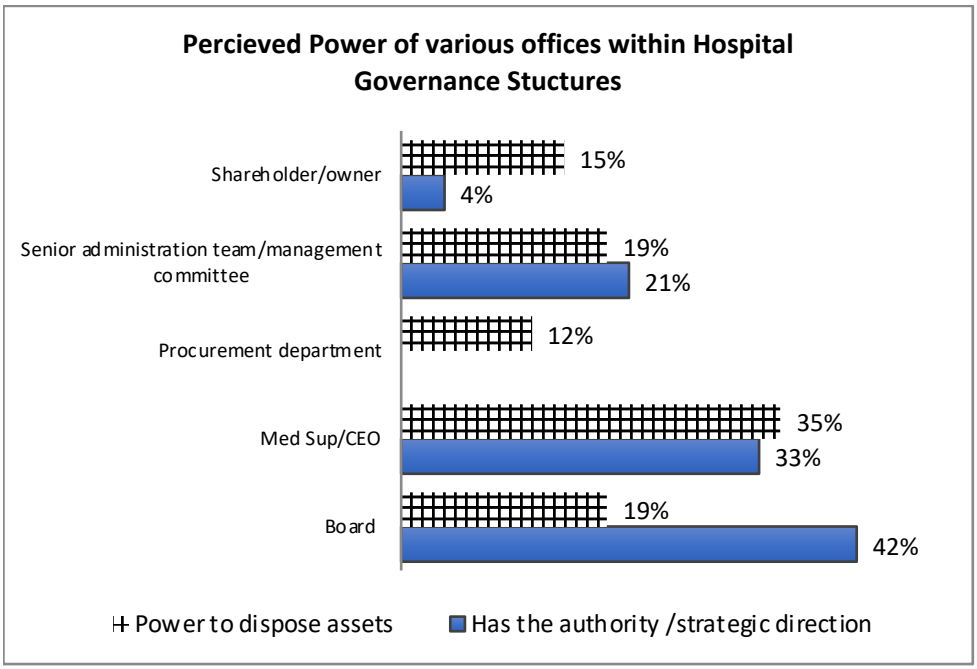


Figure 3: Perceived Power to Raise Funds for Capital Investment

The hospitals could raise funds in five different ways; donor funds, government funds (county and national), user fees, surpluses generated and commercial loans. All except the private for profit used donor funding for capital projects. The public facilities were also funded through government budgets and used their user fees collected for small capital projects. The non-government hospitals, Kijabe, Nazareth and Metropolitan had a goal to generate surpluses from their operations, which were then ploughed back into capital projects, but often did not charge enough to generate adequate surpluses (Table 9).

"…The hospital operates within a very 'funny' framework of financing because… we charge very little for our services, which is enough to cater for operational issues but not enough to cater for capital investments…"(HMT,Kij).

"…Almost every investment is supported by the hospital operations we have a resource mobilization department; we created our own because all our infrastructure, all our capital all our assets we have developed them ourselves, through donations from friends..."(HMT,Kij).

The private for profit was alone in having to pay taxes on surpluses and accessing commercial loans for capital projects.

"…We raise capital for the hospital through banks supplying us with credit, leasing and retaining profits…"(HMT,Met).

Table 9: Sources of Funds for Capital Investment by Hospital

Capital Investment	Gatundu	Kiambu	Kijabe	Mbagathi	Metropolitan	Nazareth
Donors	x	x	X	X		x
County Government	x	x		X		
User Fees	x	x		X		
Commercial Loans					x	
Operational Surplus			x		x	x

Legend 'x'=Indication of source of funding

Overall two governance structures of hospitals were identified labelled corporate and public hospital governance were identified depending on whether or not the board members bore actual fiduciary responsibility (corporate governance) or not (public governance); and the ensuing characteristics of the board that enable responsibility to be exercised (Table 10).

Table 10: Characteristics of Corporate and Public Hospital Governance

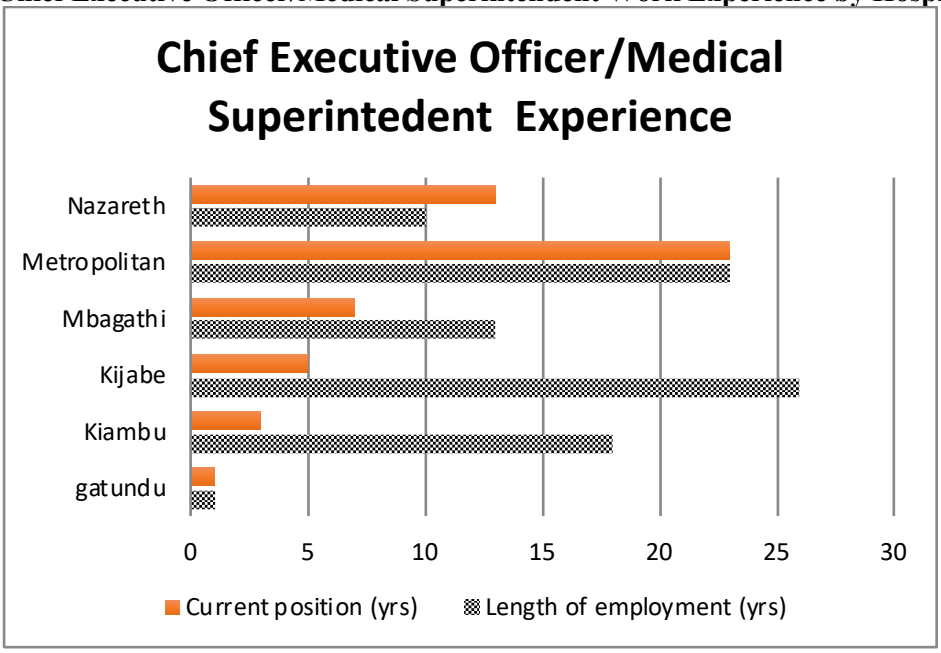
Characteristic	Corporate Governance		Public Governance
	Public for profit	Public not for profit	Public (government)
Bogue et al classification	4	3	1
MoH classification	6	4	2
Board reports to:	Shareholders	Owner Representative	County executive for health
Board member focus	Internal on performance	Varies	External, political interests (stakeholder management)
Board representative	Director	Board member/ Trustee	Trustee
Background of board members	Homogenous	Varies	Heterogeneous
Board size (tendency)	Smaller (<8)	Varies	Larger (>8)
Surplus/profit	Surplus with profit distribution	Surplus. No profit distribution	Perpetual deficit management
Fiduciary responsibility	Yes	Yes	No
Hospitals	Metropolitan	Nazareth, Kijabe	Mbagathi, Kiambu, Gatundu
Primary Legal act	Cap 486	NGO Act 1992	County government act 2012
Primary Oversight body	MP&DB	MP&DB	MP&DB
Board Formation	Election	Election	Selection
Term Limits	Yes	Yes	Yes
Board Secretary	CEO	CEO	Med Sup
Organizational Control	Management	Ownership	Legal device
Theory explains board/managers roles	Agency	Stewardship	Resource dependency

4.2.3. Operational Management of the Hospitals

Below the strategic level board of directors sat the hospital management team tasked with the day to day management of the hospital.

Each hospital was headed by a medical superintendent (Med Sup) (four hospitals) or chief executive officer (CEO) (two hospitals). In terms of qualifications, all six hospital heads had a minimum of a master's degree. The hospitals were led by experienced managers with a median of six years in the position and sixteen and a half years of working in the medical field. Of interest was the difference in experience in the position of CEO/med sup. While the median professional experience was the same, roughly 15½ years, the CEO/med sup in the non-government hospital had been in the same office for an average of 14 years, compared to the government hospital average of 3 years.

Table 11: Chief Executive Officer/Medical Superintendent Work Experience by Hospital



The major responsibilities of the CEO/Med Sup can be divided into five major areas: leading the hospital i.e. the face of the institution, board duties, financial management, human resource management and clinical management. Except in one hospital where the CEO was clearly the leader, in the other hospitals the MedSup was the designated management leader but part of a hospital management team including a nursing officer and an administrator.

Institutional Leadership: In four hospitals, Mbagathi, Metropolitan, Nazareth and Kijabe, the CEO/Med Sup represented the 'face of the hospital'. In Gatundu and Kiambu, the Med Sup was considered as the leader of a team rather than a leader on their own.

"The Med Sup is the chairman of the hospital…committee…"(HMT,Kia)

"...The H.M.T and the management team, the core management team that is Health Administrative officer, Med Sup and Nursing Officer in charge…(HMT, Gat)

Board Duties: The CEO/Med Sup was where a board was constituted a board member, usually with specific duties as the board secretary.

Financial Management: Included preparing budgets, whether annual or quarterly, being the signatory for purchasing of supplies and or salaries. Other than in the private for profit no CEO or Med Sup had sole control over finances. The least amount of control was exhibited by Med Sup of government hospitals, where the owners (county government) paid salaries and managed capital expenditure.

"The government treasury has the legal right to acquire and dispose property…"(HMT,Gat)

Clinical Management: While all the CEOs were employed full time, those titled medical superintendents also had additional duties leading and providing clinical services. A key role on this regard was organising the clinical duty roster especially for doctors. In addition, the Med Sup was involved in training and supervising students, especially medical students. CEOs generally had no clinical duties, were not the ones involved in writing duty rosters but sat in committees involved in clinical management, where another member of staff had primary clinical oversight.

Human Resource management: In public hospitals the MedSup did not have authority to hire clinical staff, had a role in disciplinary actions, but not the final authority, and was not a major decision maker in terms of promotion or staff appraisals. In contrast those with the title CEO had greater authority in hiring, staff appraisals and promotions.

Except for the private for profit hospital where the CEO was head and shoulders above other department heads, the other hospitals had a similar hospital management structure where the chief executive/MedSup was 'first among equals', with the other senior members of the management team, the nursing officer in charge and the administrator as noted by respondents.

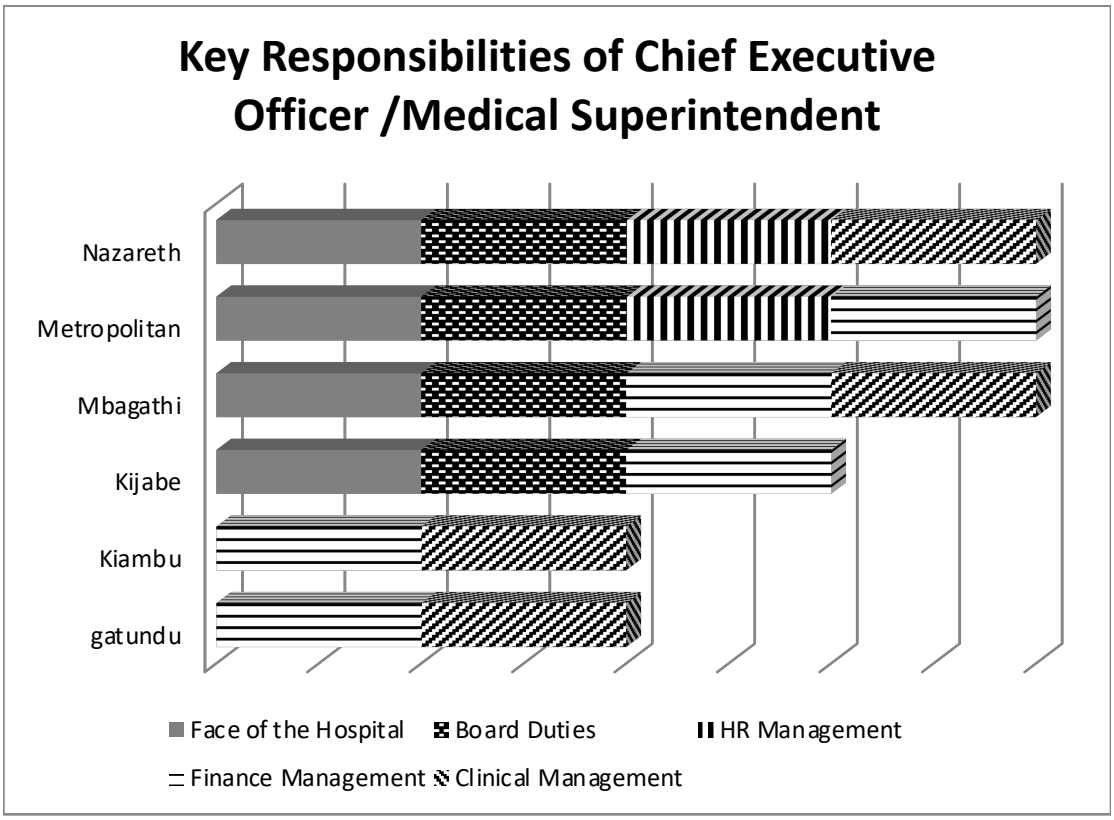


Figure 4: Key Responsibilities of the Chief Executive Officer/ Medical Superintendent by Hospital

"…The executive expenditure committee meets monthly and looks at revenue collection and expenditure in the revenue. They want to see the collection of revenue in this institution and how it is collected per department…"(HMT,Mba).

Despite the lack of clear authority for the medical superintendent they were still the ones called upon to answer when things were not right.

"…The medical superintendent is the overall head; he is the coordinator of all the other parties that happen within the facility whether they are happening in the maternity or whenever it is happening. He is the one who is to be answerable if there are no supplies…."(HMT,Gat).

"…The CEO is the eye of the board on the facility, so I have the responsibility of a day to day learning leading the strategy in the hospital…"(HMT,Kij).

The nursing officer in charge (nursing services manager, nursing director) was an experienced nurse (> 12 years median experience) with an educational background of higher diploma and in some cases built up into a degree over time. Kiambu Hospital nursing officer in charge had the longest professional experience (29 years) but had served just one year at the specific hospital. The government hospitals (Mbagathi, Gatundu and Kiambu) presented a picture of rotation in posts, compared to the other hospitals where experience and time in particular job were much more closely related (Figure 5).

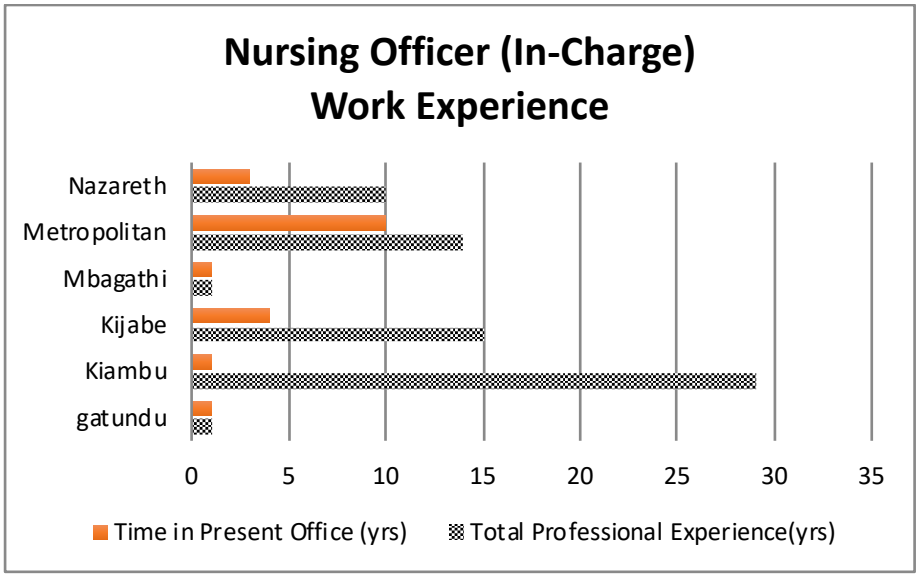


Figure 5: Professional and Job Experience of Nursing Officer In-Charge by Hospital

Compared to the nursing in charge, the administrators tended to have less years of on job experience (Median 4 years). The most experienced hospital administrators were found in Nazareth and Metropolitan hospitals (16 and 19 years respectively), compared to Gatundu and Mbagathi (1 and 3 years respectively).

However, in terms of time spent in current office, Mbagathi and Metropolitan and Kijabe hospital administrators were similar at 3-4 years(Figure 6). Unlike the MedSup all of whom had at least a masters degree, the administrators had varying qualifications from diploma, a bachelors and postgraduate degree and this regard were similar in qualification like the nursing officers in charge.

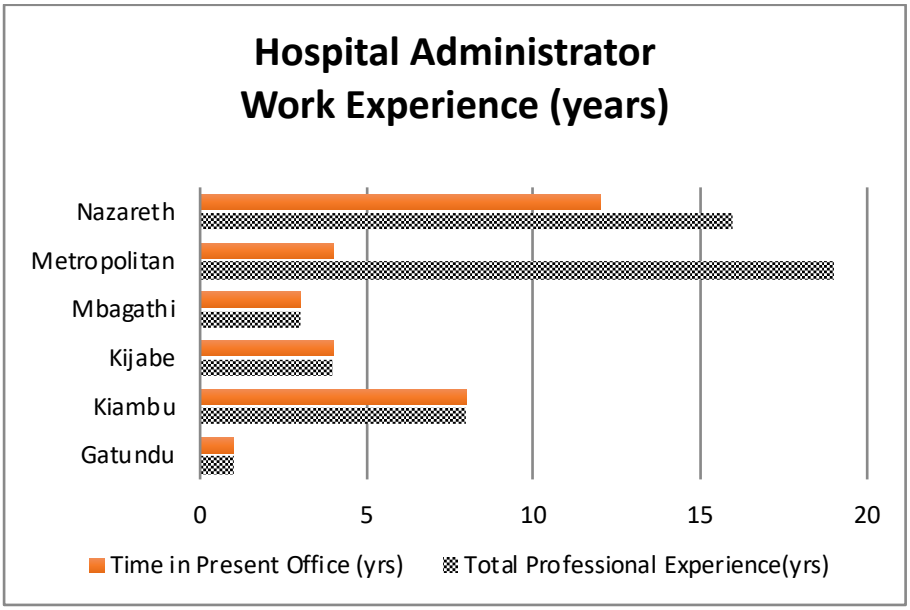


Figure 6: Hospital Administrator Professional and Job Experience by Hospital

Management Meetings. All six hospitals reported having regular hospital management meetings. Once a month was the norm except for the private hospital, which held them every week. Each hospital had a median of seven committees to which hospital management belonged. Procurement and maternal mortality were the two committees that cut across all the different types of hospitals(Table 12).

Table 12: Hospital Management Team Committees by Management Area

Management Areas	Examples of Committees	Gatundu	Kiambu	Kijabe	Mbagathi	Metropolitan	Nazareth
Financial Management	Billing/User Fees	x	x		X	x	
	Expenditure	x	x		X	x	
Clinical/ Patient Care	Quality of care				X	x	x
	Maternal death audits				X	x	x
	Infection Control				X	x	x
Support Services	ICT/Automation					x	
	Procurement	x			x	x	
	Marketing						x
Human Resource Management	Occupational Safety			x			
	Disciplinary			x			
	Training	x			x		

Legend 'x' = presence of committee

In public governance hospitals the hospital management team administered affairs through committees for example executive expenditure. In the non-government most of the committees were to manage the clinical side for example quality of care, drug/antibiotic. The proportion of hospital management committees that were clinical (infection control, maternal death audit, quality of care) was associated with perinatal mortality P<0.001,95%CI: 1.5143-4.2844). However, it is noteworthy that middle managers such as the in charges of maternity did not mention working through committees.

4.2.4. Hospital Patient Loads

This study reported both high and low maternity patient loads ranging from an average of less than one delivery in the smallest hospital to more than 21 deliveries per day in the busiest hospital. The hospitals' patient loads ranged from just over 300 patients per year in one facility to more than 7,600. In terms of growth public hospitals experienced tremendous growth in the number of patients seen with one growing by 62% over from 2012; overall growth rate for all the facilities was a more modest 16%. This growth in the number of patients was marked in the public hospitals (25%) and the private hospitals (33%) while the not for profit recorded negative growth (-4%) in the number of maternal delivery patients seen (Table 13).

Table 13: Maternal Delivery Patients seen per Facility/Year: 2012-2014

Total No. Maternal Delivery Patients seen per facility, Year 2012-2014							
Facility/ Year	2012	2013	2014	Avg.	Growth over 3 yrs.	Owner	Growth over 3 yrs.
Gatundu	3,258	3,690	4,195	3,714	29%	Public (Govt.)	25%
Kiambu	7,681	7,073	8,279	7,678	8%		
Mbagathi	3,314	3,451	5,361	4,042	62%		
Kijabe	2,324	2,393	2,522	2,413	9%	Public (faith based)	-4%
Nazareth	4,426	4,047	3,985	4,153	-10%		
Metropolitan	279	312	371	321	33%	Private	33%
Total	21,282	20,966	24,713		16%		

However, this increase in the number of deliveries conducted was not matched by a corresponding increase in staffing or beds. The respective ratios deteriorated over the three year period with Mbagathi hospital reporting the largest change at -62%, followed by Metropolitan (-33%), Kijabe (-29%). Kiambu and Gatundu had changes in patient staff ratio at -8% and -9% respectively, while Nazareth hospital was different with an improvement in patient/staff ratio of 10% over the three year period (Table 14). Part of the relatively large deterioration in patient staff ratios was ameliorated by an increase in efficiency and an increase in the number of beds.

Table 14: Changes in Patient /Staff ratio: (2012-2014).

	Patients/per staff ratio			
Hospital/Year	**2012**	**2013**	**2014**	**Over 3 years**
Metropolitan	8	8	10	-33%
Kijabe	27	28	29	-29%
Mbagathi	47	49	76	-62%
Nazareth	89	81	80	10%
Kiambu	145	133	156	-8%
Gatundu	204	231	262	-9%

The average bed turnover ratio (BTR) for Gatundu, Kiambu, and Mbagathi (public hospitals) was relatively high at 161,126 and 107 compared to Nazareth, Kijabe and Metropolitan at 67,45 and 25 respectively. While Metropolitan (38%), Kijabe (9%) and Gatundu (8%) recorded improved BTR suggesting greater efficiency; while Nazareth (-10%), Mbagathi (-12%) and Kiambu had worse BTR in 2014 when compared to 2012 at -10%, -12% and -13% respectively (Table 15).

Table 15: Bed Turnover Ratio by Hospital: (2012 – 2014).

	Bed Turnover Ratio				
Hospital	**2012**	**2013**	**2014**	**Average (2012-2014**	**Change over 3 years**
Metropolitan	21	24	29	25	38%
Kijabe	43	44	47	45	9%
Nazareth	71	65	64	67	-10%
Mbagathi	110	115	97	107	-12%
Kiambu	135	124	118	126	-13%
Gatundu	155	160	168	161	8%

Other than patient co-morbidity a key characteristic that determines patient outcome in MDS is age. One third of patients admitted were in the 25-29 year age group with 29% in the 20-24 year bracket. A further 21% were aged 30-34 with those over 35-39 being 9% of the population. Those aged 19 and under made up 6% of the population, and those aged over 40 years making up 2%, the latter two categories being classified as high risk mothers.

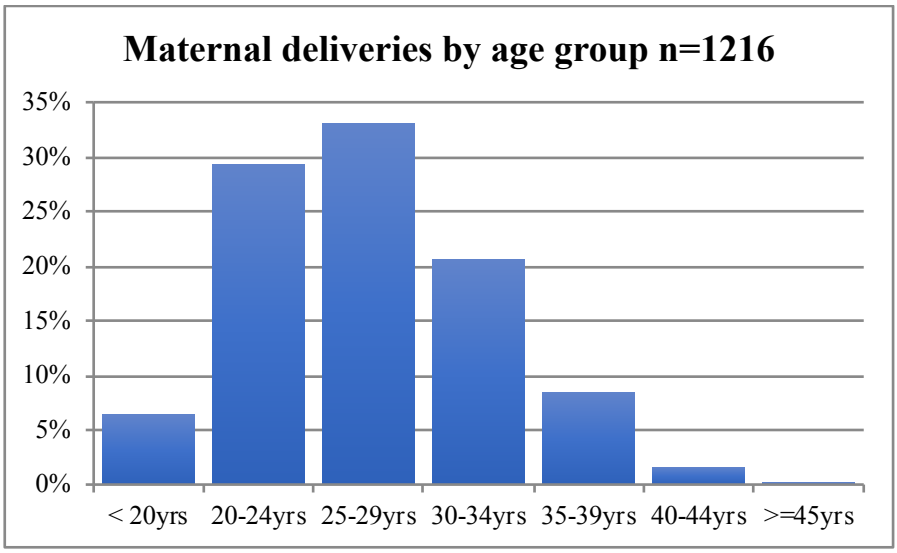


Figure 7: Maternal Deliveries all hospitals by Age Group

4.3. The Effectiveness of Maternal Delivery Services

Effectiveness can be used as a measure of service delivery. Effectiveness in this study was measured by adverse maternal or foetal outcome during delivery and included patient outcomes of maternal and perinatal mortality and quality of care. The results are presented in two parts; the first part examines three morbidity indicators that signify the quality of maternal delivery services; the caesarean section rate, the patient length of stay and, the readmission rate. Incentives and challenges of delivering effective maternal delivery services are also presented.

4.3.1. Caesarean Section Rates

The average caesarean section rate for the six hospitals was 25.4% (N=22,320). Metropolitan hospital had the highest rate at (46%, N=321), followed by Kijabe (39%,N=2,413), Nazareth, (33%, N=4,153), Gatundu (25%, N=3,714), Mbagathi (22%,N=4,042), and Kiambu hospital with the lowest rate (18%,N=7,678) (Figure 8).

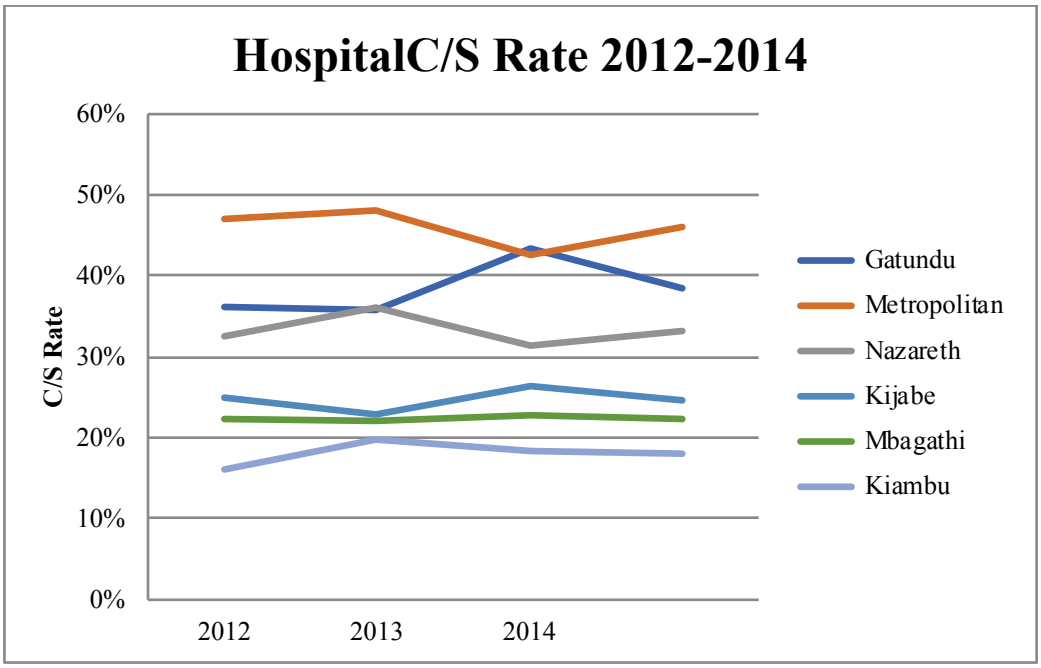


Figure 8: Hospital Caesarean Section Rate (2012 -2014)

The main indication for a caesarean section was a patient having had a previous caesarean section (32%), followed by foetal distress (23.1%), obstructed labour (8.1%) and poor presentation (6.6%) with other various causes (30.2%).

Table 16: Types and Indications for Maternal Deliveries

Type of Delivery	Variable	Frequency (%)
Type of delivery (n=1216)	SVD (Normal delivery) Caesarean section (CS) Assisted Vaginal Delivery Missing	72.1% 27.3% 0.2% 0.4%
Indications for CS (n=334)	Previous caesarean section Foetal distress Obstructed labour Poor presentation Other	32.0% 23.1% 8.1% 6.6% 30.2%
Indications for Assisted Vaginal Delivery	Breech presentation	100%

4.3.2. Length of Stay

The median length of stay (LOS) for all patients admitted for MDS was just under two days (range 0-39 days). For Kiambu and Mbagathi hospitals the median LOS was less than a day, that is patients were admitted for delivery and discharged in less than 24 hours; while for Gatundu, Kijabe and Metropolitan the median LOS was two days with Nazareth at four days. However, when average (mean) length of stay (ALOS) was calculated Nazareth, Kijabe and Metropolitan were at 5.1, 3.1 and 2.9 days respectively while Gatundu, Mbagathi and Kiambu were at 2.3,2.1 and 0.7 days respectively. The ALOS was associated with perinatal mortality P<0.001, 95%CI: 0.6472-0.7542).

Table 17: Length of Stay for Maternal Delivery Services

Length of Stay(days)				
Facility name	**Mean**	**Median**	**Minimum**	**Maximum**
Nazareth	5.1	4.0	1.00	39.0
Kiambu	0.7	<1	<1	12.0
Metropolitan	2.9	2.0	<1	13.0
Gatundu	2.3	2.0	<1	23.0
Mbagathi	2.1	1.0	<1	36.0
Kijabe	3.1	2.0	1.00	29.0
Average	2.7	2.0	<1	39.0

4.3.3. Readmissions

Thirteen patients (1.1%,N=1,182) were recorded as being readmitted within six weeks of delivery. Vaginal and uterine bleeding, eclampsia and sepsis were the main contributors of readmission at four, two and two patients respectively.

4.3.4. Health Workers

In terms of cadre, the private hospital had the highest number of qualified staff including medical officers, obstetricians and paediatricians attending to patients. However, they were the only ones to employ consultants and medical officers on non-full time basis. No hospital employed an independent contractor in delivery of maternal delivery services. They also did not employ clinical officers in the maternity department. On average hospitals had a ratio of 1.1 registered nurses to midwives except Gatundu that did not have a breakdown.

4.3.5. Maternal and Perinatal Mortality

The two major outcomes for assessing the effectiveness of maternal delivery services were maternal and perinatal mortality. In this study the average maternal mortality ratio for the 2012-2014 period was 91.44 per 100,000 births. However, there were significant differences between the hospitals. One private hospital did not record a single maternal death over the three year period. In the same category one not for profit hospital recorded a record high 32 maternal deaths in one year, 2012, all concentrated around the time of a doctors strike[13] when the neighbouring public facilities were not receiving patients (Table 18).

Table 18: Maternal Deaths by Hospitals by Year (2012-2014)

Maternal Deaths 2012 -2014			
Hospital	2012	2013	2014
Metropolitan	0	0	0
Gatundu	5	2	4
Mbagathi	5	8	4
Nazareth	32	3	1
Kiambu	1	10	3
Kijabe	0	1	6
Total deaths	43	24	18

The maternal mortality ratio (MMR) was almost the same for corporate governance compared to public governance hospitals at 91.32 and 91.57 per 100,000 deaths respectively per year. The type of cadre represented by presence of midwives and obstetricians was not significantly related to maternal mortality (P=0.374,95% CI: -0.129-0.275)) and (P=0.694, 95%CI: -2.300-1.691) respectively). The maternal mortality was not associated with the type of delivery (P=0.069, 95%CI: 0.8725-49.6605).

Maternal mortality was associated with the age of the mother (P=0.036). Most number of perinatal deaths occurred to mothers aged 20 – 24 years followed by those delivered to mothers aged 30 – 34 and 35 -39 years. However proportionally in relation to number of deliveries, mothers aged 35 -39 had the higher perinatal mortality.

Table 19: Maternal Deaths by Age of the Mother

Age (Grouped) Years	Perinatal Deaths	
	Yes	No
< 20	0	77 (100.0%)
20-24	6 (1.7%)	346 (98.3%)
25-29	3 (0.8%)	394 (99.2%)
30-34	4 (1.6%)	243 (98.4%)
35-39	4 (3.9%)	98 (96.1%)
40-44	2 (10.0%)	18 (90.0%)
>=45	0	3 (100.0%)
P=0.036		

The number of perinatal deaths was lower in private governance hospitals; Metropolitan, Nazareth, Kijabe (1.04, 10.52, 14.64 deaths per 1,000 births respectively) compared to the public hospitals, (Mbagathi, Gatundu, Kiambu,) (29.61, 35.18, 37.12 deaths per 1,000 births respectively).

Table 20:Perinatal Deaths by Hospital

Perinatal Deaths				Perinatal rate per 1,000 Births
Hospital	**2012**	**2013**	**2014**	
Kiambu	319	328	208	37.12
Gatundu	119	113	160	35.18
Mbagathi	125	76	158	29.61
Kijabe	40	41	25	14.64
Nazareth	22	57	52	10.52
Metropolitan	0	0	1	1.04
Total	625	615	604	27.54

Furthermore, when perinatal deaths were analysed by aggregating private hospitals (Kijabe, Nazareth and Metropolitan vs. public (Gatundu, Kiambu, Mbagathi) the rates were 5 and 36 per 1,000 births respectively. Perinatal deaths were associated with the type of delivery (P=0.004, 95%CI: 1.65-1.86) and with SVD deliveries (P=0.034).

Table 21: Type of Delivery and Perinatal Deaths

	Perinatal Deaths	
Type of Delivery	**Yes**	**No**
SVD (Normal Delivery)	69	808
Caesarean Section	24	308
Assisted Delivery	1	1
P=0.004,95% CI: 1.65-1.86		

4.3.6. Standard Operating Procedures and Maternal Delivery Service

All six hospitals reported having standard operating procedures (SOP) in managing maternal delivery services (MDS). Three of the facilities, Kiambu, Gatundu and Kijabe hospitals reported having annual work plans. All six hospitals had a scheme of service and code of conduct for their employees. None reported having been inspected by the national Ministry of Health, but county health teams had visited all in the past year except for Metropolitan hospital.

"…I want to say that the county comes to the ground very often and especially to check and monitor maternal outcomes and hold discussion…which we do with them..."(HMT,Kij).

With respect to inspection by non-MOH regulator such as the National Environmental Agency, only the non-government hospitals namely Kijabe and Metropolitan 'had interactions.

Table 22: Standard Operating Procedure in MDS Management by Hospital

Type of SOP	Gatundu	Kiambu	Kijabe	Mbagathi	Metropolitan	Nazareth
Scheme of Service	x	x	X	X	x	x
Written SOP	x	x	X	X	x	x
Annual Work Plans	x	x	X			
Donor Inspection	x	x				
MoH Supervision						
External Regulations		X		X	x	
Non MoH Regulator Inspection			X		x	
Total number of SOPs	4	5	3	3	4	2

'x' = Availability of Standard Operating Procedures(SOP)

4.3.7. Incentives availed to Promote Maternal Delivery Services

A number of policy initiatives were reported as being incentives that promoted maternal delivery services. The availability of free vaccines and antiretroviral medicines topped the list, while for government facilities medical equipment whether donated by donors or provided by government were cited as major incentives. However, some of the items mentioned as incentives were basic commodities.

"…I would want to say that like now they have bought equipment for the maternity unit…Like delivery…they have added delivery packs, delivery beds, the BP machines and they are making sure that even the thermometers are available..."(MT,Kia).

In private hospitals there were few examples of incentives from government to support maternal delivery services other than provision of vaccines. Respondents explained the sense of not working in tandem with government initiatives to promote maternal care.

"…There are no incentives from the national government…Free maternity is not in this facility. People pay for the deliveries..."(MT,Naz).

"…they have tried to enrol us in this voucher system but the money is not enough there…"(HMT,Met).

"…We are still in the transition phase… at the county level, the county has not been so proactive in providing anything for us they make promises…"(HMT,Kij).

The availability of training was mentioned by three of the six hospitals as being an incentive to providing maternal delivery services.

"…If they would actually include us in the trainings that are maternal; normally run by the government if they would include us in the familiarization, networking, benchmarking activities all this are resources and incentives that would help us improve our maternal..."(HMT,Kij).

No hospital cited a service delivery incentive. However additional human resource and medical products were cited as possibly promoting maternal delivery services by one hospital. Of interest was the comment that 'borrowing' of their medical supplies by government health facilities was viewed as a disincentive for the promotion of maternal delivery services(Table 23).

Table 23: Incentives to Promote Maternal Delivery Service by Hospital

WHO 6-building blocks (Under which Incentive falls)	**Incentives cited**	**Gatundu**	**Kiambu**	**Kijabe**	**Mbagathi**	**Metropolitan**	**Nazareth**
Incentives							
Leadership	Supportive supervision	x					
Health Financing	FMS	x					
Human Resource	Training		x	x			x
Medical Products	ART/Vaccines /Med Products	x	x	x		x	x
	Equipment	x	x	x	x		
Proposed Incentives							
Human Resource	More Staff	x					
Medical Products	More Equipment	x					

'x'= reported presence of incentive

4.3.8. Challenges faced in delivering Maternal Delivery Services

Hospitals reported a number of challenges in provision of maternal delivery services. Delays in reimbursement of maternal delivery service funds were the most commonly cited challenge followed by shortages in medical staff especially doctors. Poor information flow within the health facility also featured as a challenge. Inadequate medical supplies, procurement delays and inadequate leadership structures and skills were challenges identified in public hospitals. Staff poaching by government hospitals was identified as a problem for faith based hospitals (Table 24).

Table 24: Challenges Experienced by Hospitals in Delivery of Maternal Services

6-building blocks	Challenges faced by the hospital	Gatundu	Kiambu	Kijabe	Mbagathi	Metropolitan	Nazareth
Leadership	Leadership structures/skills		x		x		
	Political violence			x			
Health Financing	Low reimbursement levels (OBA, FMS, NHIF)			x			
	Reimbursement delays (OBA, FMS)	x	x	x	x		x
	Low resources (financial)	x					
	Patient inability to pay					x	
Information	Poor information flow		x	x			x
Human Resource	Low midwife skills					x	
	Staff poaching			x		x	x
	Shortage non-resident HR (Drs)		x		x	x	x
Medical Products	Over supply of equipment				x		
	Inadequate medical supplies		x		x		
	Procurement delays		x		x		
Service Delivery	Referral system delays						x
	Quality perceptions by patients					x	
	Lack of adequate space + bed capacity	x					

Key 'x' indicates presence of that challenge

Respondents at senior level also reported a lack of engagement with Ministry of Health at county and national level in strategy development of maternal delivery services as elaborated by one respondent.

"…The county Ministry of Health have not given us an opportunity to contribute towards the formation of the county health strategy...we would want to be equal partners in provision of strategy and implementation strategy...we will go for discussions… they will set a circular and we are told from now on xyz will be happening and you are not involved..."(HMT,Kij).

4.4. **The Equity of Hospital Maternal Delivery Services**

Vertical and horizontal equity were measured by assessing how the hospitals navigated pregnant women through the delivery and what the outcomes were. Age of mother, conditions that might lead to complicated delivery were taken as proxies for vertical equity; while cost of care was the proxy for horizontal equity. Overall, the age of the mother was associated with the likelihood of a caesarean section ($P<0.001$).

Table 25: Type of Delivery Associated with Mother's Age

Age Grouped		Type of delivery		Total
		SVD (Normal delivery)	Caesarean Section	
< 20yrs	Count	65	12	77
	% within Age (grouped)	84.4%	15.6%	
20-24yrs	Count	279	73	352
	% within Age (grouped)	79.3%	20.7%	
25-29yrs	Count	290	106	396
	% within Age (grouped)	73.2%	26.8%	
30-34yrs	Count	162	84	246
	% within Age (grouped)	65.9%	34.1%	
35-39yrs	Count	56	45	101
	% within Age (grouped)	55.4%	44.6%	
40-44yrs	Count	11	9	20
	% within Age (grouped)	55.0%	45.0%	
>=45yrs	Count	1	2	3
	% within Age (grouped)	33.3%	66.7%	100.0%
Total	Count	864	331	1195
	P<0.001			

In government hospitals most deliveries occurred to mothers aged 20-24 years (218 births, 36.7% of deliveries) followed by mothers aged 25-29 years (172 births, 29.0% of deliveries).

Table 26: Type of Delivery associated with Mother's Age by Hospital Ownership

		Private for Profit Hospitals			Faith based Hospital			Government Hos	
Age Grouped		Type of delivery			Type of delivery			Type of delivery	
		SVD	C/S	Total	SVD	C/S	Total	SVD	C/S
< 20yrs	Count	1	1	2	9	5	14	55	6
	% within Age	50.0%	50.0%		64.3%	35.7%		90.2%	9.8%
20-24yrs	Count	26	13	39	65	30	95	188	30
	% within Age	66.7%	33.3%		68.4%	31.6%		86.2%	13.8%
25-29yrs	Count	56	30	86	94	44	138	140	32
	% within Age	65.1%	34.9%		68.1%	31.9%		81.4%	18.6%
30-34yrs	Count	24	21	45	62	43	105	76	20
	% within Age	53.3%	46.7%		59.0%	41.0%		79.2%	20.8%
35-39yrs	Count	10	6	16	14	31	45	32	8
	% within Age	62.5%	37.5%		31.1%	68.9%		80.0%	20.0%
40-44yrs	Count	6	2	8	1	5	6	4	2
	% within 1. Age	75.0%	25.0%		16.7%	83.3%		66.7%	33.3%
>=45yrs	Count	0	2	2	245	158	403	1	0
	% within Age (grouped)		100.0%		60.8%	39.2%		100.0%	
Total	Count	123	75	198	9	5	14	496	98
	% within Age (grouped)	62.1%	37.9%		64.3%	35.7%		83.5%	16.5%

In contrast to government hospitals most deliveries in the private for profit hospital occurred to mothers aged 25-29 years (86 births 43.4% of deliveries) followed by mothers aged 20-24 years (39 births 19.7% of deliveries).

In faith-based hospitals most deliveries occurred to mothers aged 25-29 years (138 births, 34.2% of deliveries) followed by mothers aged 30-34 years (105 births, 26.1% of deliveries).

When type of delivery as compared to mother's age, across the different types of hospital (ownership, government, faith-based or private), there was a lack of vertical equity with respect to age in government hospital (P=0.340) and in the private for profit (P=0.410), compared to faith based (P<0.001).

In terms of conditions likely to lead to different treatment of the mother, only eclampsia (n=94) was found to be significant with all six hospitals managing the condition in a similar fashion, mainly through caesarean section (P=0.039). A patient with eclampsia was three times more likely to have a caesarean section compared to one without (OR=3.44 CI 95%1.0672-11.1173 P=0.039).

Table 27: Association of Eclampsia and Type of Delivery

Eclampsia		Type of Delivery		Total
		SVD (Normal)	Caesarean Section	
Yes	% Yes (n)	50.0% (7)	50.0% (7)	100.0%(14)
No	% No (n)	77.5% (62)	22.5% (18)	100.0% (80)
Total	% within eclampsia	73.4% (69)	26.6% (25)	100.0%(94)
OR=3.44 CI 95%1.0672-11.1173 (P=0.039)				

The presence of haemorrhage, a major cause of maternal and perinatal mortality was not a significant factor in determining the method of delivery (P=0.644).

Table 28:Association of Haemorrhage and Type of Delivery

Haemorrhage	Type of Delivery		Total
	SVD (Normal delivery)	Caesarean section	
Yes	68.8% (11)	31.3%(5)	100.0%(16)
No	74.4%(58)	25.6%(20)	100.0%(78)
Total	69	25	94
P=0.644 OR=1.318 95% 0.4079 to 4.2598			

Public hospitals did not charge patients directly for MDS, but private hospitals did. Patients who paid for MDS were three times more likely to have a caesarean section OR=3.147 95%CI 2.4018 to 4.1252(P<0.001).

Table 29:Relationship between Payment for MDS and Type of Delivery

Did the patient pay for MDS?	Type of delivery		Total
	SVD (Normal delivery)	Caesarean section	
Yes	61.6% (369)	38.4%(230)	100.0%(599)
No	83.5%(505)	16.5%(100)	100.0%(605)
Total	874	330	1,204
OR=3.147 95%CI 2.4018 to 4.1252(P<0.001).			

The average bill paid was Kshs 30,818 (US$ 304.2)[12] (range Kshs 11,522-49,844 (US$ 113.7 – 492). The majority (52.1%) paid cash, while NHIF contributed some to the bill in 27.9% of cases at an average cost of Kshs 6,000 (US$59). Those who were being paid for by their employer were at 25% but the average bill was much higher at 54,464.0 (US$ 537.7),(range Kshs 40,157.5-104,492.8 (US$ 396.4-1031.5)). About 18.5% of patients had their bills settled through donor funding, output based approach (OBA) with an average cost of Kshs 18,000 (US$177.7). Those with personal private insurance were just 1.3% of patients at an average cost of Kshs 52,000 (US$513) similar to company funded payments. It is noteworthy that a significant number of patients (26.9%) who were required to pay for services did not and almost all (97.6%) received a waiver of fees. The small proportion who were given credit (2.1%) came later to clear their bills (average cost of Kshs 45,523 (US$419.8)).

[12] 1 $US = 101.3 Kenya shillings (Central Bank of Kenya Key indicative rate) www.centralbank.go.ke accessed 12th September 2016

Table 30:Payment for Maternal Delivery Services

Did the patient pay for MDS? (total n=1216)	Frequency (%)	Total paid in Kshs, Median (IQR)	Total paid in US$, Median (IQR)
	49.3	30,818 (11,522-49,844)	304.2 (113.7 – 492)
Mode of payment to the hospital			
Cash	52.1	15,972 (6,976.3-30,804.0)	157.7 (68.9 – 304.1)
Personal private insurance (PPI)	1.3	52,356.5 (39,615.3-105,423.8)	516.8 (391.1 – 1040.1)
Company medical fund	25.0	54,464.0 (40,157.5-104,492.8)	537.1 (396.4 – 1031.5)
NHIF	27.9	6,000.0 (6,000-18,000)	59.2 (59.2 – 177.7)
Donor project fund e.g. OBA	18.5	17,933.5 (11,729.8-30,495.3)	177 (115.8 – 301)
Fee waiver for those who did not pay	26.9		
Full waiver (n=164)	97.6		
Was the patient given any credit?	2.1		
Patient cleared bill within the credit period	1.9	42,523 (20,000-61,656)	421 (198.1 – 610.5)

4.5. **Relationship Between Ownership, Governance Structure and Maternal Delivery Services**

The ownership characteristics of the various hospitals when reviewed through the traditional classification of for profit, not for profit and government, showed the expected differences. Legally all were expected to have as their primary oversight body the MP&DB. In reality the medical officer who often provides supportive supervision within the health system comes from the county hospital level. As such after registration (and in the case of public hospitals almost never) there was no recorded contact from the MP&DB at board or hospital management level except through renewal of license.

However other bodies such as National Environment Management Agency (NEMA), laboratory board reviewed specific operations of the hospitals that touched on the particular agencies mandate but not directly on the clinical care as explained by respondents.

"…We started having NEMA coming recently when our waste system broke down…"(HMT,Naz).

"…boards like for NEMA and pharmacies and poisons board come to inspect…The inspections occur annually…"(HMT,Met).

The non-government hospitals had many agencies that demanded fees from them, which the government hospitals were exempt.

"…we have to comply with a lot of things,… medical board license, lab license, pharmacy license, county license, CBD license, …I think it costs us about seven hundred and fifty thousand to a million shillings each year to comply... because [with] county government you pay per bed and the medical board also has a fee which is based on bed. The lab gives a fee based on that and the staff themselves have to comply…There is NEMA, there is KRA, there is NHIF, there is NSSF and there is NITA what used to be called…' '…. they are called national industrial training institute, then there is OSHA the occupational health and training institute, there is the insurance for staff comply with the workman's compensation laws and we have to comply with RBA because we are a pension fund…"(HMT,Met).

Of the six hospitals in the study, two had not constituted boards at the time of the study. There was an association between the presence of a board and the likelihood of a newborn not dying. A newborn was two times more likely to die in a hospital without a board than one where a board existed (Odds Ratio 2.02, 95% CI:1.8498-2.2537,P<0.001). However, the presence of female board members was not associated with perinatal mortality (P=0.06).

In terms of financial management, the private for profit board directors who were also all shareholders had fiduciary responsibility to ensure that the hospital made profit. While the non-profit hospitals also had to return a surplus the directors were not held responsible for the financial state of the hospital.

In the case of public governance hospitals all operated under perpetual deficits and uncertainty over the budgets that they had and controlled, necessitating frequent reviews of budget. Only Kijabe hospital had a written strategic plan reflecting the uncertainty over revenue and expenditure control.

All six hospitals were publicly owned, something which some of the respondents were aware of.

"…The day the county and the national government will actually stop categorizing hospitals in this country as mission, private and government we don't mind being called by that name but we want to be seen to be part of the health system..."(HMT,Kij).

The private hospitals whether for profit or not shared many more characteristics than the non-profit shared with the government hospital including fiduciary responsibility by the directors.

This differences between the government and private was reflected in patient outcomes. Having an experienced operational head of the hospital as opposed to purely clinical experience had significant influence on patient outcomes. As presented earlier the average length of professional experience (median 15½ years) was not as critical compared to years in the position of CEO/Med Sup (median 8.7 years) in being associated with perinatal mortality (R^2= -0.440 and -0.872 respectively).

Table 31:Characteristics of Governance Structures by Ownership

Characteristic	Public for profit	Public not for profit	Public (government)
Board reports to:	Shareholders	Owner Representative	County executive for health
Board representative	Director	Trustee	Trustee
Surplus/profit	Profit distribution	No profit distribution	Perpetual deficit management
Fiduciary responsibility	Yes	Yes	No
Hospitals	Metropolitan	Nazareth, Kijabe	Mbagathi, Kiambu, Gatundu
Primary Legal act	Cap 486	NGO Act 1992/PBO Act 2015	County government Act 2012
Primary Oversight body	MP&DB	MP&DB	MP&DB
Board Formation	Election	Election	Selection
Term Limits	No	Yes	Yes
Inspecting agency	Inspected by GOK agencies e.g. training Laboratory Council, Radiation Protection Board, NEMA, NCK, PPB, Single Premises Permit License, Atomic Nuclear Act, the Medical Practitioners and Dentists Board (MP&DB	Inspected by various GOK agencies e.g. training Laboratory Council, Radiation Protection Board, NEMA, NCK, PPB, Single Premises Permit License, Atomic Nuclear Act (MP&DB	Not Inspected by MP&DB. Ministry of Health
Board Secretary	CEO	CEO	Med Sup

Patient loads were higher in government facilities compared to private hospitals, with larger patient numbers associated with higher perinatal mortality (OR= 3.08 95% CI 2.6879 to 3.5362, P<0.001).

Table 32:Risk of Perinatal Death associated with Type of Governance Structure

Status of Newborn	Type of Hospital	
	Public (Government)	Private (non-profit, for profit)
Alive	44,696	20,421
Dead	1,606	238
Total	46,302	20,659
Odds Ratio 3.08 95% CI 2.6879 to 3.5362 (P<0.001)		

Hospitals were categorized into two governance structures. Hospitals with large boards (>8) representing diverse bodies, where board members held no fiduciary responsibilities and were managed through many administrative committees and had a weak CEO, first among equals. In the second category were hospitals with relatively smaller boards (<8), members represented shareholders/owners, board members held fiduciary responsibilities, management committees focused on clinical issues and had a strong CEO with functional administrative heads below them. Hospitals having at least 40% of board members registered with the Medical Practioners & Dentist Board were associated with reduced perinatal mortality (P<0.001 (95% CI: 6.8073-13.9712) (R2=0.672)).

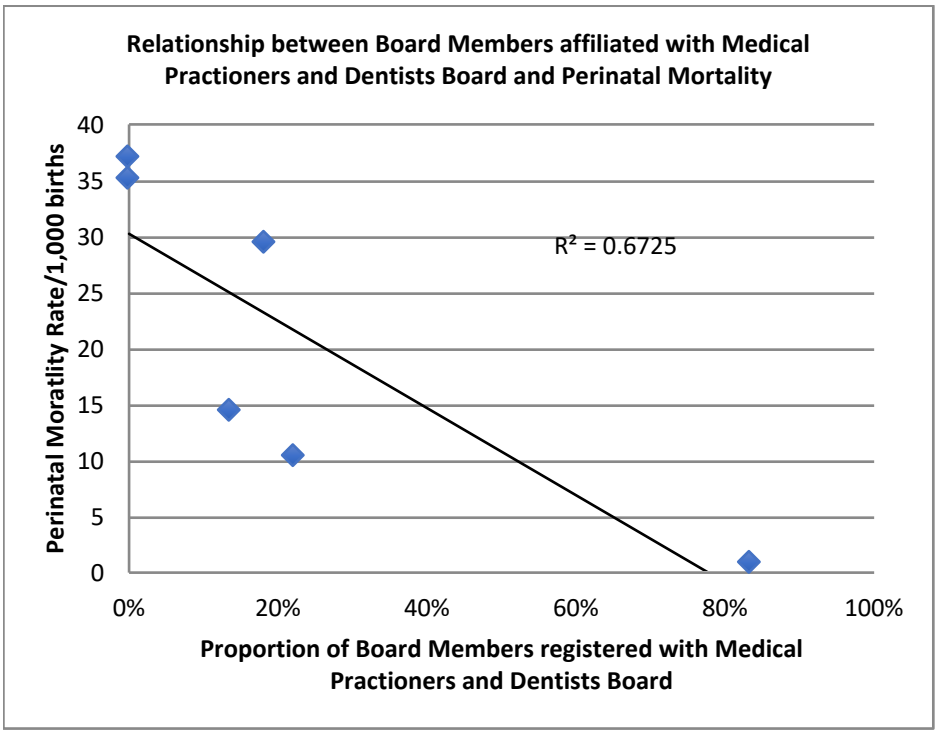


Figure 9:Relationship between Board Members affiliated with Medical Practioners and Dentists Board and Perinatal Mortality

Theoretically the board was the final authority but in practice actual power lay with the hospital management team especially the CEO/Medical Superintendent and not with the board. Corporate governance hospitals were led by chief executives with an average of 14 years in office, compared to the medical superintendent in public governance hospital average of three years. There was a correlation between how long a chief executive had served and perinatal mortality, the shorter they had been in office, the higher the perinatal mortality (R^2= -0.852).

All six hospitals reported having regular hospital management meetings at least once a month with each senior manager belonging to a median of seven committees. Procurement and maternal mortality were the two committees that cut across all the different types of hospitals. In public governance hospitals the hospital management team administered operations through committees while in corporate governance this was done through substantial office appointments. Committees in the latter focused on monitoring clinical quality of care. The presence of such committees were correlated with perinatal mortality (P<0.001 95% CI: 1.5143-4.2844).

The average caesarean section rate for the all the hospitals was 25.4%. A private governance hospital had the highest rate at 46%, while a public governance hospital had the lowest rate at 18%. Maternal deaths recorded were 43,24,17 in 2012,2013 and 2014 respectively giving an average maternal mortality ratio over the 3-year period of 91.44 per 100,000 births. However, there was no difference between corporate and public governance hospitals, the maternal mortality ratio (MMR) was 91.32 and 91.57 per 100,000 deaths respectively. Perinatal deaths were much more common when compared to maternal deaths at an average of 27.54 per 1,000 live births.

Public governance hospitals had three times higher perinatal mortality rate when compared to corporate governance hospitals. Perinatal deaths were associated with SVD deliveries (P=0.025) and the age of the mother (P=0.036).

Government provided few incentives for hospitals to conduct maternal delivery services but experienced a number of challenges the most commonly cited being delays in reimbursement of maternal delivery service funds. The presence of the incentives, in themselves, did not seem to confer any advantages in terms of patient outcomes. Public hospitals no longer charge for maternal delivery services, but corporate governance hospitals charged an average of Kshs 30,818 per delivery (US$304). A majority of those paying (52.1%) paid cash. However, 26.9% of those required to pay were waived from paying by the hospital.

Chapter 5:Discussion

This study sought to explore the relationships between ownership and governance of hospitals and delivery of maternal delivery services. chapter presents a discussion of the key study findings presented in the results chapter. The discussion is guided by the main study objective, which was “to explore the relationship between hospital governance and maternal delivery service outcomes”. Each of the four specific objectives namely to; describe the governance structures of different hospital ownership types; determine the equity of hospital maternal delivery services; assess the effectiveness of maternal delivery services in the hospital and lastly; examine the relationship between ownership types, governance structure and maternal delivery service is discussed in turn. Links are made between the key findings; existing literature and the implications thereof are discussed.

A cross sectional, mixed methods study of six primary referral hospitals in Kiambu and Nairobi Counties differentiated by ownership was conducted. Three public hospitals were selected and matched with two non-profit and one for profit hospitals. Within each hospital there were three sources of data namely; board members, members of the hospital management team, and files of patients admitted to the maternal delivery service in the past one year.

To describe the governance structure and processes in each facility, six key informant interviews were held with the health facility in-charges (one at each facility). Additionally, 40 questionnaire interviews were held with board members and members of the hospital management team.

Maternal delivery services was assessed by data abstraction of patient and hospital data. Patient data abstraction covered the period 2014 and focussed on equity of MDS. The hospital abstraction covered 2012-2014 and focussed on effectiveness of MDS.Hospital governance and processes were coded by emerging themes, of which key themes were compared against the research questions to generate a code book used to analyse all the transcripts. Hospitals ownership and governance structures were analysed by MDS outcomes using Chi-square (X^2), Odds Ratio and Poisson correlations.

In contextualising the governance structures, the maternal delivery services and the outcomes of the hospitals in this study, it is important to have an overview of the patient numbers seen and the types of patients admitted. This study reported both high and low maternity patient loads ranging from an average of less than one delivery in the smallest hospital to more than 21 deliveries per day in the busiest hospital. Large patient care loads whether expressed in numbers or qualitatively as 'overcrowding is not an uncommon occurrence in hospitals in sub-Saharan Africa, especially with the introduction of free maternity care (Ziraba *et al.*, 2009; Kizza *et al.*, 2011; Quansah, 2013).

The hospital with the fastest growing maternity unit reported patient numbers growing by 62% over a three-year period from 2012. This growth in the number of patients was marked in the public hospitals (25%) and the private hospitals (33%), but the faith-based hospitals recorded a fall in the number of maternal delivery patients seen (-4%).

The decline in patient numbers in the faith-based hospitals is in line with a systemic review and meta-analysis of faith-based organization participation in health service delivery in developing countries, which noted that while such organizations “provide essential health infrastructure and healthcare in many countries in Africa,” the magnitude of healthcare provided is lower than commonly perceived(Kagawa, Anglemyer, & Montagu, 2012, pp.6).

Overall growth rate for all the facilities was a more modest 16% still six times the average population growth rate. However, this increase in the number of deliveries conducted was not matched by an increase in staffing or beds. The respective ratios deteriorated over the three-year period. Part of the deterioration in patient staff ratios was ameliorated by an increase in efficiency and increase in the number of beds as evidenced by the reduction in patient bed ratios.

Patient characteristics including age, education and obstetric history are major factors in predicting mortality. Patient age has been consistently shown to be associated with hospital case outcomes(Fukuda, Okuma and Imanaka, 2014).In this study the 20-34 years age group constituted 83% of the population, while the high risk populations, the adolescents (under 19years) and those over 35 years of age made up 6% and 11% of the population respectively. A 38 countries review of maternal mortality age patterns found that the largest number of deaths occurred in the 20-34 years age group, largely because those were the ages at which women were most likely to give birth. The risk curve was a ‘‘J’’ rather than a “U” shape with the excess risk among adolescents lower than is generally assumed (Blanc, Winfrey and Ross, 2013).

Advanced maternal age is associated with increased risk of maternal adverse outcomes including perinatal mortality, independent of parity and socio-economic status (Huang *et al.*, 2008; Kenny *et al.*, 2013; Laopaiboon *et al.*, 2014). For young maternal age, low birth weight and preterm birth, may mediate infant outcomes such as neonatal mortality(Gibbs *et al.*, 2012).

Approximately 11% of births worldwide are to women aged 15–19 years old(World Health Organization, 2011). However, in this study those aged 19 and under made up 6% of the population, about half what would be expected. Maternal health service readiness assessment in the two counties though higher than the national average is still low (Table 4) and adolescents are known not to use health services due to lack of awareness and perceived unfriendliness of health workers to this age cohort (Owuondo *et al.*, 2015).

Among women aged 25-49 years the median age at birth is 20.3 years nationally, but is higher for Nairobi and Kiambu counties at 22.7 and 21.5 years respectively. This is corroborated by age of sexual debut, nationally 10.7% of all 15- 19 year olds have had sex by age 15, but Kiambu and Nairobi counties are among counties with the highest median age at first sexual contact, 19.4 and 19.3 years respectively(Kenya National Bureau of Statistics & ICF Macro, 2015).

5.1. Ownership and Governance Structures

In this study the governance structure of each hospital consisted of the board and the hospital management structures. Four of the six hospitals had boards. The two, Gatundu and Kiambu hospitals, that did not have boards constituted, was because the county government had yet to pass the necessary gazette notices. Both the hospitals without boards were public hospitals. The higher perinatal mortality associated with these hospitals that lack boards can be said to support the core argument of the need for a governance structure and processes that enable either the owners or representatives of the owner to exercise authority to ensure organizational accountability (Carver, 2010).

Overall two governance structures of hospitals were identified. These two categories can be labelled ‘public governance’ and ‘corporate governance’ classified as to whether or not the board members bear actual fiduciary responsibility (corporate governance) or not (public governance); and the ensuing characteristics of the board that enable responsibility to be exercised. These characteristics are described subsequently in the form of the board composition and processes.

Under the Ministry of Health facility classification, the hospital boards fell under categories 2,4 and 6; while under Bogue’s (2007) classification the boards would fall under categories 1 and 4.

5.1.1. Board Composition

The primary duty for all boards is oversight, working closely with management to ensure that organizational goals are met. Board duty is held to three legal standards: duty of care, duty of loyalty, and duty of obedience (Shukla and Lassner, 2012). Together these three collective duties form the fiduciary responsibility that all individual board members should account to. The fiduciary duty of the governing boards is to ensure the organization's fidelity to its core mission (Lee *et al.*, 2008). The board composition featured three aspects; the size, the professional backgrounds of the directors and who they represented.

In the public governance category, hospitals had large boards (>8) representing diverse bodies with board members holding no fiduciary responsibilities. This finding is in concordance with previous studies which concluded that among private not for profit hospitals, the roles and responsibilities of governing boards were complex as the fiduciary responsibility for such boards were simultaneously to ensure institutional viability and fulfil community obligations (Orlikoff and Totten, 2001). Public governance hospital boards on the other hand are seen as having a responsibility to their communities only and were expected to hold hospital assets in trust for them (Alexander *et al.*, 2008).

The public governance hospitals had more diverse representation of professionals, a finding consistent with the extant literature, which makes the case that members of large boards while more representative of various constituencies, fail to carry individual responsibility, have difficulties in communication and decision making (Pozen, 2010; Buchner, Schreyogg and Schultz, 2014; Abor, 2015).

A four country study (Ghana, Nigeria, Kenya and South Africa) found that the size of the firm was the only variable that positively explained board size across all the firms in the all the countries studied (Fiador, Abor and Abor, 2012). However, this was not the case in this study. Boards with a maximum of seven members have been hypothesized to be more efficient in operations and decision making because beyond this number, the members communicate less efficiently with each other and come to rely more on the chief executive, reducing their capacity to monitor management (Jensen, 1993).

In addition, large boards (>8 members) may because of too many members fail to operate effectively as decision-making groups as the members fail to take personal responsibility. In addition consensus building among so many individuals becomes difficult (Pozen, 2010). Furthermore the positive effect of strategy-setting by a hospital board on organizational performance has been found to increase with decreasing board diversity (Buchner, Schreyogg and Schultz, 2014).

However large boards both in size and diversity of members are argued by resource dependence theorists to have arisen to help the organization secure critical resources by linking it to the external environment(Goodstein, Gautam and Boeker, 1994).

Across all boards, just under two thirds (62%) of board members belonged to a professional body, with half of those professionals belonging to the medical and dentists practioners board (MP&DB). In all hospitals with boards, there was a minimum of two board members registered with the Medical Practioners and Dentists board, at least one board member registered with the Nursing Council of Kenya. This finding with respect to medical professional representation is similar to Ghana and other English speaking countries in sub-Saharan Africa (Abor, 2011).

In the corporate governance hospitals members of the MP&DB were roughly 40% of board members compared to being just 20% in public governance boards a reflection of both board size and the push for diversity in the latter governance structures. This lower proportion suggests less influence on governance by the medical/clinical side. Physician involvement at board level has been associated with better hospital performance in terms of clinical outcomes(Neves, 2012). A survey of German hospitals concluded that where board member diversity was low, collaboration quality was higher leading to higher board activity levels (Buchner, Schreyogg and Schultz, 2014).

Under such circumstances it is possible that what makes the board work well is not any specific individual attribute but how all the attributes fit together into a system(Lee *et al.*, 2008). In addition, the most effective optimal boards are those with low verification costs to outside board members and low private benefits to inside board member(Raheja, 2016).

The church was also represented in every board except in the for profit hospital. Other professions found on the boards included the Law Society of Kenya, Institute of Certificated Public Accountants and Architectural Association of Kenya. Stakeholder theory assumes multiple competing and co-operative interests within the hospital and the role then of board members is to represent and balance various stakeholder (including staff, patients and the public) interests (Mannion *et al.*, 2016).

An alternative view using the RDT is that the board members were chosen for their background, contacts and skills to manage internal and external relationships to leverage influence and resources(Mannion *et al.*, 2016). This might explain the selection of board members from women groups and politicians like the local Member of the County Assembly (MCA).

Other than in the corporate hospital where shareholders elected board members, in the other hospitals an appointing authority nominated the board members to represent particular constituencies. While public governance hospitals had a process of gazetting board members, thereby defining term limits, more common were members who served without defined limits.

However agency theory calls for more representation from independent board members to protect shareholders' equity and financial interests(Molinari *et al.*, 1993). From a hospital governance perspective while shareholder funds and viability of the hospital business are key considerations, so are the rights of patients. Therefore, neither the managerial nor the agency theories alone, fully explain the board structures found in this study.

Across all six hospitals board term limits existed but these seemed to be honoured in the breech with members staying for many years on boards. There are no ideal term limit applicable to all directors(Katz and McIntosh, 2014). Principals of corporate governance in Kenya call for directors to submit themselves for re-election at regular intervals and at least once every three years (Private Sector Corporate Governance Trust, 2000). However long tenure on a corporate board historically has been demonstrated to be an asset to board effectiveness associated with solid corporate performance (Katz and McIntosh, 2014).

No board paid any of its members to attend meetings. However, some were paid travelling and sitting allowances. In contrast a review of hospital governance boards in Ethiopia, found that nearly 80% paid board members for participation(McNatt *et al.*, 2014). A review of South American companies found that in order to align individual goals to corporate goals, board remuneration was based on company results with board members entitled to six per cent of profits (International Finance Corporation, 2009). But a study of Dutch hospitals found that higher board pay did not necessarily lead to better organizational performance (Blank and Hulst, 2011).

These studies suggest that board pay is not a simple matter of paying for the duration of a meeting or a travel allowance, but that consideration needs to be taken of their fiduciary responsibility. Using the principal-agency theory it would be assumed that the board members would want to maximise their individual goals for example in terms of remuneration.

However, in this study the principal-agency theory was not a good model, as using high pay, as a tool to motivate board members to perform in hospitals, would not be ideal. It would appear that the stewardship theory is more at play when it comes to board compensation with the assumption that the mechanism by which the board is aligned to the ownership goals is not pay.

5.1.2. Governance Process

A hospital board like other corporate boards has two primary roles of external accountability to shareholders and stakeholders including compliance with regulatory requirements and accountability; and monitoring of hospital performance (Chambers *et al.*, 2013a). In this study the chairman of the board was in all cases non-executive. This finding contradicts a study of 242 health sector NGOs in Nairobi County which found that 'CEO duality', where CEO served as both chief executive and board chair, the NGO performed better than where the roles were split(Gathayo *et al.*, 2016).

Managerial power theory proposes that a CEO who is also board chair, has the power to influence board decisions thereby creating the conditions for board 'capture (Chambers *et al.*, 2013a). In this study the chief executive/medical superintendent was often the board secretary and therefore had limited power at board level.

Under managerialism theory, participation by top-level management is often believed to enhance board decision-making and effectiveness(Abor, 2015). While this arrangement ensured that power within the board was distributed between management and directors it still gave the CEO/MedSup considerable powers. However, most board members stated that board decision making was done by consensus of all members.

Corporate governance hospitals board represented shareholders/owners and bore fiduciary responsibility. Furthermore, these hospitals had management committees that focused on clinical issues besides having a strong CEO with functional administrative heads below them. In two corporate governance hospitals the board was the final decision maker in terms of the strategic direction of the hospital, while in one the CEO was key. The CEO in these hospitals became even more powerful when it came to disposal of assets. For public governance hospitals however, the board where present was relatively weak with the added layer of authority of the county health authorities when disposing assets.

This finding contrasts with those from Ethiopia, where despite the boards being reported to have limited ability to control financial decisions when compared to their counterparts in high income countries they still had significant influence on hospital operations (McNatt et al., 2014).

5.1.3. Hospital Management

Each hospital was headed by a medical superintendent (MedSup) (four hospitals) or chief executive officer (CEO) (two hospitals). Except in one hospital where the CEO was clearly the leader, in the other hospitals the MedSup was the designated management leader but part of a hospital management team including a nursing officer and an administrator.

This was despite what was stated in one county health bill, which stated "the Medical Superintendent shall be responsible for the day to day management of a hospital"(Kiambu County, 2014, pp.14). The latter structure reflects the tension in hospital management with a 'dual organizational structure'; the co-existence of both managerial and professional decision making structures(Mintzberg, 1993).

All six hospital heads had a minimum of a master's degree. The hospitals were led by experienced managers with a median of six years in the position and sixteen and a half years of working in the medical field. Of interest was the difference in experience in the position of CEO/MedSup. While the average professional experience was the same, roughly 15 years, the CEO/MedSup in the corporate hospital had been in the same office for an average of 14 years, compared to the public governance hospital average of three years.

Simsek (2007) suggested that CEO tenure can indirectly influence organizational performance through its direct influence on hospital management team's risk-taking propensity; that is a short tenured CEO would lack legitimacy be unable to influence the hospital management team compared to a long-tenured CEO(Simsek, 2007).

However a review of firms listed on the Nairobi Stock Exchange found that CEO tenure had no significant effect on firms' performance (Gacheru, 2011). But a review of CEO turnover and changes in corporate performance in South Africa found that poor corporate performance was a major driver of CEO turnover with 58% of the corporations undergoing CEO turnover having reported to be under performing when compared to their peers in the one year prior to the turnover event (Wilkes, 2014). The literature suggests that all other things held constant from this study, corporate governance hospitals should perform better than public governance hospitals because of the longer tenure of their chief executives.

While all the CEOs were employed as full time managers, those titled medical superintendents also had additional medical and clinical duties including training and supervising students and providing individual clinical care to patients. Such CEOs can be termed "interface professionals," those who are able to bridge medicine and management (Angood & Birk, 2014, pp.8).

A review of hospitals in 17 developed countries concluded that where doctors had management roles especially strategic ones, implementation of quality management systems was better (Rotar *et al.*, 2016). However in Kenyan training of medical specialists except in public health almost all other medical specialists focus on decision-making at the individual doctor-patient level; as such they are not trained to lead as part of their basic training(Collins-Nakai, 2006).

This study suggests that by overloading the MedSup with a full complement of clinical/medical duties and management duties, the public governance hospitals compared to the corporate governance hospitals were not able to take advantage of the benefits of having doctor managers in hospital management. This follows the theory of expert leadership that holds that under usual circumstances, performance will improve or be maintained when the head of an organization in any situation has core business knowledge and expertise (Goodall, 2012). Indeed in "the best-performing hospitals in the United States are led disproportionately by physicians"(Angood & Birk, 2014, pp.2) similar to the corporate governance hospitals in this study that were led by doctors.

Under the CEO/MedSup were the senior managers who made up the hospital management team. In the corporate governance for profit hospital the CEO was head and shoulders above department heads. In the public governance hospitals and corporate governance not for profit, the hospital management structure had the CEO/MedSup as 'first among equals', with the other senior members of the management team being, the nursing officer in charge and the administrator. This management model is common.

In a Botswana study only 31% of hospital managers felt they had the decision making power on budget allocations for their hospitals without undue consultations with their Ministry of Health (Seitio-kgokgwe *et al.*, 2014). In this study the nursing officers in charge (nursing services manager, nursing director) in both corporate governance and public governance was an experienced nurse (> 20 years median experience) usually with an educational background of higher diploma; in some cases, built up into a degree over time.

Compared to the nursing in charge, the administrators tended to have less years of on job experience (Median 5 years). Like the nursing officer in charge and in contrast to the MedSup (all of whom had at least a masters degree), the administrators had varying qualifications from diploma, a bachelors and postgraduate degree.

The implications of this imbalance in experience and qualifications is that the senior administrative team is more likely to have 'minority domination' a disadvantage of group decision making(Lunenburg, 2012). Further it could lead to a proliferation management meetings in public governance hospitals to compensate (Hartley and Martin, 2008).

All the hospitals reported having regular hospital management meetings. This practice was in keeping with good management practices (Ministry of Health, 2014a). A study of five district hospitals in South Africa found that regular functional meetings built a foundation for teamwork that improved patient care (Couper and Hugo, 2005). Each hospital had a median of seven committees to which hospital management belonged.

Procurement and maternal mortality were the two committees that cut across all the different types of hospitals. Once a month was the norm except for the corporate governance for profit hospital, which held meetings every week. In the corporate governance hospitals there was greater emphasis on management committees that focused on the clinical side for example quality of care, drug/antibiotic usage.

This practice of focusing on clinical care probably lead to good hospital performance especially where there was regular board review of operations (McNatt *et al.*, 2014). This added board oversight potentially overcomes the information asymmetry where the board is informed about the quality and effectiveness of the work done by the medical practioners (Ludwig, Van Merode and Groot, 2010).

Public governance hospitals were managed through many administrative committees, reflecting the difference with the corporate governance hospitals where operations were executed more through substantial administrative positions. Holding management meetings is one strategy that senior managers can use to communicate priorities to staff members(Kapiriri and Martin, 2006).

5.2. **Assessment of the Effectiveness of Maternal Delivery Services in the Hospital**

In this section the factors associated with maternal and perinatal mortality and morbidity are discussed. Effectiveness in this study was measured by adverse maternal or foetal outcome during delivery and included patient outcomes of maternal and perinatal mortality and quality of care; (Olafsdottir *et al.*, 2011). The discussion is divided into two; the first part examines three morbidity indicators that signify the quality of maternal delivery services: the caesarean section rate, the patient length of stay and, the readmission rate. The next part of the discussion reviews maternal and perinatal mortality found in this study.

5.2.1. Caesarean Section Rates

For maternity delivery services the rate and indications for caesarean sections (CS) are a critical indicator of the quality of care. In Kenya, nine per cent of births are by caesarean section(Kenya National Bureau of Statistics & ICF Macro, 2015). The average caesarean section rate in this study for all the hospitals was 25.4% three times the national average and much higher than the 17.7% found in Nigeria (Ugwa et al., 2015); but similar to those found in Latin America and the Caribbean (29.2%), which are the highest rates globally (Betrán et al., 2007). These differences are possibly due to referral nature of our hospitals, but may also be due to non-medical hospital variations. An analysis of more than 1.4million births in the USA revealed considerable hospital variation even after taking into account individual patient indications (Kozhimannil, Arcaya and Subramanian, 2014).

In this study, a corporate governance hospital had the highest CS rate at 46%, while a public governance hospital had the lowest CS rate at 18%. While high, this rate is still lower than that in Brazil where a birth cohort study documented a rate of 82% of all private deliveries (Barros *et al.*, 2005). Caesarean section rates above the threshold of 9–16 % are not associated with decreases in mortality outcomes regardless of socioeconomic adjustments(Betran *et al.*, 2015). And in settings with already low perinatal mortality there is little additional benefit in rising caesarean section rates (Jonsdottir *et al.*, 2009).

When a CS is done without a medical indication there has been an associated increased risk of maternal mortality and morbidity(Lumbiganon *et al.*, 2010). However a WHO worldwide ecologic study found that a substantial part of the crude association between caesarean section rate and mortality appears to be explained by socioeconomic factors and therefore where it offers the CS rate reduces maternal mortality, access to basic care is likely to be a problem(World Health Organization, 2015). The WHO recommends that caesarean section rates at population level should be below 15%(World Health Organization, 2015).

However, in this study the lowest hospital had a caesarean section rate at 18%. Given that the hospitals are at the apex of a relatively large population catchment it can be argued that their caesarean section rate corresponds to a population rate.

Yet the perinatal mortality rate was still high indicating a need for more caesarean sections. This finding concurs with Betran et al (2015), who concluded following a systematic analysis of the ecological association between CS rates and relevant morbidity outcomes that the ecological relationship needed further evaluation.

In this study the indications for a caesarean section included: previous caesarean section (32%), foetal distress (23.1%), obstructed labour (8.1%) and poor presentation (6.6%). These results agrees with a review of over 21,000 births in a tertiary hospital in north-west Tanzania where previous scar and obstructed labour were the most common diagnoses given for caesarean section (Sørbye *et al.*, 2011).

Similarly, a three month audit of emergency caesarean sections in 2011 at Kenyatta National Hospital found non-reassuring foetus response (27.3%), failed vaginal birth after caesarean section (16.1%), malpresentation/malposition (9.4%), having two previous scars in labour (9.2%), and pre-eclampsia/eclampsia (6.4%) to be the leading indications for emergency caesarean section (Wangui, 2014).

The rates of caesarean section due to foetal distress were similar in these two studies, however a Nigerian study found obstructed labour was the commonest indication for emergency caesarean section accounting for 31.7% of caesarean sections and foetal distress was the least at 2.6 % (Emelumadu *et al.*, 2014). Given the high newborn mortality reported in this study, the findings from this and the other studies suggest that caesarean section as an intervention is focused on the wellbeing of the mother, that is the primary concern is maternal mortality rather than newborn mortality.

In this study just eight patients (0.7% of all deliveries) had an assisted vaginal delivery with the indication being breech presentation. This finding was not unusual with a similar rate (0.69%) found in a two year (2009-2011) retrospective study on instrumental vaginal deliveries in Bauchi, Northeast Nigeria and in health facilities within or near urban slums in Nairobi (1.3%); in these studies a lack of experienced personnel and possible provider bias against assisted vaginal delivery were cited at possible reasons (Ziraba *et al.*, 2009; Aliyu, Kada and Hauwa, 2011). These studies corroborate the view that across many countries, assisted vaginal delivery is underutilized and our study confirmed this general state of affairs (Bailey, 2015).

5.2.2. Length of Stay

The median length of stay for patients admitted for maternal delivery services was just under two days. However, the median masked considerable differences between the different hospitals, with the public governance hospitals having a median of less than one day of stay compared to two days for corporate governance hospitals. The relative short length of stay is not uncommon especially for public facilities.

A review of the South African health system reported an acute shortage of beds leading to women being routinely discharged after six hours following vaginal delivery and on the third day after caesarean section(Chopra *et al.*, 2009). In a 92 country review of hospital length of stay after child birth the mean length of stay ranged from 1.3 to 6.6 days with the majority of women staying too short a time to receive adequate postnatal care(Campbell *et al.*, 2016).

The high patient turnover made maternal delivery a high volume service with the challenge then being how to maintain quality and ensure safety of patients. Furthermore it would be assumed that there was an adequate community based post-natal care system to manage the newborn and the mother(Bowers and Cheyne, 2016). Unfortunately Kenya does not have a well financed community strategy(Ministry of Public Health and Sanitation, 2010).

This study showed that those hospitals with short lengths of stay also had poorer patient outcomes, which given the country context suggests that the morbidity and mortality arising from the short length of stay in public governance hospitals is probably much higher than what is reported here.

5.2.3. The Readmission Rate

Few patients (1.1%) were recorded as being readmitted within six weeks of delivery. However same hospital readmission metrics require careful interpretation especially when they do not take into account readmissions to other hospitals (Davies *et al.*, 2013).

5.3. Maternal and Perinatal Mortality

The two major outcomes for assessing the effectiveness of maternal delivery services were maternal and perinatal mortality.

5.3.1. Maternal Deaths

In this study the maternal mortality ratio (MMR) for all the hospitals over the 3 year period was 91.44 per 100,000 births. This is low compared to a three month review of risk factors for maternal mortality conducted in three states in Nigeria that recorded a MMR of 927 maternal deaths per 100 000 live births (Fawole *et al.*, 2012). A two and half year retrospective review of main causes of maternal deaths in a single teaching hospital in Ghana reported a rate of 1,004 per 100 000 live births (Lee *et al.*, 2011).

This current study, however recorded significant differences in terms of size between the hospitals. A maternal death is a relatively rare event and the corporate governance for profit hospital recorded zero maternal deaths over the three year period. This finding corroborates earlier finding by Alexander and Lee ,2006 who found out hospitals governed by boards using a corporate governance model, were likely to be more efficient in their clinical outcomes(Alexander and Lee, 2006).

However, a corporate governance (not for profit) hospital recorded a record high 32 maternal deaths (MMR of 803 per 100,000 live births) in one year, all concentrated around September 2012, the time of a nationwide public sector doctors' strike[13]. The neighbouring public health facilities were not receiving patients.

The picture of the relationship between doctors strike and patient mortality is mixed. Some studies suggest a paradoxical reduction in patient mortality during a strike, due to elective surgeries not being done and staff focusing on emergency care (Cunningham *et al.*, 2008; Metcalfe, Chowdhury and Salim, 2015). Others show an increase in patient mortality (Bhuiyan and Machowski, 2012).

In this study the maternal mortality in 2012, when the strike occurred was about double that in the subsequent two years and so this paradoxical effect was not observed. Health system-wide disruption therefore affected whatever individual strategies hospitals may have had to manage quality of care and the striking doctors did not leave in place mechanisms to ensure patient safety.

[13] Kenya Medical Practitioners, Pharmacists and Dentists Union (KMPPDU), announced a nationwide strike starting September 13, 2012 saying the government has reneged on an agreement it had signed with the doctors. Services in most hospitals were paralyzed. The strike ended three weeks later on 5th October 2012 after the government pledged to address all the doctors' grievances(Daily Nation, 2012),(AllAfrica.com, 2012).

In this study maternal deaths were primarily due to direct causes of obstetric haemorrhage and eclampsia, a finding similar to other studies in developing countries. An audit of maternal deaths in Nigeria (70.2%) and Morocco (54.3%) found that the majority of cases the deaths were due to avoidable factors (Ozumba and Nwogo-Ikojo, 2008; Abouchadi *et al.*, 2013). In Ghana and India, studies of tertiary care hospitals reported direct causes of maternal death that is, haemorrhage, eclampsia and sepsis as contributing 72.5% and 71.1% of all deaths (Lee *et al.*, 2011; Murthy, Murthy and Prabhu, 2013).

Globally and locally the focus of reproductive health strategies has been to address direct causes of maternal death(Ministry of Public Health and Sanitation & Ministry of Medical Services, 2009; Wilmoth *et al.*, 2010). These findings suggest that there is a still a long way to go in implementing these various strategies and that further investment is needed in emergency obstetric care systems.

When analysed by corporate governance vs. public governance hospitals, the maternal mortality ratio (MMR) was almost the same 91.32 and 91.57 per 100,000 deaths respectively. This reflects the health systems wide risks that hospitals face in managing their individual institutional risks. One corporate governance hospital reported the 'borrowing' of their medical supplies by government health facilities as a disincentive to providing maternal delivery services. This finding is not unusual.

Service provision in Kenya is generally constrained by a number of elements, including medical product supplies(Luoma *et al.*, 2010). Faith based health facilities are reported to source their medicines from a variety of sources including private wholesalers, Mission for Essential Drugs and Supplies (MEDS), and Kenya Medical Supplies Authority (KEMSA) unlike public health facilities that rely almost exclusively on KEMSA (Kariuki *et al.*, 2015).

All six hospitals in this study reported having standard operating procedures in managing maternal delivery services. All had a scheme of service and code of conduct for their employees.

However none mentioned deployment of specific interventions such perinatal audit systems, as part of a quality of care process, which have been demonstrated to prevent still births (Bhutta *et al.*, 2009). None of the hospitals reported having been inspected by the national Ministry of Health, but county health teams visited public hospitals.

Three of the six facilities reported having annual work plans. With respect to following external regulations only the non-government hospitals were subjected to some inspection by non-Ministry of Health regulator such as NEMA symptomatic of many policies in developing countries where there are often conflicting existing laws and legislations, creating bureaucratic implementation leading to policy implementation failure(Banchani and Tenkorang, 2014). The limited leadership and management capacity of Ministry of Health to provide oversight in service delivery has been well documented (Luoma *et al.*, 2010; Ministry of Public Health and Sanitation & Ministry of Medical Services, 2011; Ministry of Health, 2014d).

The study results highlight the major problem of the difficulty in assessing performance of hospitals when they do not have a common foundation for licensing and inspection with legal backing(Blum, 2010). Furthermore this study demonstrates the effects of these limitations relating them to patient outcomes namely perinatal deaths.

The impetus to reduce maternal mortality and morbidity in low-resource settings often use global standards and indicators to assess obstetric care, without taking into account local skills, resources or context (Spangler, 2012). Furthermore women are often mistreated during delivery in health facilities suffering at the hands of individual healthcare providers and because of systemic failures at all levels of the health system (Bohren *et al.*, 2015). Unfortunately such women often do not have a voice to complain effectively.

A critical part of evaluating health system governance is accountability, specifically social accountability, and the World Bank recommends that there should be regular conduct of client satisfaction surveys (World Bank Group, 2010b).The importance of having mechanisms for patients to voice their issues is pertinent given the relative autonomy that hospitals have in their operations. Worse is when as has been described above, the supervisory capacity of the ministry is limited and uneven, and so accountability of the hospital is reduced.

Hospitals reported a number of challenges in provision of maternal delivery services. For public hospitals delays in reimbursement of maternal delivery service funds were the most commonly cited challenge followed by shortages in medical staff especially doctors. Poor information flow within the health facility also featured as a challenge. Inadequate medical supplies, procurement delays and inadequate leadership structures and skills were other challenges identified in those hospitals.

Similar issues including inadequate in-service training, limited knowledge of health policies by midwives, increased workload, risks of infection, low motivation, inadequate labour wards, problems with transportation, and difficulties in following the procurement act were identified in Tamale Metropolis, Ghana as implementation challenges of maternal health care services (Banchani and Tenkorang, 2014).

Staff poaching by government hospitals was identified as a unique problem for corporate governance in not for profit hospitals and may exacerbate the already existing absolute shortage and regional disparities in the distribution of the existing health workers. These organizations make up 11.4% of health facilities and consume three times as much in health expenditure in Kenya and are therefore significant players in the health sector(Ministry of Health, 2014b). The extent to which they are unable to deliver on their mandate of providing care therefore has significant impact on national goals, in this case maternal delivery service goals of reducing maternal and newborn mortality. Addressing these challenges, by measuring performance and monitoring what goes on in hospitals should therefore be a priority if national goals are to be met.

5.3.2. Perinatal Deaths

In this study perinatal deaths which included early neonatal deaths (<7 days) and foetal deaths were much more common when compared to maternal deaths. When perinatal deaths were analysed corporate governance vs. public governance the rates were 5 and 36 per 1,000 births respectively.

Globally, while under children under five death rates have been declining over the last 40 years, neonatal death rates have not declined as fast; the relative share of deaths that are caused by neonatal causes has therefore increased to about 40% of childhood deaths(Rajaratnam *et al.*, 2010). The neonatal mortality rate in Kenya is currently 28 per 1000 live births, but more significantly neonatal deaths now comprise close to 60% of all inpatient deaths in children aged ≤ 5years(Mwaniki *et al.*, 2010). Most of the increase in the burden was from neonates born in hospital and very young neonates aged < 7days, with birth asphyxia, prematurity/LBW and neonatal sepsis the major contributors of mortality (Aluvaala *et al.*, 2015). These findings point to the need to improve these primary level facilities and the referral system as a whole if this high mortality rate is to be reduced.

While the number of deaths was low in the corporate governance hospitals, the public governance hospitals recorded a high numbers of perinatal deaths. Assistance from a doctor (consultant, registrar or medical officer intern) was protective against neonatal mortality. This finding is in agreement with other studies that have found the presence of a doctor at birth enhances appropriate management and reduces maternal and infant mortality(Yego *et al.*, 2014).

Indeed in the Netherlands infants of low risk pregnant women whose labour started in primary care under the supervision of a midwife had a relative risk 3.66 higher of perinatal death compared to infants of pregnant women at high risk whose labour started in secondary care under the supervision of an obstetrician(Evers *et al.*, 2010).

It goes against the growing body of evidence that task shifting to mid-level healthcare providers of medical tasks traditionally performed by doctors can be done safely and effectively(Prata *et al.*, 2010). In this study these differences in results could be attributable to several factors including: Low bed/patient ratios in public hospitals coupled with low staff/patient ratio worsened maternal health outcomes in these hospitals. Indeed these results compare well with previous studies that have showed strong associations between patient mortality and low staffing levels (McGahan et al., 2012, Kane et al.,2007 and Aiken et al., 2002. Task shifting where the levels of staff/patient ratio are already low may therefore not give the expected outcomes of reducing patient mortality.

In this study perinatal deaths were associated with SVD deliveries (P=0.025) and the age of the mother (P=0.036). This contrasts with findings in a four country –sub-Saharan Africa study where one in seven Caesarean sections resulted in early neonatal death, the high rate possibly reflecting inadequate labour management and the late transfer of patients from home or a health centre to the hospital(Chu *et al.*, 2012).

Because many of the complications that lead to newborn mortality are not easily prevented, timely and optimal treatment can greatly improve newborn health (Souza *et al.*, 2011).Developing countries have reported neonatal infection rates 3-20 times that of developed countries due to poor intra-partum and postnatal infection-control practices(Zaidi *et al.*, 2005).

Neonatal infection in the first week of life has been shown to be associated with maternal infection, with sepsis the cause of about 10% of all maternal deaths and 26% of neonatal deaths in sub-Saharan Africa(Chan *et al.*, 2013). In this study the hospitals with worse newborn outcomes had management and governance structures that spent comparatively less time on clinical outcomes and more on routine administrative tasks. Reversing these poor outcomes would require a focus by management and the board on clinical outcomes. This can be achieved by having proportionately more health professionals on the board, so that they can lend their expertise to the board and improve quality of the management systems (Mason *et al.*, 2013; Rotar *et al.*, 2016).

A number of policy initiatives were reported as being incentives that promoted maternal delivery services. The availability of free vaccines and antiretroviral medicines topped the list, while for government facilities medical equipment whether donated by donors or provided by government were cited as major incentives. However some of the items mentioned as incentives such as vaccine supply were basic commodities and or what would be expected such as supportive supervision.

Of interest is that the hospitals with the worst perinatal mortalities reported having the same number of methods to maintain standards of service as the hospital with the best mortality figures. Similarly an assessment of the quality of maternity care in an Indian metropolitan city concluded that public hospitals practices fell short of evidence-based guidelines, while there was relative overuse of interventions in private hospitals (Nagpal *et al.*, 2015).

The problem is that having certain quality improvement methodologies or approaches only rarely lead to the desired outcome of high standards of care. There has to be an imbedded culture of quality improvement (Raven *et al.*, 2011). While identifying the culture was not an explicit aim of this study, the finding that all six hospitals had various committees to manage quality of care but still had significantly different outcomes suggest that in the public governance hospitals the culture of quality improvement was lacking.

5.4. **The Equity of Hospital Maternal Delivery Services**

Equity in this study was defined as "equal treatment outcomes for people in equal need" (Boeckxstaens *et al.*, 2011)(pp.2). In government hospitals following the launch of free maternity services in July 2013[14], women are no longer required to pay for maternal delivery services. However private hospitals all of which had a corporate governance structure continue to charge. The average bill paid was Kshs 30,818 (US$304) (range Kshs 11,522-49,844 (US$ 113.7-492)). Women requiring caesarean section paid more than those with a normal delivery ($P < 0.0001$). The average bill paid was high compared to other countries. In Morocco following implementation of 'Free Deliveries and Caesarean Policy', the median cost was US$45 for an uncomplicated delivery, US$50 for a complicated delivery and US$65 for a caesarean section (Boukhalfa et al.,2016, Bennis and De Brouwere, 2012).

These costs however did not take into account patients indirect expenses which in a study of tertiary hospital in Islamabad were estimated at almost twice the fees paid to the hospital(Khan and Zaman, 2010). This means that the cost estimate in this study underestimates the societal cost of maternal delivery services by a factor of at least two. Given that about 42% of the population[15] remains below the poverty line, it implies that free maternity care, which covers just the cost of care in the health facility is only part of the solution to improving access to maternal delivery services.

[14] "Speech by H.E. Hon. Uhuru Kenyatta, C.G.H., President and Commander-in-Chief of the Defence Forces of the Republic of Kenya during the Madaraka Day Celebrations" (Nyayo National Stadium, June 1, 2013), http://www.statehousekenya.go.ke/. Nairobi.
[15] https://www.unicef.org/kenya/overview_4616.html. Accessed 6th July 2017

In this study the majority (52.1%) of those paying for maternal delivery services paid cash, while the National Hospital Insurance Fund (NHIF) contributed to the bill in 27.9% of cases at an average cost of Kshs 6,000 (US$59). This large proportion of healthcare expenditure paid for through out-of pocket payments is of concern due to the regressive nature of such payments and is similar in findings to other countries in sub-Saharan Africa including Tanzania, Ghana and South Africa (Mills *et al.*, 2012).

About 25% of patients were paid for by their employer but their average bill was much higher at 54,464.0 (US$537.7)(range Kshs 40,157.5-104,492.8)(US$396.4-1031.5).Patients with personal private insurance were just 1.3% of patients at an average cost of Kshs 52,000 (US$513) similar to company funded payments.

The use of a fee for service system by third party payers creates incentives for over-servicing and supplier-induced demand and is therefore a key driver in the escalation of health care costs (Mckeon, Gitonga and Decker, 2009). Approximately 18.5% of patients had their bills settled through donor funding, output based approach (OBA) (Chuma *et al.*, 2009a) with an average cost of Kshs 18,000 (US$177.7). This proportion is lower than the average of 26% of donor funding that supports health expenditure in the country (Ministry of Health, 2012). Much of the donor support that Kenya receives goes towards HIV care and there is evidence that at global level, donors do not focus on addressing the estimated 2.1 to 3.8 million stillbirths each year (Pitt *et al.*, 2012; Health Policy Project, 2015).

A significant number of patients (26.9%) who were required to pay for services did not, though almost all (97.6%) received a waiver of fees. The provision of care for the poor is a central tenet of the concept of community benefit and non-profits are expected by society to provide care to all patients irrespective of their ability to pay(Alexander *et al.*, 2008). It is noteworthy that waivers as a policy have generally failed to protect the poor mainly because of implementation issues: deciding who should benefit and the process of acquiring the waiver is often time consuming (Chuma *et al.*, 2009b).

Similar implementation issues have been reported elsewhere. The high proportion of mothers paying for delivery, the relatively low donor support and low levels of pooled funds in the form of NHIF point to a financing problem that if not tackled will hamper the goal of reducing maternal and newborn deaths.

In Senegal, an evaluation of free delivery and caesarean policy in select districts reported significant implementation difficulties, especially related to the allocation of funds and delivery kits and the adequacy of their contents despite significant success with utilization in normal deliveries increasing 10% a year after the policy start (Witter, Dieng, Mbengue, Moreira, & De Brouwere, 2010). In Ghana after introduction of the fee exemption policy clinical care provided did not change, even though women with complications were arriving in hospital earlier after the introduction of the policy (Ansong-Tornui, Armar-Klemesu, Arhinful, Penfold, & Hussein, 2007).

However, Japan despite having only 20% of health facilities not being privately owned managed to achieve universal health coverage because most of the revenues for the private facilities are derived from services regulated by a fee schedule (The World Bank, 2014). This method of achieving universal health coverage is however predicated on a strong regulatory framework for hospitals, which in earlier discussion has been pointed out as weak in Kenya. Therefore at present the push for the free maternity policy to cover both public and private facilities, without a commensurate improvement in oversight is unlikely to lead to major improvement in maternal delivery service outcomes.

In this study, patients who paid for MDS were more likely to have a caesarean section ($P<0.001$). These results are in concordance with others in sub-Saharan Africa, a review of caesarean sections across the continent concluding that 'richer women more likely than poorer women to receive a CS' (Harrison and Goldenberg, 2016).

Whereas paying for caesarean section is not proof of relative wealth, it is tied to inequality in access to maternal services. It suggests that across socio-economic groups, despite the presence of fee exemption policies that were primarily implemented to remove a prohibitive financial barrier, there remains a major problem associated with paying for maternal delivery services. .

In Sub-Saharan Africa, it has been shown that proportionately fewer women in the poorest segment of the population receive caesareans (Harrison and Goldenberg, 2016). However a maternal death review in selected hospitals in Ghana found that fee exemption did not affect the patterns of adverse and favourable events in maternal delivery care (Ansong-Tornui et al., 2007).

This study suggests that corporate governance hospitals whether for profit or not for profit do not provide equitable care as charging fees for their services even with a waiver mechanism in place is still inequitable. However managing this inequity has to be balanced against the incentives provided by having fee paying clients and a hospital with a board having fiduciary responsibility whereby there is a direct link between client satisfaction as measured by their willingness to pay. Moving towards a more equitable maternal health delivery system requires an examination of wider issues of supply and demand factors, beyond just user fee waivers by addressing the social determinants of health, including non-financial barriers.

5.5. The Relationship between Ownership, Governance Structure and Maternal Delivery Services

The following section examines the possible relationships between the governance structures, management structures and maternal delivery services outcomes.

Two hospitals did not have boards at all. Reviewing 132 hospitals in Ghana, Abor (2015) found that hospitals without a governing board performed worse than those with one (Abor, 2015) As corporate entities with statutory oversight , hospital governing boards are accountable for the overall quality and safety of the care their hospitals provide. They therefore have a fundamental governance role in the oversight of quality and safety, by defining priorities and objectives, crafting strategy, shaping their culture, and designing systems of organizational control (Millar, Mannion, Freeman, & Davies, 2013).

The public governance hospitals had three times higher perinatal mortality rates compared to the corporate governance hospitals. This finding mirror studies that established that higher performing boards were linked with better hospital performance in several dimensions including clinical performance (Ludwig et al., 2010). A review of hospitals in the United Kingdom concluded that for-profit hospitals exceled in balancing financial and clinical performance, while Government hospitals demonstrated the weakest balanced performance, with significantly worse performance on core measures and inpatient expense (Foster, Zrull, & Chenoweth, 2010).

This can be explained from a theoretical perspective by agency theory defined as an agreement in which the principal (board) delegates certain responsibilities to the agent (clinical personnel) for which the agent receives a certain reward; from which case we expect the private sector to be more efficient than the public sector due to the profit motive (Ludwig et al., 2010). Agency theory emphasizes conformance, suggesting that the problems of management pursuing their own interests are best controlled through the monitoring role of the board, supported by external processes such as audit and reporting requirements (Chambers et al., 2013).

Across all six hospitals, respondents also reported a lack of engagement with Ministry of Health at county and national level in strategy development of maternal delivery services. This lack of engagement points to leadership deficiency at the Ministry of Health, which has been reported in various reviews of national policy and strategy (Kenya Institute for Public Policy Research and Analysis, 2010; Luoma *et al.*, 2010).

The shortage in human and financial resources, as well as limited political commitment have been cited as challenges to achieving reduction in country maternal mortality (Prata *et al.*, 2010). One of the problems Kenya like other developing countries such as Uganda, Zambia, face is that many health interventions including the push to reduce maternal mortality are often done at rapid pace with an external design, and lacking a long-term financing plan with integration into the health system and local ownership (Kruk *et al.*, 2014).

However international support for newborn health remains relatively low meaning that whatever resources come in need strong local institutions to execute (Pitt *et al.*, 2012). But the lack of local ownership is of concern, a study in Germany indicated that the strategy-setting role and board/management collaboration quality had a positive effect on hospital performance (Buchner et al., 2014). These factors put together highlight the importance of proper hospital governance structures that can engage with Ministry of Health if patient outcomes of maternal delivery services are to be improved.

Legally all had as their primary oversight body the Medical Practioners and Dentists board. In reality the medical officer who often provides supportive supervision within the health system comes from the county hospital level. As such after registration (and in the case of public hospitals almost never) there was no recorded regular contact from the MPDB at board or hospital management level except through renewal of license despite 'regulatory enforcement' being listed as one of the strategic themes of the MPDB (MP&DB-Kenya, 2013).

However other bodies such as NEMA, laboratory board reviewed specific operations of the hospitals that touched on their particular agency mandate, which did not directly touch on clinical care. The non-government hospitals had many agencies that demanded fees from them, which the government hospitals were exempt.

In terms of financial management the corporate governance for profit board directors who were also all shareholders had fiduciary responsibility to ensure that the hospital made a surplus. A review of governance structures in not for profit hospitals in the USA established that hospitals governed by boards with a corporate governance model were likely to be more efficient and have more admissions and a larger share of the local market compared to hospitals with philanthropic-style boards (Alexander and Lee, 2006).

In this study the non-profit hospitals also had to return a surplus behaving like for profit hospitals in contrast to NFP boards in USA who were found to be less responsive to competitive pressures and less prone to develop strategies leading to positive performance because of their focus on asset preservation (Alexander and Lee, 2006). These findings are consistent with that by McDonagh & Spohn (2006) who demonstrated that boards ranked as higher performing also reported better hospital performance especially in the dimensions of profitability and lower expenses (McDonagh and Spohn, 2006).

In this study, all the public governance hospitals, operated under perpetual deficits and uncertainty over the budgets that they had and controlled, necessitating frequent budget reviews. The uncertainty over budget control was reflected in the lack of strategic plans in all but one of the hospitals reviewed and can be attributed to the lack of board fiduciary responsibility. It is no surprise therefore, that senior management of those hospitals spent considerable time in management committees addressing administrative issues rather than clinical ones with commensurate impact on patient outcomes. Aligning governance structures to strategy by ensuring boards had fiduciary responsibility including those of patient outcomes would reduce mortality.

The corporate governance hospitals whether for profit or not shared many more characteristics than the non-profit shared with the government hospital including fiduciary responsibility by the directors, the need to make profit or surplus, having a CEO as the management head. This differences between the public governance and corporate governance was reflected in patient outcomes with the risk of dying at birth being three times higher in public governance hospitals compared to corporate governance hospitals.

This finding of relatively poorer patient outcomes was consistent with a review of public and private hospitals in western Australia, that found low Apgar scores to be higher in public patients compared to private patients (Einarsdóttir *et al.*, 2013). Part of the reason for this differences may be due to private hospitals having higher rates of obstetric intervention even for low risk patients, which was evidenced in this study (Dahlen *et al.*, 2012).

These differences in practice between the public governance and corporate governance exist despite having the similar basic minimum standards and therefore the challenge is to identify from a governance perspective the clinical standards that will achieve the desired outcomes rather than setting minimum clinical standards.

5.5.1. Limitations of the Study

Several limitations were identified with respect to the study. This was a cross sectional study mixed methods study, integrating both quantitative and qualitative data, was chosen to enable a better understanding of hospital ownership, the governance structures that arise and the association with health service delivery, specifically maternal delivery services. The decision to select six hospitals was based on two considerations: whether additional sites would yield significantly different data from what is presented in the findings and secondly the cost of data collection from additional sites. The concern was that the data collected would not be representative of the whole country.

The study population were all level four hospitals and the public hospitals were randomly selected to reduce bias, however there are differences in organizational size and complexity. Results therefore need to be interpreted with caution considering possible impact of differences in organizational size and complexity.

Only four of the six hospitals had boards. This result is in itself an important finding as it reflects the governance of the owner. Both were government owned and the rules governing selection of board members are publicly available. Further among the study respondents were senior management who normally would be members of the board and therefore the results of the board processes remain valid.

Two issues arose regarding the quality of patient data maintained by some of the hospitals. The first was related to case definition and therefore classification of perinatal death, which were at times not clear. The second was that patients would sometimes be discharged without their records being complete. Both issues were managed by triangulating records so that maternity unit records were checked against the general registry.

A third limitation related to the context within which the study was undertaken. The study looked at governance within the hospital, but it is important to recognise the external policy implementation environment where government hospitals had just undergone a legal but yet to be fully effected change of ownership from national to county government. This change may limit generalizability prior to 2012. However the results of this study may now form a baseline for the country's health system.

Lastly the study design was cross-sectional in nature. It may well be that the governance structures described are determined by the hospital performance and not as presented in this study. The thesis therefore provides findings on mechanisms by which ownership through governance structures is associated with the performance of hospitals offering MDS.

5.6. **Summary of Key Discussion**

Two governance structures, corporate and public, were identified among the hospitals. Public governance had large boards (>8) representing diverse bodies, board members without fiduciary responsibilities and a relatively weak CEO who managed through many administrative committees. In contrast corporate governance had relatively smaller boards that held fiduciary responsibilities, a strong CEO with functional administrative heads below them.

The average maternal mortality ratio for all six hospitals was 91.44 per 100,000 births with no significant difference between corporate and public governance hospitals. Perinatal deaths were much more common when compared to maternal deaths at an average of 27.54 per 1,000 live births. Public governance hospitals had three times higher perinatal mortality rate when compared to corporate governance hospitals.

The average caesarean section rate for the six hospitals was 25.4%. A private governance hospital had the highest rate at 46%, while a public governance hospital had the lowest rate at 18%. Public hospitals did not charge maternal delivery fees but corporate hospitals charged an average Kshs 30,818 per delivery (US$304) with majority of (52.1%) patients paying cash. However 26.9% of those required to pay were waived from paying by the hospital.

Chapter 6:Summary, Conclusion and Recommendations

6.1. Summary

This study set out to explore the relationship between hospital ownership, governance structure and maternal delivery service outcomes (MDS). Hospitals are registered by ownership, rather than as part of the functional four tier health service delivery system making it difficult to assess their individual and collective performance. Hospitals play a key role in providing maternal delivery services, yet the extent to which their ownership and governance structure determine patient outcomes has been theorised but not tested experimentally.

Most studies on improving health system outcomes have focused on either the lower level health facilities or the recipient attributing poor maternal health outcomes such as maternal and perinatal mortality on the patient attributes and access problems. The general theoretical literature on the subject of hospital governance particularly in the African context is thin and inconclusive with several questions unanswered. Not much research has been done to relate the governance structure and processes of hospitals to the delivery of maternal delivery patient outcomes.

This study conducted a synthesis of literature on governance ranging from the corporate business sector to the health sector. The three main theories relevant for governance in hospitals were critically reviewed, to establish their strengths and weaknesses given the context of hospitals.

The study demonstrates that no single theory explains well the governance structures in place or the conduct of hospital boards and hospital management in determining organizational performance. However, the best performing hospital was underpinned by strong elements of stewardship theory.

To the researcher's knowledge, this study is the first study to comprehensively study faith based, for profit and public hospitals in Kenya on the subject of the role of ownership, governance structures and maternal delivery outcomes. This chapter, presents the inferences and conclusions arising from the study findings, offers recommendations for action, and suggests future areas of research. The chapter also outlines the limitations of the study.

The study had four specific objectives namely to: 1) Describe the governance structures of different hospital ownership types; 2) Determine the equity of hospital maternal delivery services; 3) Assess the effectiveness of maternal delivery services in the hospital and; 4) Examine the relationship between ownership types, governance structure and maternal delivery service.

The key finding of this study is that governance structure rather than ownership is associated with hospital performance as measured by maternal delivery service outcomes. Fiduciary responsibility at board level is associated with better patient outcomes. Furthermore the study suggests that perinatal mortality not maternal mortality is a sensitive indicator of hospital performance. The study therefore links the important health outcomes of maternal and perinatal mortality, important goals for the government and society, to governance of hospitals.

6.2. **Hospital Ownership and Governance Structure**

This study identified two types of governance structures from the three ownership types, labelled corporate and public governance as defined by whether board members bore fiduciary responsibility or not. Hospitals with corporate governance structures had better hospital performance as defined by perinatal outcomes compared to public governance hospitals.

The study findings suggest that because of the complexity in healthcare and the parallel managerial and professional decision making structures existing in healthcare organisations; coupled with the need of board members to gather and understand medical decision-making, the board should have significant membership belonging to the medical profession.

The study postulates the need to have relatively small board sizes (less than eight members). Smaller boards have fewer interests to manage and are better able to make quick decisions.

The study identified corporate governance hospitals having at hospital management level clear management structures with most power vested in the chief executive. In contrast in the public governance hospital, had the medical superintendent as the head, but in practice power was dispersed into administrative committees. The corporate governance hospitals demonstrated that having a medical doctor with management training as the head led to better health outcomes. The practice in public governance hospitals of frequent rotation of hospital heads, may likely be a contributor to poor hospital performance.

6.3. **Effectiveness of Hospital Maternal Delivery Services**

The focus of reducing maternal mortality has often been at community and lower level facilities. This study has used research findings to show that hospitals contribute significantly to maternal mortality with the maternal mortality ratio (MMR) for the six hospitals over the 3 year study period at 91.44 per 100,000 births. However there was no difference between the corporate governance vs. public governance hospitals; the maternal mortality ratio (MMR) was almost the same 91.32 and 91.57 per 100,000 deaths respectively. This suggests that maternal deaths reflect health systems wide risks rather than individual hospital performance.

In contrast for perinatal deaths there were significant differences between the corporate governance vs. and public governance hospitals with rates of 5 and 36 per 1,000 births respectively. Overall, the risk of dying at birth was three times higher in public governance hospitals compared to corporate governance hospitals. Perinatal deaths are therefore a better indicator of individual hospital performance as many of the complications that could lead to mortality require timely and optimal treatment.

6.4. Equity of Hospital Maternal Delivery Services

One major intervention in reducing perinatal and maternal mortality is caesarean section. The study reported the average caesarean section rate in this study for all the six hospitals was 25.4%, three times the national average. Neither maternal mortality nor perinatal mortality was associated with caesarean sections indicating that despite the large numbers of patients, quality of surgery was relatively high. However, the perinatal mortality rate was very high indicating a need for more caesarean sections.

The private governance hospitals had rates much higher than public governance and there was a positive correlation between payment of maternal services and likelihood of having a caesarean section. This suggests that public governance hospital MDS are not equitable with access to caesarean section contributing to perinatal mortality.

6.5. Conclusion

The study findings suggest that in reviewing hospital performance, specifically maternal delivery services as measured by maternal and perinatal mortality, classification by governance structures is much more useful when compared to ownership. Hospitals that had a corporate governance structure had smaller boards with fiduciary responsibility, clearer administrative structures with power of management well defined. Public governance hospitals had larger boards, a more diffuse power structure and weaker, less experienced chief executives. While maternal mortality was similar, perinatal mortality was much higher in public governance hospitals.

The findings suggest that because board members (executive and non-executive) in corporate governance hospitals have fiduciary responsibility they are much more aware of patient needs and attendant risks of poor clinical outcomes and are able to tie in financial performance with clinical performance. In contrast public governance hospitals are much more focused on diffusion of power and asset preservation and less sensitive to patient outcomes.

From a theory perspective this would suggest agency theory with boards holding management to account. However stewardship theory better explained the board composition and the governance processes that were associated with good clinical outcomes.

This study provides a fresh approach to implementing governance theories in relation to hospitals. From the foregoing it can be concluded that classification based on ownership does not provide a direct way to gauge hospital performance. Hospital governance structure is associated with hospital performance. Stewardship theory emphasizing information exchange is critical to good hospital governance.

6.6. **Recommendations**

Based on the foregoing it is recommended that the classification of hospitals be revised into two categories ‘corporate’ and ‘public’ that better reflect the governance structures that oversee the management of the different type of hospitals and are directly associated with hospital performance. Policymakers would be able to improve on hospitals accountability to the health system Ownership would then be a characteristic of these hospitals but not the defining feature.

As part of their governance charter, hospital boards should aim for no more than eight members, all with fiduciary responsibility, enabling the board to have power to oversee clinical hospital performance. The majority of board members should be medical professionals to better address information asymmetry and bridge the administrative and medical decision-making gaps. Hospitals should be headed by a doctor trained in management, an 'expert leader'. Management at senior level should be distinct with clear delineation of power. Chief executives should be provided with contracts that allow time to develop a hospital management team able to deliver on the hospital mandate.

Maternal delivery services are an ideal proxy for measuring national health system performance. At hospital level, monitoring of perinatal mortality is a sensitive measure that should be used to monitor hospital performance. Since this is a measure of hospital system wide governance and service delivery, reducing perinatal mortality can part of the licensing procedures for hospitals, thereby aligning national strategy to individual hospital strategy.

Much of the focus for maternal health services improvement has been at lower levels of care and it can therefore be assumed that soon the 'low hanging fruits' in reducing maternal mortality will have been picked and focus must therefore turn to quality of care of hospitals and how effective they are in delivering maternal delivery services.

The findings of this study not only reiterate the importance of governance in delivery of healthcare but go further to reveal governance structure and practices that promote hospital performance.

6.7. **Further Areas of Research**

The findings of this study identify some issues for future research. This study was cross-sectional. Yet governance is dynamic and consists of processes. Therefore a longitudinal study using an experimental design might provide us with a better understanding of management and governance dynamics and relate them to changes in hospital performance.

The data collection instruments on governance were adapted mainly from corporate for profit governance tools. There is a need to develop healthcare governance specific instruments, beyond those at the macro health system level that are better able to relate the dual nature of healthcare decision making incorporating the clinical and business management aspects of the hospital.

While each maternal death is a significant event, the number of maternal deaths were relatively few with wide inter and intra-hospital variations and effects of the wider health system at play in determining the occurrence of a death. Perinatal deaths however were more frequent and seemed directly linked to the quality of care provided within the hospital. Perinatal deaths may be a critical key indicator of hospital performance and further studies are required to link hospital governance, operations to reduction in perinatal deaths.

Appendices

Appendix A. Study Instruments

Appendix One: Patient Data Abstraction

Patient Data Abstraction

"The Influence Of Hospital Ownership And Governance Structure On Maternal Health Services Delivery In Kenya"

INTERVIEWER NAME_____

Date _____

1. Facility Name _____
2. Facility Number;
3. What type of facility is this?_____

(Government = 1, faith based = 2, private for profit = 3, NGO =4, other = 5)

Question	
1. Patient study ID	
2. Date of admission *(day/month/year)*	
3. Date of discharge (*(day/month/year)*	
4. Age (date of birth) *(day/month/year)*	
5. Parity (At the point of admission)	

Maternal Delivery Services	Response Yes=1,No=2
6. Type of delivery	
a. SVD	
b. Caesarean section	
i. If yes then reasons for C/S	
1. Obstructed labour	
2. Poor presentation	
3. Previous caesarean section	
4. Foetal distress	
5. Other specify_____	
c. Assisted vaginal delivery Yes=1,No=2	
i. If yes, specify reason for assisted vaginal delivery	

Maternal Delivery Services	Response Yes=1,No=2
7. Outcome of Delivery: Maternal complications *Yes=1,No=2*	
8. If Yes to complications then indicate diagnosis *(can be more than one response)*	
1. Eclampsia ?	
2. Haemorrhage?	
3. Underwent hysterectomy?	
4. Admitted to ICU or HDU?	
5. Maternal death?	
6. Neonatal death?	
9. Was the patient readmitted within six weeks? *Yes=1,No=2*	
a. If YES, what was the reason for readmission?	
b. Date of readmission *(day/month/year)*	
c. Date of discharge *(day/month/year)*	

Payment for Maternal Delivery Services	
10. Did the patient pay for MDS? *Yes=1,No=2*	
a. If YES, how much was paid in total for MDS? Kshs *(includes NHIF)*	
b. What method was used to pay the hospital? (Can be more than one response. Indicate amounts paid by each)	
1. Cash	
2. Personal private insurance (PPI)	
3. If PPI state the insurance company	

4. Company medical fund	
5. NHIF	
6. Donor project fund e.g. OBA	
7. Other (specify)	
11. If the patient did not pay for MDS was there a fee waiver?	
a. If there was a fee waiver was it a full waiver *Yes=1,No=2, partial=3*	
12. Did the hospital give any credit? *Yes=1,No=2*	
13. Did the patient clear the bill within the credit period?	
a. If the patient did not clear the bill what was the balance?	

Appendix Two: Hospital Data Abstraction

Hospital Data Abstraction

INTERVIEWER NAME_____

Date _____

1. Facility Name _____
2. Facility Number;
3. What type of facility is this?
4. (Government = 1, faith based = 2, private for profit = 3, NGO =4, other = 5)
5. How many staff with each of the following qualifications or category work specifically in maternal delivery services?

Cadre	Number	Type of contract: (full time, part-time)	Period of time worked in hospital (months)	Annual mid-point total emoluments
Nurse BSc.			If 4 nurses then 23,44,60,28	
Nurse Registered (diploma)				
Midwife				
Clinical Officer				
Medical Officer				
Obstetrician/Gynaecologist				
Paediatrician				
Other (specify)				

Year	2014	2013	2012
6. How many beds in the maternity ward/unit in this hospital?			
7. What are the total number of delivery beds in this hospital?			
8. How many patients have been admitted for MDS?			
9. How many patients had an SVD?			
10. How many patients had a caesarean section?			
11. Total MDS admission days?			
12. How many MDS patients have been transferred?			
13. How many MDS patients have been referred?			
14. Number of maternal deaths?			
15. Number of neonatal deaths?			
16. Number of readmissions of MDS patients within 6 weeks of delivery			

Appendix Three: Key Informant Guide

Key Informant Guide

(Administered to med superintendent, facility in-charge, board secretary, hospital administrator, nurse in-charge of MDS)

INTERVIEWER NAME_____

Date _____

1. Facility Name _____
2. Facility Number;
3. What type of facility is this?
   (Government = 1, faith based = 2, private for profit = 3, NGO =4, other = 5)

About you

In order to understand your views I would firstly like to know a few things about you. The answers you provide will be used only to help with the research analysis, and will not be used in any way to identify you personally.

1. Are you: Male? 1 Female? 2 _____
2. What is the highest qualification you hold?
3. What professional qualifications do you hold? (Tick more than one if applicable)
   a. Medical [1] Non-medical [2]
   b. Specify _____
4. Length of employment at current hospital_____
5. Do you work here: Full-time? [1]Part-time? [2]
6. Kindly describe your role, position and responsibility?
   Probe:
   a. Is there a job description for your position?
   b. Can you tell me what your main functions are in your current position in this hospital?
   c. Have you always been in this position or in other positions within the hospital?
   d. Are your functions dependent on need or do they follow a legal and policy framework (specify which one)?
   e. Are there any new (or proposed) functions you are now doing that you were not doing before?
7. Describe the governance structure of the hospital (*draw an organogram)*
   Probe:
   a. What role(s) do each of the structures described play in maternal delivery service?
   b. Are there some structures/individuals that are more important than others? In what way?

c. Describe the governance of the hospital in terms of who has the legal rights to the facility such as;
    i. Rights to acquire and dispose of assets,
    ii. Rights to use assets (clinical or non-clinical).

8. What are the major incentives provided by MOH that influence MDS in this hospital?
   Probe:
   a. How do you think they influence hospital performance?
   b. Are there any proposed incentives?
   c. What incentives arise from the governance structure that promote maternal delivery service? (volume, quality)

9. What challenges do you experience in providing maternal delivery services?
   Probe:
   a. What are the present challenges presented by MOH that influence MDS in this hospital?
   b. Around the six building blocks (HRH, Service delivery, Finance, Medical products & vaccines, Information, Leadership & Governance). *Elaborate on each challenge mentioned.*
10. Describe how investments in service delivery are decided and made?
    Probe:
    a. What are the sources of investment capital?
    b. What is the tax status of the hospital?
    c. How are profits distributed?

Thank you for completing this interview.

Appendix Four: Hospital Governance Questionnaire

Hospital Governance Questionnaire[16]

INTERVIEWER NAME_____

1. Date _____
2. Facility Name _____
3. Facility Number_____
4. What type of facility is this?_____
5. (Government = 1, faith based = 2, private for profit = 3, NGO =4, other = 5)

Licensing/Registration of the hospital

6. What licenses are required to operate the facility?

6.1. Type of License	6.2. Licensing authority	6.3. License currently valid *[yes=1, no=2]*	6.4. License displayed in public view *[yes=1, no=2]*	6.5. Fees paid	6.6. License frequency (annual=1, initial registration =2, other=3)

Board Composition and Processes

7. Are board members formally appointed? *[yes=1, no=2]*
8. Describe the process of nomination to the board? *[Election=1,Selection=2]*
   8.1. Selection done by_____
9. Describe the composition of the board, current year and in each of the last 3 preceding years. *(Fill table for each year)*

Year	Board Member						
	1	2	3	4	5	6	7
Male =1;Female=2							
Age (years)							
Profession [medical=1, non-medical=2, then doctor, nurse, accountant etc.]							
Is currently employed by Hospital *[yes=1, no=2]* If Yes full time=3 or part time=4]							
Time served on board *<1 yr;1-2yr;>3yr*							
Has a specific role(s) on board *(e.g. chair, audit committee)*							
Representation [Community=1, management=2, owner=3, other=4 specify] (Trustee or fiduciary)							

[16] Adapted from Governance Centre of Excellence, Sample Governance Audit Questionnaire, *https://www.thegce.ca/.../Goodgovernance/Guide%20to%20Good%20Governance%2....*

Voting rights*[yes=1, no=2]*							
Pay [yes=1, no=2] If 1 then amount per annum							
Owns shares *[yes=1, no=2* If yes <15%=3, 15-49.9%=4, >50%-85%=5, >85%=6							
Board compensation *[yes=1, no=2]* If employed by hospital, separate board membership pay from other pay (Travel costs not part of compensation)							

10. Does the board have term limit(s) for members serving? Yes=1/No=2

11. How often are board meetings held?

Year (specify hospital year)	Current Year	Previous Year	Two years ago	Three years ago
Number of meetings				
What are the issues that routinely most occupy the board's time during meetings?**(list the issues*[17]*)*				

12. Is the board the final decision-maker regarding the strategic direction of the hospital? *[yes=1, no=2]*

12.1. Explain.

_____

_____

13. Is there any document or set of documents that describes the mission, vision and values, purpose and goals of the organization? Yes=1/No=2.

14. Does the hospital have a strategic plan? *[yes=1, no=2]* _____

14.1. If yes are the strategic plans done with approval of the board? [yes=1, no=2] _____(check that appears in minutes of board).

15. Are there any documents that demonstrate the involvement of the following in strategic or program planning?

15.1. Community leaders [yes=1, no=2] _____

15.2. Health care organizations in strategic or program planning of service delivery? *[yes=1, no=2* _____

16. What is the hospital mission statement?

_____

_____

17. Is the organization's mission made public? *[yes=1, no=2]*.

17.1. If yes where_____(website, published document, notice board)

_____

17 Strategic=1[strategic planning, joint ventures, competitive position].

Operational=2 [cash flow, hiring]

18. Is there any document or set of documents that describes the structure of the organization? *[yes=1, no=2]Provide organogram.*
19. Is there an annual budget developed? *[yes=1, no=2]*
20. Is the budget approved by the board? *[yes=1, no=2]*
21. Is approval of the budget documented in the minutes of the governing body? *[yes=1, no=2]*
    21.1. If no then who approves the budget? _____

Hospital Management Structure and Processes

22. Is there any document or set of documents that describes the roles/responsibilities of the Chief Executive Officer? *[yes=1, no=2]*
23. Describe the hospital management team composition.

Position (title)	Reports to	Professional qualifications	Years in current position

24. Are routine hospital management meetings held?
25. If yes how often are they held?_____
26. Are there minutes that support these meetings? *[yes=1, no=2]*
27. Who regularly attends these meetings?

28. Are there any documents that demonstrate that policies approved by the board have been implemented? [yes=1, no=2, list the documents shown as evidence including reports, meeting minutes, plans].If no explain.

29. How are the various departments coordinated? *(multiple answers allowed)*
    1. Regular staff meetings
    2. Grand rounds
    3. Interdisciplinary team meetings
    4. Reporting processes (e.g. shift reports)
    5. Others (Specify)_____
30. List the departments that together provide MDS
    1. How are the various departments coordinated with reference to MDS?
    2. Regular staff meetings
    3. Grand rounds
    4. Interdisciplinary team meetings
    5. Reporting processes (e.g. shift reports)
    6. Others (Specify)_____
31. Are there copies of applicable laws and regulations that govern the hospital readily available? *[yes=1, no=2, partially=3. List which ones]*

32. Is compliance with laws and regulations documented? *(reporting where required)*

Area	yes=1, no=2, partially=3, not up to date=4
HRH (e.g. Radiology safety logs)	
Information (Reporting of data to MOH)	
Service Delivery (Notifiable contagious diseases)	
Governance (changes in board, hospital management)	
Finance (annual operating plan to MOH)	
Vaccines and medical products (e.g. expiry of drugs)	
Other (specify)	

33. Are there any reports from inspecting or regulatory agencies focusing on MDS available? *yes=1, no=2, partially=3, not up to date=4. List which ones are)*

Inspecting or Regulatory agency	Date of last inspection/regulatory visit	Are there minutes of meetings or reports that show that actions have been taken to rectify any issues arising from inspection or regulatory visit? *yes=1, no=2*

34. Does the hospital formally use any independent contractors to provide any clinical services related to MDS?

Area	Describe the type of service	yes=1, no=2	How is the contractor selected? *(tender, selection)*	How is quality of service provided monitored? (minutes of meetings=1; reports=2;)	Are complaints regarding contracted services documented and followed up? *yes=1, no=2*	If No, describe the nature of relationship Patient choice=3 Informal contract=4 Other=5
Diagnostic services (e.g. lab, x-ray)						
Consultation						
Treatment						
Other (e.g. cleaning)						

Investment Structure

35. What major investment has the hospital undertaken in the last 3 years?

36. How does the hospital raise capital to finance investment?

1. Internal (profits are reinvested)
2. Loans (bank)
3. Loans (shareholders)
4. Loans (donor)
5. Donations
6. Other _____

37. Is the hospital exempt from paying any taxes? Yes/No_____.
Explain_____

38. Is the hospital legally obliged to pay corporate tax on profits? Yes/No_____

39. Has the hospital made a surplus (profit) in the last three years?

Year	2014	2013	2012
Profit (Yes/No)			

39.1. If Yes, how is the surplus distributed? (if response is more than one category estimate proportions)

	Proportion (%)
Shareholder dividend	
Retained by hospital for future investment	
Used to pay for patients unable	

39.2. If No, how are the losses distributed?

	Proportion (%)
Shareholders bear loss	
Other, explain_____	

Appendix Five: Sample Hospital Governance Audit Questionnaire

Governance Centre of Excellence, Ontario Hospital Association

Form 4
Sample Hospital Governance Audit Questionnaire

Checklist of Governance Practices	Status of Governance Practices & Recommendations
1. Legal Structure of the Hospital and Background Information	
a. Letters Patent and Supplementary Letters Patent. Review for special provisions.	
b. Date of most recent by-law review: Provide by-laws (administrative).	
c. Identify any special issues or challenges facing the hospital (i.e., member communication, resources, stability).	
d. Date of most recent governance review.	
2. Role of the Corporation and Accountabilities	
a. Role of the corporation (provide copies of: objects/purpose, mission, vision and values, strategic directions).	
b. Date of last strategic plan. Date of next review.	
c. Identify a corporation's accountabilities and key relationships. Is there a formal statement of corporate accountability? Date of last review.	
3. The Board's Governance Role	
I. Define the role of the board	
a. Board exercises a governance role in the following areas: strategic planning, financial oversight, risk/quality, CEO and Chief of Staff supervision and succession planning, communication, governance. Has the board expressly adopted a statement of the board's role? (Provide copies.) Date of last review	
b. Is there an annual board workplan? (Provide copies.)	
II. Provide an outline of how the board performs its responsibilities for the following areas of board performance:	
a. Strategic planning – ensuring a strategic plan is developed with board participation and ultimate board approval, ensure annual review takes place and participate in annual review of strategic plan.	
b. Oversight of management (CEO and Chief of Staff) – develop and approve CEO job description; select the CEO, review and approve CEO's annual performance goals; review CEO performance; ensure succession plans are in place for CEO and senior management; and exercise oversight of CEO's supervision of senior management as part of CEO's annual review. Outline process for Chief of Staff selection and review.	
c. Quality and risk identification and management – ensure quality standards and indicators are established and approved by the board; ensure board understands its role in relation to risk; ensure processes are in place for identifying risks; and that plans are developed and implemented to monitor and manage risks.	

Sample Hospital Governance Audit Questionnaire

Checklist of Governance Practices	Status of Governance Practices & Recommendations
d. Financial oversight – stewardship of financial resources including setting policies for financial planning; approving annual budget; monitoring performance; approving investment policies; and approving audited financial statements.	
e. Governance – the board is responsible for the quality of its own governance; the board establishes and periodically accesses policies regarding board conduct and processes; the board reviews its governance structures (board size and composition, committee mandates and composition, officers, meeting effectiveness, etc.) at periodic intervals; the board is responsible for its own succession and ongoing quality (education) and to monitor board and individual directors effectiveness through annual evaluations.	
f. Communication and accountability – ensure organization appropriately communicates with its stakeholder in a manner consistent with accountability to stakeholders.	
4. Duties, Obligations and Expectations of Individual Directors	
a. Fiduciary obligations to adhere to and observe the standard of care expected of a director and to obey the "Rules of Fiduciary Conduct". The standard of care is to act honestly and in good faith and in the best interests of the corporation and to apply the skill and judgment that might reasonably be expected of a person with the same level of skill (special expertise must be applied). Is there a formal policy with respect to directors duties? How are directors made aware of their duties and obligations?	
b. Rules of fiduciary conduct • Avoid conflict of interest • Corporate obedience – solidarity, board speaks with one voice • Confidentiality • Loyalty – act in interest of corporation as a whole and not any one group or representative body Is there a board Code of Conduct that describes the rules of fiduciary conduct?	
c. Describe expectations regarding the level of attendance and participation at board and committee meetings. How are these expectations communicated?	
d. Describe participation in board and individual director evaluation (self-evaluation and/or peer review).	
5. Board Governance Policies	
a. Has a formal board Governance Policy Manual been prepared? (Provide copies.)	
b. Date of last review.	
c. Process for updating.	

Checklist of Governance Practices	Status of Governance Practices & Recommendations
6. Board Composition & Recruitment	
I. Board Size and Composition	
a. Identify number of elected/appointed/*ex-officio* directors. List *ex-officio* directors by office.	
II. Board Quality	
a. Is there a process to identify skills required of board members?	
b. Is a board profile or skills matrix of the current board maintained?	
c. How are prospective board nominees identified? Is a roster of eligible candidates maintained?	
d. How are prospective candidates advised with respect to role and expectations of directors?	
e. How are prospective candidates evaluated?	
f. Who makes the recommendation of approved candidates?	
g. How is election conducted at annual meeting?	
III. Term of Office	
a. Board term (initial, renewal and maximum terms).	
b. Committee chair terms (initial, renewal and maximum terms).	
c. Officer terms (initial, renewal and maximum terms). Identify officers.	
7. Officers	
a. There is a clear process to select officers and committee chairs. Describe process.	
b. Are position descriptions prepared and periodically reviewed?	
8. Board Committees	
a. Do committees have written mandates? (provide committees' Terms of Reference)	
b. Are committee mandates reviewed periodically?	
c. How are committees established? Committees are established pursuant to governance principles (committees do board work not management work). Describe how committee reports are dealt with by the board.	
d. Is the Audit Committee comprised of independent directors?	
e. Is there an Executive Committee and how does it report to the board? Describe decision making role of Executive Committee.	

Appendix Six: Coding Framework

Final Coding Framework		
Final Category /themes	**Code**	**Sub-code**
1. Governance Structure	Board mandate	
	Board Members	
	Board Size	Number of members
	Types of members	Professional association
	Independent members	
	Management members	
2. Management Team	Job description	
	Education	
	Experience	
3. Governance Process	Power	
	Delegated powers	
	Meetings	
	Disposal of assets	
4. Management Process	Meetings	Types of Meetings
		Number of Meetings
5. Maternal delivery service	Departments	
	Staffing	
	Cadre	Nurse
		Midwife
		RCO
		MO
		Consultant
	Qualifications	
	Full time/part time	
	Cadre Experience	
	No of beds	

Appendix Seven: Consent Form

Consent Form

Informed Consent Form for hospital board members, hospital chief executive, and senior hospital executives.

Research Title: The Influence of Hospital Ownership and Governance Structure On Maternal Health Services Delivery In Kenya.

Principal Investigator: Dr. Richard Ayah

Organization: University of Nairobi, School Of Public Health.

Supervisors: Dr. Dismas Ongore MbChb, MPH, PhD

Professor Alfred T.O. Agwanda M.Sc., PhD

Dear Participant,

Introduction

My name is Dr. Richard Ayah, a lecturer at the School of Public Health pursuing a PHD degree at the University of Nairobi. As one of the requirements for completion of this course, I am required to carry out a study. I intend to carry out this study in Nairobi and Kiambu County.

Purpose of the Study

The purpose of my study is to determine the influence of hospital ownership in the provision of maternal delivery services by hospitals.

Type of Research Intervention

This will be a cross sectional study mixed methods study.

Files of patients admitted to the maternity delivery service: Data will be collected using a data abstraction tool, which will be collected by the research assistants.

Hospital board members and Hospital management team: Key informant interviews as well as in- depth interviews will be conducted.

Participant Selection

Your selection to participate in this study is by chance and I wish to request you to kindly allow the interviewer to take some of your time to ask you some questions. If you agree to participate in the study, the interviewer will ask you some questions and record your answers in the questionnaire. The questions will address the hospital ownership and governance factors that possibly influence provision of maternal delivery services.

Voluntary Participation

Your participation in this study is entirely voluntary. It is your choice to participate or not. You may change your mind later and stop participating even if you agreed earlier.

Sharing of Results

Results of this study will be shared with policy makers in the formulating equitable health policy that define roles of different hospitals in the healthcare system. We will also publish on peer review journals to reach a wider group of people. Confidential information will not be shared.

Risks

There are no medical risks to you in participating in this study. You will be simply requested to answer the questions as they are asked, and you are not obliged to answer a question if you do not feel like.

Benefits

There may be no direct benefit to you from this study. However, it is expected that the findings of this study will be used to come up with policy recommendations that improve the governance structures of hospitals and therefore improve outcomes for patients accessing maternal delivery services.

Confidentiality/Privacy

The information you give for this study will be treated with utmost confidentiality during the study and thereafter. Your name will not be recorded anywhere on the questionnaire. None of the information you give will be linked to you and it will only be used for the intended purpose. Any sensitive information will be treated with the strictest confidentiality. In the final report no names of the health facility or respondents will be mentioned.

Right to Refuse or Withdraw

Your participation in this study is voluntary. You have the right to refuse to participate or to answer any question that you feel uncomfortable answering. If you change your mind about participating during the course of the study, you have the right to withdraw. The decision not to participate or to withdraw will not affect any aspect of your life. If there is anything that is not clear that you need clarification, we shall be happy to assist you. [*Interview ask if the respondent has any questions and provide the necessary clarifications*]

Contact information

The study proposal has been reviewed and approved by the Kenyatta National Hospital/ University of Nairobi- Ethics Review Committee (KNH/UoN-ERC), a committee mandated to ensure protection of study participants from harm. In case of any questions you can contact the committee through:

The Secretary,
The Kenyatta National Hospital/University of Nairobi-Ethics & Research Committee (KNH/UON-ERC)
The Kenyatta National Hospital
Telephone number: +2542726300-19; (020) 726300-9
Email address: uonknh_erc@uonbi.ac.ke
Physical address: Kenyatta National Hospital School of Pharmacy, UON behind the KNH Dental clinic.
Postal address: P O BOX 20723-00202, Nairobi, Kenya
Country: Kenya

You also can contact the principal investigator for further information on 0720940526.

Informed Consent Form

I confirm that I have read the above information/the above information has been read to me. I had the opportunity to ask questions and all questions were answered to my satisfaction. I consent voluntarily to participate in the study as a respondent. I do understand that I have the right to withdraw from the study at any time without my life being affected in any way.

Signature of the respondent (Optional) _____ Date_____

Signature of the Investigator_____ Date_____

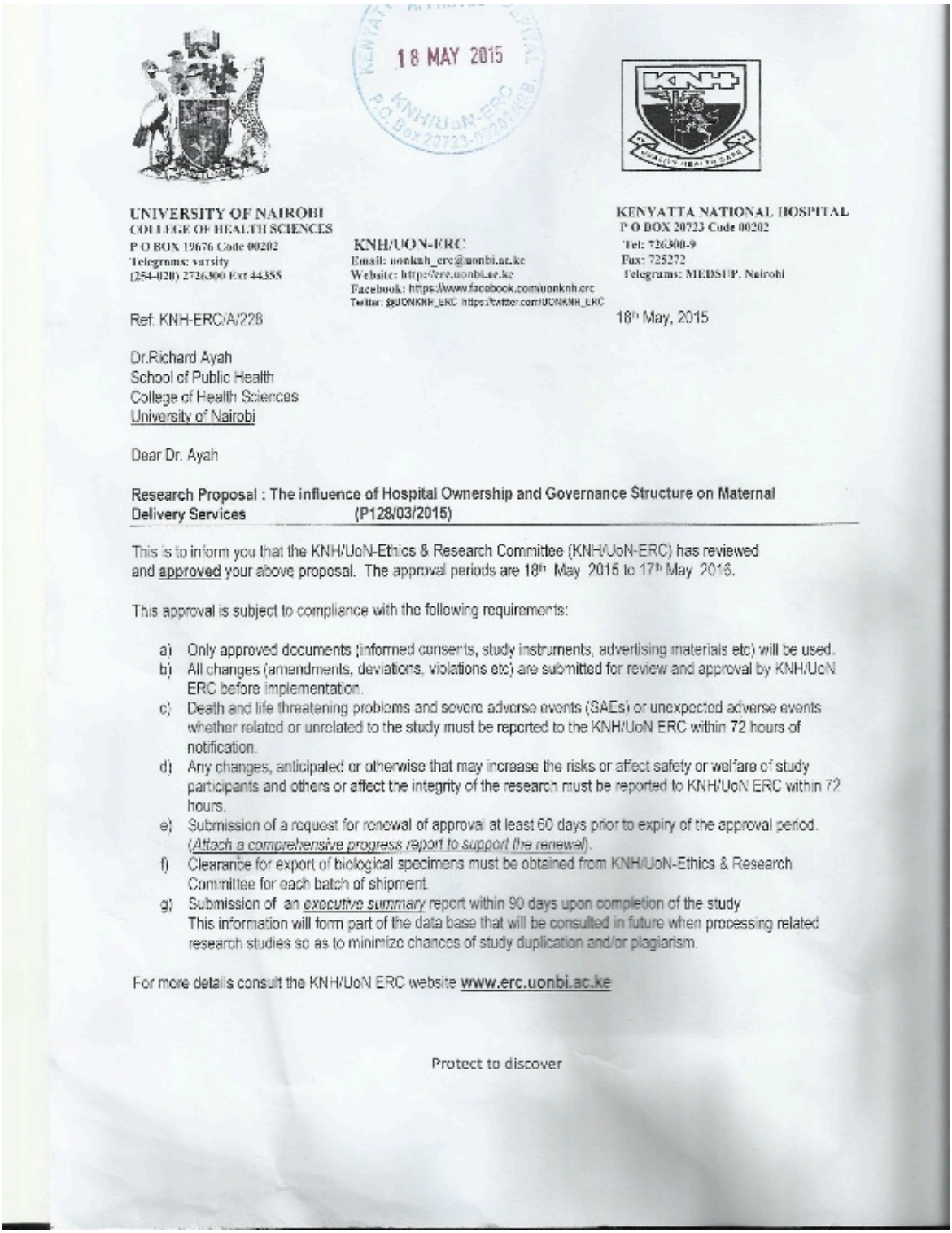
A copy of this informed consent form has been provided to the participant.

Name of researcher---------- Signature----------

Name of participant---------- Signature----------

Date --------/-------/-------Day/month/year

Appendix Eight: KNH/UON -Ethics & Research Committee Consent



18 MAY 2015

UNIVERSITY OF NAIROBI
COLLEGE OF HEALTH SCIENCES
P O BOX 19676 Code 00202
Telegrams: varsity
(254-020) 2726300 Ext 44355

KNH/UON-ERC
Email: uonknh_erc@uonbi.ac.ke
Website: https://erc.uonbi.ac.ke
Facebook: https://www.facebook.com/uonknh.erc
Twitter: @UONKNH_ERC https://twitter.com/UONKNH_ERC

KENYATTA NATIONAL HOSPITAL
P O BOX 20723 Code 00202
Tel: 726300-9
Fax: 725272
Telegrams: MEDSUP, Nairobi

Ref: KNH-ERC/A/228

18th May, 2015

Dr.Richard Ayah
School of Public Health
College of Health Sciences
University of Nairobi

Dear Dr. Ayah

Research Proposal : The influence of Hospital Ownership and Governance Structure on Maternal Delivery Services (P128/03/2015)

This is to inform you that the KNH/UoN-Ethics & Research Committee (KNH/UoN-ERC) has reviewed and approved your above proposal. The approval periods are 18th May 2015 to 17th May 2016.

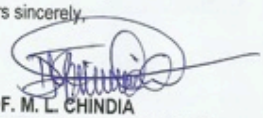
This approval is subject to compliance with the following requirements:

a) Only approved documents (informed consents, study instruments, advertising materials etc) will be used.
b) All changes (amendments, deviations, violations etc) are submitted for review and approval by KNH/UoN ERC before implementation.
c) Death and life threatening problems and severe adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the KNH/UoN ERC within 72 hours of notification.
d) Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH/UoN ERC within 72 hours.
e) Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. (*Attach a comprehensive progress report to support the renewal*).
f) Clearanbe for export of biological specimens must be obtained from KNH/UoN-Ethics & Research Committee for each batch of shipment.
g) Submission of an *executive summary* report within 90 days upon completion of the study This information will form part of the data base that will be consulted in future when processing related research studies so as to minimize chances of study duplication and/or plagiarism.

For more details consult the KNH/UoN ERC website www.erc.uonbi.ac.ke

Protect to discover

Yours sincerely,



PROF. M. L. CHINDIA
SECRETARY, KNH/UON-ERC

c.c. The Principal, College of Health Sciences, UoN
The Deputy Director CS, KNH
The Chair, KNH/UoN-ERC
The Director, School of Public Health,UoN
Supervisors: Dr. Dismas Ongore, Prof.Alfred Agwanda

Appendix Nine: Administrative Consent Kiambu County

MINISTRY OF HEALTH KIAMBU COUNTY

CHIEF OFFICER – HEALTH SERVICES P. O. BOX 2344 – 00900
KIAMBU

Telegrams: "MEDICAL", Kiambu Telephone : Kiambu (office) 2011051 When replying please quote Mobile: 0721276644

Email adreess:cdhkiambu@gmail.com

Ref. No.: KBU/COUNTY/RESEARCH AUTHO/.VOL 1/24 Date: 15th June, 2015

TO WHOM IT MAY CONCERN,
RE: CLEARANCE TO CONDUCT RESEARCH IN THE COUNTY

Kindly note that we have received a request by Dr Richard Ayah of University of Nairobi to conduct research on ***"The Influence of Hospital Ownership and Governance Structure on Maternal Delivery Services"*** in selected sub-counties of Kiambu County.

We have duly inspected the study documentation and found that it has been cleared by the KNH/UoN-ERC to proceed during 18th May 2015 – 17th May 2016. There is thus no need for further clearance with another regulatory body in order to conduct research within the county of Kiambu, and the County Health Research and Development Unit has no objection to this study proceeding as proposed.

However, it is incumbent upon the facility in which the research is being carried out to ensure that they are conversant with the remit of the study and operate in line with their institutional norms on conducting research. This note also accords the principal investigator the duty to provide feedback on the research to the county at the conclusion of the study.

Dr M. N. Ndirangu, MBChB, Mphil, CRD County Health Research & Development Unit, KIAMBU COUNTY

Appendix Ten: Administrative Consent Nairobi County

NAIROBI CITY COUNTY

Telegrams: "PRO-MINHEALTH", Nairobi
Telephone: Nairobi 217131/313481
Fax: 217148

When replying please quote

Ref. No. CHS/PH/109/42

COUNTY HEALTH OFFICE
NAIROBI
NYAYO HOUSE
P.O. Box 34349-00100
NAIROBI

COUNTY HEALTH SERVICES

TO: Dr. Richard Ayah,

University of Nairobi

School of public Health

RE: RESEARCH AUTHORIZATION

Following your application dated 19th May, 2015 for authority to carry out research on "**The Influence of Hospital Ownership and Governance Structure on Maternal Delivery Services.**"

I am pleased to inform you that you have been authorized to undertake research in Nairobi County.

On completion of the research, you are expected to submit **two hard copies and one copy in PDF** of the research thesis to our operational research technical working group.

For COUNTY DIRECTOR OF HEALTH
NAIROBI COUNTY

Mr Raphael. K Muli ,

For County Director of Medical Services

Cc

Medical Superintendent

- **Mama Lucy Kibaki**
- **Mbagathi Hospital**

Appendix Eleven: Administrative Consent Gatundu

MINISTRY OF HEALTH

Telegram: "MEDICAL"Gatundu
Telephone: Thika 067-74024
When replying please quote
Email Address :

GATUNDU LEVEL IV HOSPITAL
P.O BOX 84 - 01030
GATUNDU
gatundul4h@gmail.com

Ref:GTD/GEN/37/VOL.1/27

22nd June 2015

DR. RICHARD AYAH
NAIROBI UNIVERISTY
REG. NO P128/03/2015

RE: COLLECTION OF DATA

Your application to conduct research on ***"The Influence of Hospital Ownership and Governance Structure on Maternal Delivery Services"*** in this institution has been granted.

During the entire period of your research, you will be reporting to the Nursing Services Manager, who will be the key hospital coordinator during the data collection. She will support you access any information that may be relevant for the successful undertaking of the research.

Finally, you are expected to adhere to all the regulations relating to confidentiality of patient information, ethics in research as well as all norms regarding conduct in a Public Health Institution.

Wishing you a successful research.

MEDICAL SUPERINTENDENT
GATUNDU DISTRICT HOSPITAL
P. O. Box 84 - 01030
TEL: 0786 916 894
GATUNDU

KARIUKI J.G.
F: MEDICAL SUPERINTENDENT
GATUNDU LEVEL 4 HOSPITAL

Appendix Twelve: Administrative Consent Mbagathi Hospital

MINISTRY OF HEALTH

Tel: 2724712, 2725791, 0721 311 808
www.mbagathihospital.org
info@mbagathi.org ,
mdhnairobi@yahoo.co.uk
Our Ref: MS/VOL.1/2015

Mbagathi Hospital
P.O. Box 20725- 00202
Nairobi

15th June 2015

Dr. Richard Ayah
University of Nairobi

Dear Sir,

RE: RESEARCH AUTHORIZATION

This is in reference to your application for authority to carry out a research on ***"The influence of hospital ownership and governance structure on maternal delivery services."***

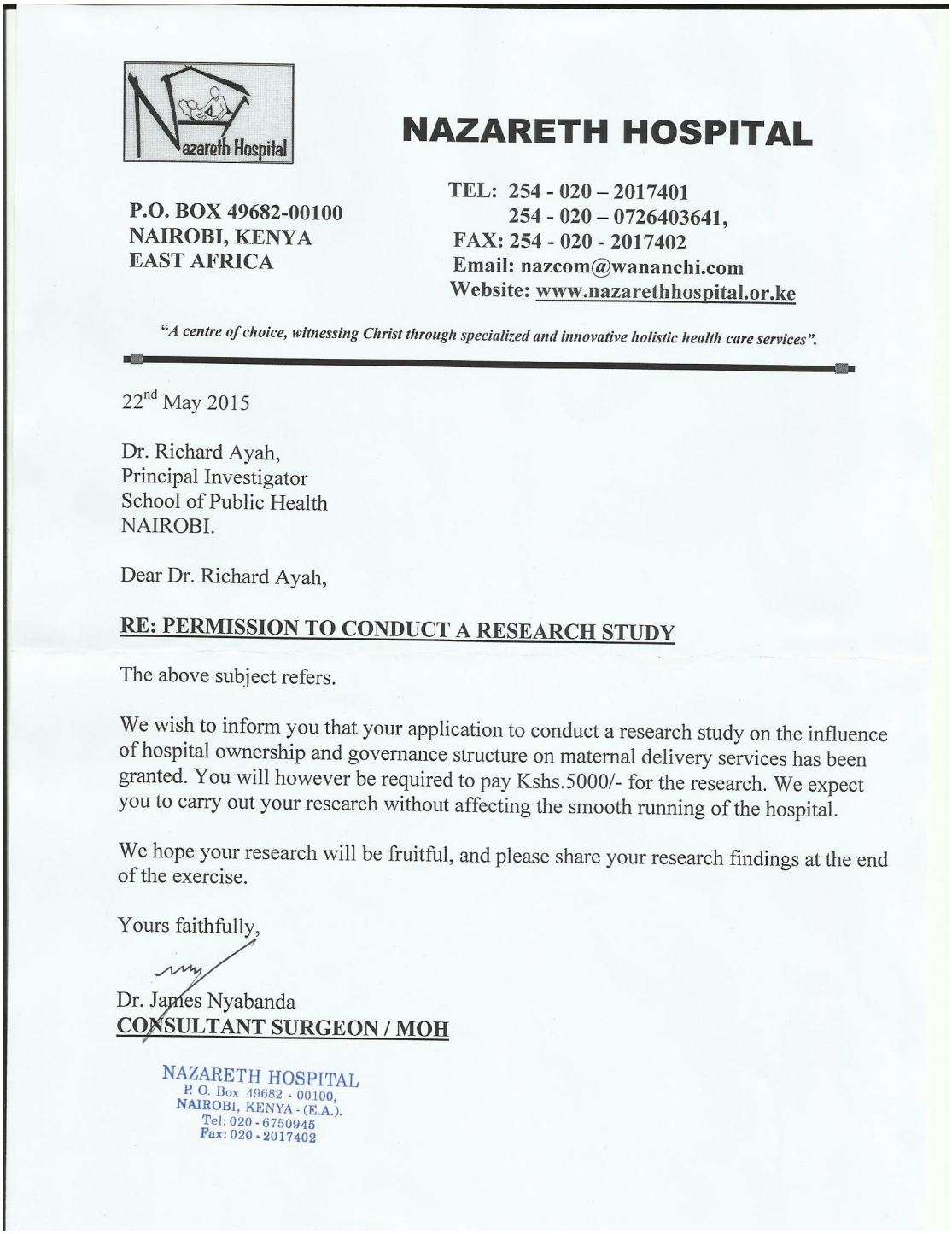
I am pleased to inform you that your request to undertake the research in the hospital has been granted.

On completion of the research you are expected to submit one hard copy and one soft copy of the research report / thesis to this office.

15 JUN 2015

Dr. A. J. Suleh
Medical Superintendent
Mbagathi Hospital

Appendix Thirteen: **Administrative Consent Nazareth**



NAZARETH HOSPITAL

P.O. BOX 49682-00100
NAIROBI, KENYA
EAST AFRICA

TEL: 254 - 020 – 2017401
254 - 020 – 0726403641,
FAX: 254 - 020 - 2017402
Email: nazcom@wananchi.com
Website: www.nazarethhospital.or.ke

"A centre of choice, witnessing Christ through specialized and innovative holistic health care services".

22nd May 2015

Dr. Richard Ayah,
Principal Investigator
School of Public Health
NAIROBI.

Dear Dr. Richard Ayah,

RE: PERMISSION TO CONDUCT A RESEARCH STUDY

The above subject refers.

We wish to inform you that your application to conduct a research study on the influence of hospital ownership and governance structure on maternal delivery services has been granted. You will however be required to pay Kshs.5000/- for the research. We expect you to carry out your research without affecting the smooth running of the hospital.

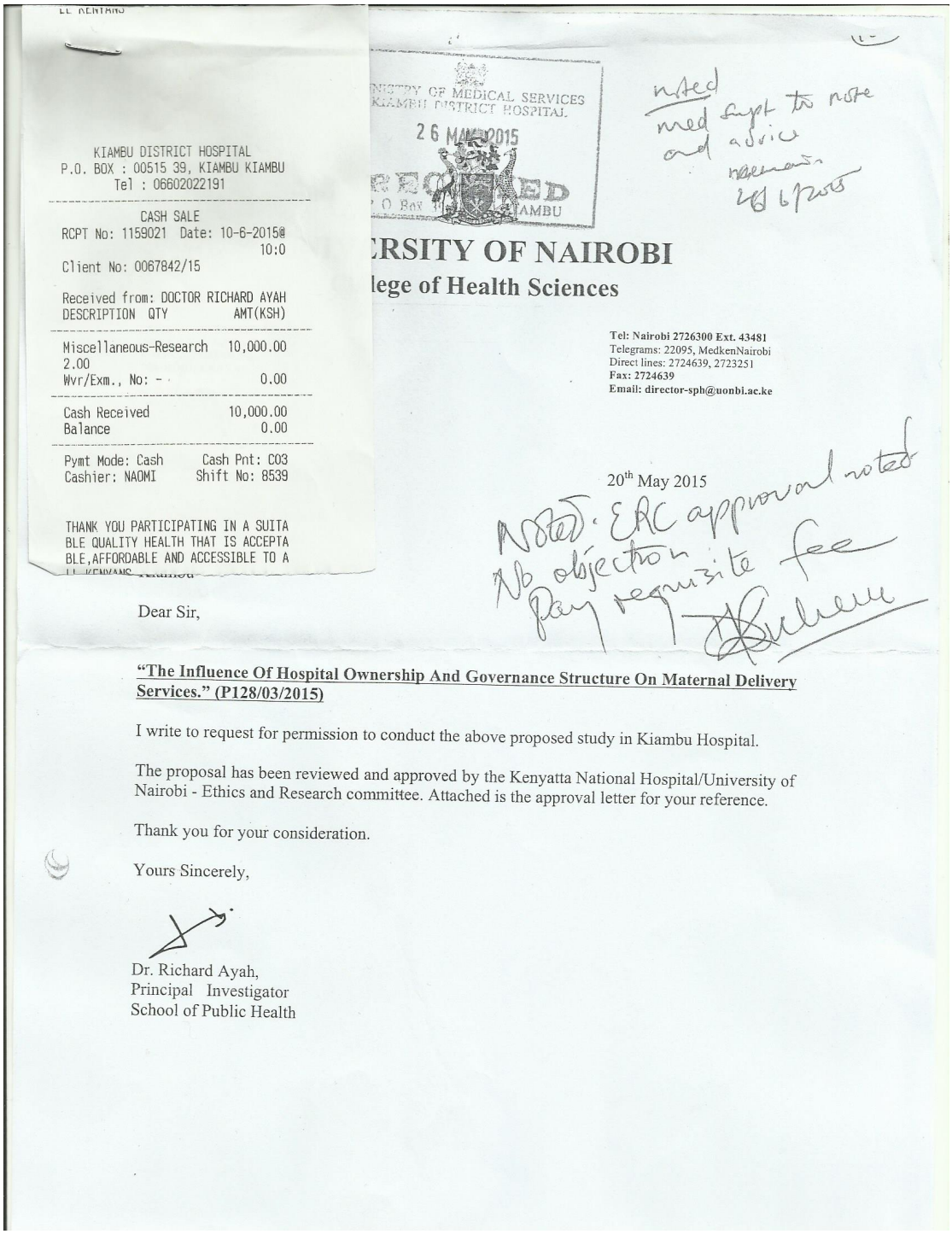
We hope your research will be fruitful, and please share your research findings at the end of the exercise.

Yours faithfully,

Dr. James Nyabanda
CONSULTANT SURGEON / MOH

NAZARETH HOSPITAL
P. O. Box 49682 - 00100,
NAIROBI, KENYA - (E.A.).
Tel: 020 - 6750945
Fax: 020 - 2017402

Appendix Fourteen: Administrative Consent Kiambu Hospital



KIAMBU DISTRICT HOSPITAL
P.O. BOX : 00515 39, KIAMBU KIAMBU
Tel : 06602022191

CASH SALE
RCPT No: 1159021 Date: 10-6-2015@ 10:0
Client No: 0067842/15

Received from: DOCTOR RICHARD AYAH

DESCRIPTION	QTY	AMT(KSH)
Miscellaneous-Research 2.00		10,000.00
Wvr/Exm., No: -		0.00
Cash Received		10,000.00
Balance		0.00

Pymt Mode: Cash Cash Pnt: C03
Cashier: NAOMI Shift No: 8539

THANK YOU PARTICIPATING IN A SUITA BLE QUALITY HEALTH THAT IS ACCEPTA BLE,AFFORDABLE AND ACCESSIBLE TO A

MEDICAL SERVICES
DISTRICT HOSPITAL
26 MAY 2015
AMBU

noted
med supt to note and advise
26/5/2015

RSITY OF NAIROBI
lege of Health Sciences

Tel: Nairobi 2726300 Ext. 43481
Telegrams: 22095, MedkenNairobi
Direct lines: 2724639, 2723251
Fax: 2724639
Email: director-sph@uonbi.ac.ke

20th May 2015

Noted. ERC approval noted
No objection
Pay requisite fee

Dear Sir,

"The Influence Of Hospital Ownership And Governance Structure On Maternal Delivery Services." (P128/03/2015)

I write to request for permission to conduct the above proposed study in Kiambu Hospital.

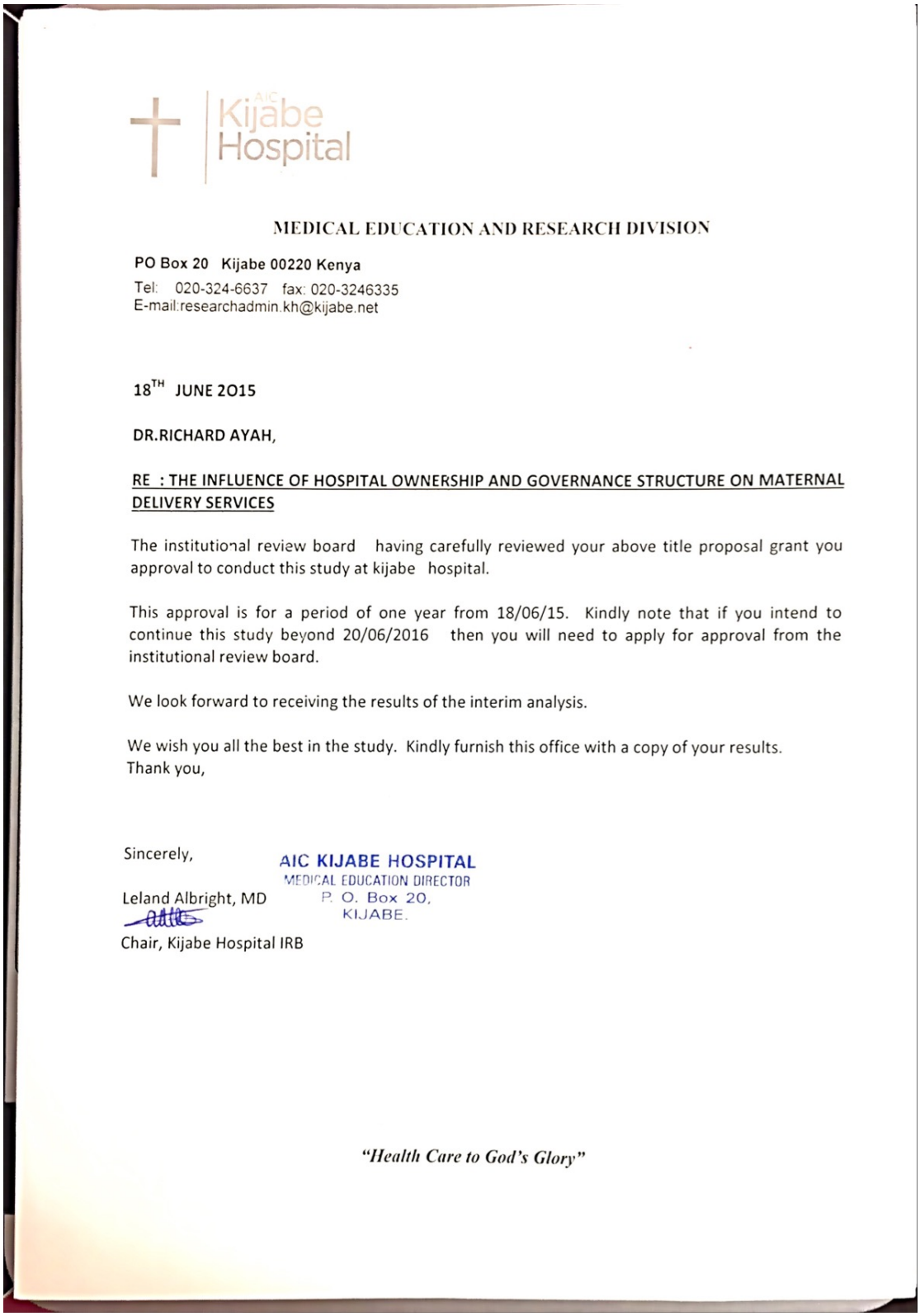
The proposal has been reviewed and approved by the Kenyatta National Hospital/University of Nairobi - Ethics and Research committee. Attached is the approval letter for your reference.

Thank you for your consideration.

Yours Sincerely,

Dr. Richard Ayah,
Principal Investigator
School of Public Health

Appendix Fifteen: Administrative Consent Kijabe Hospital



AIC Kijabe Hospital

MEDICAL EDUCATION AND RESEARCH DIVISION

PO Box 20 Kijabe 00220 Kenya
Tel: 020-324-6637 fax: 020-3246335
E-mail:researchadmin.kh@kijabe.net

18TH JUNE 2015

DR.RICHARD AYAH,

RE : THE INFLUENCE OF HOSPITAL OWNERSHIP AND GOVERNANCE STRUCTURE ON MATERNAL DELIVERY SERVICES

The institutional review board having carefully reviewed your above title proposal grant you approval to conduct this study at kijabe hospital.

This approval is for a period of one year from 18/06/15. Kindly note that if you intend to continue this study beyond 20/06/2016 then you will need to apply for approval from the institutional review board.

We look forward to receiving the results of the interim analysis.

We wish you all the best in the study. Kindly furnish this office with a copy of your results.
Thank you,

Sincerely,

Leland Albright, MD
Chair, Kijabe Hospital IRB

AIC KIJABE HOSPITAL
MEDICAL EDUCATION DIRECTOR
P. O. Box 20,
KIJABE.

"Health Care to God's Glory"

Appendix Sixteen: Administrative Consent Metropolitan Hospital

Dr Richard Ayah's PHD project-Request for an Appointment/Interview

richard ayah <richardayah@gmail.com>

Dr. Gakombe <kgakombe@metro-hospital.com>
To: ROBIN MOGERE <romimodr@gmail.com>, kimani wanjeri <kimwanjeri@hotmail.com>
Cc: richard ayah <richardayah@gmail.com>, Metro Administrator <admin@metro-hospital.com>

Good evening,

Dr Ayah has included Metropolitan in a study he is doing for his PHD project

He would like to interview two other directors among them the Chairman

Please give him an appointment and accord him the necessary cooperation

Regards

18 June 2015 at 19:50

***Dr K.K Gakombe**, MBCHB,MBA: Director, Metropolitan Hospital| Nairobi Kenya| P.O. Box 808 -00515| !: OFFICE| +254 20 2020263|!: AIRTEL|+254 733 602 114| !: SAF COM| +254 722 207 665, www.metro-hospital.com*

Disclaimer

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.....

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https://mail.google.com/mail/u/1?ik=288c8c34ea&view=pt&searc...sg-f%3A1504335654051381766&simpl=msg-f%3A1504335654051381766 Page 1 of 1

Appendix C. Study Calendar and Budget

PHD work Plan		2013		2014				2015				2016				2017	2018
Activity				Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
Proposal development																	
Literature Review																	
Primary data collection preparation	Finalization of Data collection tools																
	Submission to ERC																
	Review and resubmission to ERC																
	Pre-testing tools & train research assistants																
Field work	Data collection																
	Data analysis																
Writing results and discussion chapter																	
Revision writing																	
Thesis defence																	
Thesis corrections and submission																	
Graduation (2018)																	

Appendix Seventeen: Budget

Item	Rate	Description	Total
Approvals		Ethical, administrative review and approvals	25,000
Documentation		Printing and photocopy of tools	40,000
	Lump sum	Production of thesis drafts and final thesis	40,000
	Publications	Preparing manuscripts, conference posters for publication, editorial reviewer, data analysis	200,000
Logistics	Lump sum provision	Messenger services	25,000
Training	Per diem @ 1000 /= each Meals for the day @ 2,000 Room, projector hire at 8,000 shillings Workshop materials	One day training for research assistants in data collection plus supervisors (total 10)	43,000
Travel	Daily travel and lunch for 6 research assistants @ 500 shillings per day Daily travel, lunch PI @ 1,000 shillings per day Supervisor travel @1,000 shillings per day	20 days data collection 30 Days data collection 30 days	120,000
Personnel	6 research assistants @ daily rate of 2500 shillings	Data Abstraction 4 days per facility initial 6 facilities then Interviews 6 facilities 18 Key informants 42 board members	360,000
Communication	1000 shillings per person.	Airtime during fieldwork	10,000
Technical support for data management	Lump sum	Biostatistician	40,000
		Data base management	50,000
		Transcription	50,000
Total Kshs			1,003,000

Appendix Eighteen: Publication 1

Hospital ownership and governance structures:

How do they relate? A review of hospitals in Kenya

Richard Ayah*[1], Dismas Ongore[2], Alfred T.O. Agwanda[3]

Author Details

1. School of Public Health, College of Health Sciences, University of Nairobi, Nairobi, Kenya. E-mail: ayah@uonbi.ac.ke
2. School of Public Health, College of Health Sciences, University of Nairobi, Nairobi, Kenya. E-mail: dongore2000@yahoo.co.uk
3. Population Studies and Research Institute, University of Nairobi, Nairobi, Kenya: email. E-mail: ataotieno@uonbi.ac.ke

*Corresponding author: Richard Ayah, School of Public Health, College of Health Sciences, University of Nairobi, Kenya. P.O. BOX 19676-00202, KNH, Nairobi, Kenya. Email ayah@uonbi.ac.ke Tel +254.720.940.526

Hospital ownership and governance structures:

How do they relate? A review of hospitals in Kenya

Abstract

Background

Hospitals are a key part of the health system, utilise a large proportion of health expenditure, but are often viewed as individual entities rather than grouped together. It is therefore difficult to collectively hold them to account for health system outcomes. Kenya has a four tier health service delivery system, with hospitals registered by ownership. Identification of common governance structures would enable a classification of hospitals that encourages accountability and performance measurement. The aim of this study was to describe the different governance structures and how they correlate with hospital ownership.

Methods

In 2015, a cross sectional survey of six primary referral hospitals differentiated by ownership was conducted. Three public hospitals were selected and matched with two non-governmental (non-profit) and one private (for profit) hospital. To describe the governance structure and processes in each facility, six key informant interviews were held with the health facility in-charges (one at each facility). Additionally, 40 questionnaire interviews were held with board members and members of the hospital management team using a tool adapted from the Audit Questionnaire of the Governance Centre of Excellence, Ontario Hospital Association. Hospital governance and processes were coded by emerging themes, of which key themes were compared against the research questions and used to analyse all the transcripts.

Results and Discussion

In this study, three ownership types were identified from which, two governance types labelled public and corporate emerged. Public governance hospitals had large boards (>8 members), diverse membership with no fiduciary responsibilities. Management functioned mainly through administrative committees. Corporate governance hospitals had smaller boards (<8 members), with fiduciary responsibilities, a chief executive with functional administrative heads and committees that focused on clinical issues.

The corporate governance hospitals reflected stewardship theory, with strong management presence in the board suggesting that board access to operational information was important. Public governance reflected resource dependency theory in board selection, results than managing principal-agent conflict of interest. Corporate governance hospitals' governance was

in conflict with government and private sector governance policy which emphasizes separating ownership from management.

Conclusion

A review of hospital governance policy is needed to ensure hospitals are accountable not just to themselves but to the broader health system.

Key words: Hospital ownership, Governance structures, public hospitals, not for profit hospitals

Background

Few countries in Sub-Saharan Africa have met global health goals (United Nations, 2014). Hospitals are a major component of the health system, collectively utilising a large share of total health expenditure. Kenya's health service delivery system is organized into a hierarchy that includes hospitals, health centres, dispensaries and households (Ministry of Medical Services & Ministry of Public Health and Sanitation, 2012); hospitals accounted for 39% of current health expenditure the bulk due to government hospital (25.6%) while, private for profit (PFP) and not for profit (NFP) hospitals consumed 8.8% and 4.8% respectively (Ministry of Health, 2012). Hospitals also consume two-thirds of out of pockets funds with private for-profit hospitals consuming 38 % and public hospitals 30 % (Government of Kenya Health Systems 2020 Project, 2009). This has serious implications for equity.

Hospitals therefore have significant impact on achievement of health system goals including effectiveness, equity and efficiency. However, hospitals are often seen individually as separate institutions from the health system in which they sit and generally managed in isolation from each other (Harding and Preker, 2000). The most common way that they are grouped is by ownership. However it is not clear the types of hospital governance structures that exist under the different models of ownership.

Ownership is meant to confer organizational control through various governance arrangements (Harding and Preker, 2000). In this study, ownership was defined as having the exclusive legal right to the facility to conduct the business of a hospital and being registered with the Ministry of Health. Based on ownership types the Ministry of Health classifies health facility ownership into six namely (1) National, under Ministry of Health (MOH), (2) county, under county governments;(3) other government;(4) Faith-Based Organisations; (5) Non-Governmental Organizations; (6) private (Ministry of Medical Services & Ministry of Public Health and Sanitation, 2010a; NACPD, 2011). The MOH owned facilities, which are gazetted through the Chief Health Administrative Officer in the ministry, while other facilities are gazetted depending on the professional license holder, that is doctor, nurse, clinical officer are regulated by medical practitioners & dentist board, nursing council of Kenya and clinical officers council of Kenya respectively (table 1).

Table 1: Health Facility Regulation and Licensing by Ownership

Health Facility Owner	Regulatory Function	Licence/ gazetted by
State Corporations	Legal Notices	State Corporations Act.
Ministry of Health	Gazetted	Ministry of Health
Christian Health Association of Kenya Kenya Episcopal Conference-Catholic Secretariat Supreme Council for Kenya Muslims Other Faith Based	Registered	Medical Practioners & Dentists Board (institution)

Private Practice – General Practitioner Private Practice – Medical Specialist	Licensed	Medical Practioners & Dentists Board (private practice)
Private Practice – Nurse/Midwife	Licensed	Nursing Council of Kenya (private practice)
Private Practice – Clinical Officer	Licensed	Clinical Officers Council of Kenya (private practice)
Private Practice – Lab Technologist	Registered	Kenya Laboratory TT Board

Source adapted from: (The Republic of Kenya, 2012e, 2012d, 2012a, 2012f, 2015)

Hospital governance includes not just the structure and composition of the board but also the processes through which the top administrative officials and medical staff, develop and oversee general policies for the institution (Bogue, Hall and Forgia, 2007). In this study governance structure was the distribution of rights and responsibilities among the owners, board members and management and specified the composition, roles and procedures of boards, board meetings and senior management team and their meetings. Three theories describe governance, agency, resource dependency and stewardship. Agency theory often termed the 'governance theory', that is holding people to account, results from the hypothesis that managers may not always act in the interests of the organization and so boards have the responsibility of mitigating the risks inherent in this separation [8]. The main function of the board under such circumstances is then to gather the necessary information to hold managers to account (Jiang, Lockee and Fraser, 2012). The resource dependency theory suggests that boards exist to manage external relationships to enable firms to minimize dependence or gain resources and board members are chosen for their networks (Hillman, Withers and Collins, 2009; Chambers *et al.*, 2013b). In the stewardship theory, the interests of the owner are maximized where the roles of management and the board are shared (L. Donaldson and Davis, 1991). Under stewardship theory the board and managers develop strategy and monitor implementation jointly, in contrast to agency theory where the management and board have to be separate entities (Van Puyvelde *et al.*, 2012).

Like most corporate entities, hospitals at the highest level of governance have a hospital board of directors or trustees with two primary responsibilities; the first is linking the organisation to its stakeholders or the community and secondly being legally accountable for the financial and quality of clinical performance [18]. In the public sector the hospital board is designated as the Health Management Committee and its' functions are governed by a legal notice[18] (Ministry of Medical Services & Ministry of Public Health and Sanitation, 2010a). In the PFP sector the hospital is a company under the companies Act Chapter 486 while an NFP hospital should be registered under the public benefit organizations act (The Republic of Kenya, 2009, 2013b). The ownership structure influences which of the two roles predominate. The core legal

[18]*Legal Notice 155,* The Government Financial Management (hospital Management Services) Regulations, 2009

distinction between PFP hospitals and NFP is that only the former could distribute profit to its shareholders. NFPs on the other hand are legally required to retain their surpluses. From this basic difference, many legal and organizational consequences flow for example in tax status. NFPs are usually exempt from paying income taxes. The inability to distribute profits leads to different financing structures, incentives for staff and governance influences in organizations with the different ownerships. Whether these differences translate into distinctive behaviour and different health outcomes has been examined over a wide range of health services, however there is no consistent finding in favour of either NFP or PFP hospitals (Schlesinger and Gray, 2006).

Most of the literature comparing the performance of NFP, PFP, and government providers rely mainly on empirical evidence from hospitals in developed countries, yet low income countries can ill afford to have ineffective and inefficient hospitals (Eggleston *et al.*, 2010). Policymakers in low and middle income countries are therefore unable to formulate policies that would effectively align national health goals and regulate hospitals with different ownership structures. Understanding ownership and governance structures would enhance regulation and provide policymakers with information to align hospitals to health system goals. In this study we sought to describe the different governance structures and how they correlate with hospital ownership.

Methods

Study Design

A cross sectional, survey of six primary referral hospitals in Kiambu and Nairobi Counties differentiated by ownership was conducted. The two counties were purposively chosen as they had below average health governance indicators (Ministry of Health, 2014a). Three public hospitals were selected and matched with two non-governmental (non-profit) and one private (for profit) hospitals. Within each hospital there were two sources of data namely; board members and members of the hospital management team. To describe the governance structure and processes in each facility, six key informant interviews were held with the health facility in-charges (one at each facility). Additionally, 40 questionnaire interviews were held with board members and members of the hospital management team using a tool adapted from the Audit Questionnaire of the Governance Centre of Excellence, Ontario Hospital Association.

Prior to initiation of research activities, ethical clearance was obtained from University of Nairobi/Kenyatta National Hospital Ethics Review Committee (KNH–ERC/RR/309). Data was collected from the six hospitals, three from each county from 10th June to 28th July 2015. On day one of the study the facility in-charge was asked to list the board of directors, senior

management team and identify the person in charge of the maternity unit. From the list, a minimum of three board members up to a number that would ensure at least half the board members including the chair, chief executive and one other were interviewed, to ensure board representation, were chosen. Since the minimum number of board members by law is two, from the six facilities this would gave a sample of 33-39, which provided an adequate medium size sample pool of interviews (Baker and Edwards, 2012). Board members and management team members were interviewed using interview guides with questions covering hospital ownership and governance structure. After obtaining written consent from participants, the interviews were audio-recorded. Where the respondent declined to be audio recorded, the notes alone were used. Interviews lasted approximately 25-60 minutes and were conducted by two interviewers with one person asking questions and the other taking notes.

There were four main question domains: 1) Type of facility - Ownership, types of licensing, and regulatory oversight; 2) Board composition and processes - Board member profession and cadre, fiduciary responsibilities, and board decision making; 3) Management structure and processes - Cadre and qualification of management members, types of management meetings, and management decision making; and 4) Capital investment - Types of investments, sources of the investment capital, tax status of the health facility, and distribution of surpluses generated

Appendix A was used to collect data from key informants (Health facility in-charges). The tool had six domains: 1) Type of health facility - Government, faith-based, and for profit; 2) Roles and responsibilities - Current job position and whether the job description was based on a legal framework; 3) Governance structure of the hospitals - Governance structures, roles of each structure, importance of the different structures, legal rights to acquire and dispose assets; 4) Investment: Types of investments in service delivery, sources of the investment capital, tax status of the health facility, and distribution of surpluses generated

Hospital governance and processes were coded by emerging themes, of which key themes were compared against the research questions to generate a code book used to analyse all the transcripts.

Results

A total of 40 in-depth interviews were done across the six hospitals selected. In each hospital board members including chairman, the CEO/medical superintendent (MedSup), and at least one independent director were interviewed. At senior management level included the chief executive or medical superintendent, the nursing officer in charge and the administrator.

Board composition

Four of the six hospitals had boards. Two did not have boards constituted because the county government had yet to pass the necessary gazette notices. The public hospitals had relatively

large boards (11+ members) with more diverse representation of professionals when compared to the private hospital. In the private hospital shareholders elected board members, however in the other hospitals, public and NFP, an appointing authority nominated the board members to represent particular constituencies. The public hospitals had a process of gazetting board members, thereby defining term limits, more common were members who served without defined limits. While respondents stated that board term limits existed these seemed to be honoured in the breech with members staying for many years on boards or leaving because the institution that they represented had assigned them elsewhere.

"…I represent the interests of the health department, County…I'm not sure about the term limit but it should be 3 years, I don't know... You know for me it is irrelevant because it is the office, once I leave…"

"…The time limit for the board members is five years two times. '…but if you are doing a good job, they will just give you another term…"

Just under two thirds (62%) of board members belonged to a professional body, with half of those professionals belonging to the Medical Practioners and Dentist Board (MPDB). In all hospitals there was a minimum of two board members registered with the MPDB, at least one board member registered with the nursing council of Kenya. The church was also represented in every board except in the PFP hospital. Other professions found on the boards included the Law Society of Kenya, Institute of Certificated Accountants and Architectural Association of Kenya. No board paid any of its members to attend meetings. However some were paid travelling and sitting allowances.

Governance Process

The chairman of the board was in all cases non-executive, with the chief executive/ MedSup the secretary to the board. Other than in one facility, the secretary was therefore a medical doctor. In terms of board decision making most decisions were made on a consensus basis.

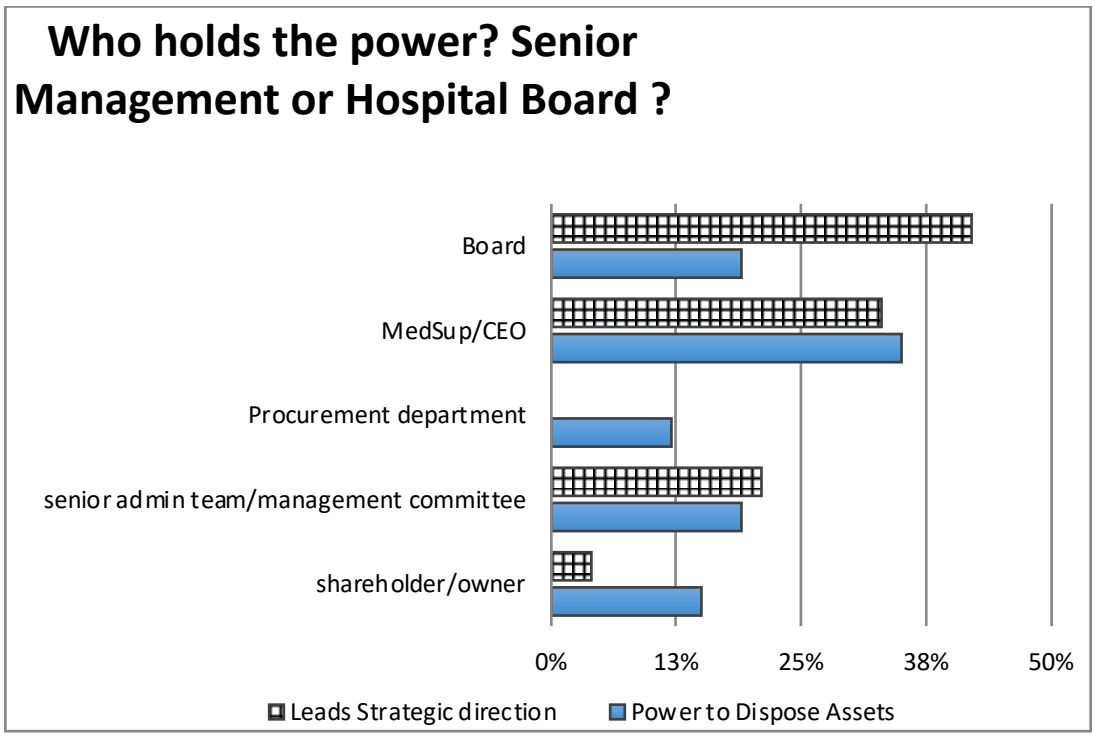
"…We vote at times, sometimes it reaches a time that we have to vote, but it is not very often..."
"…The board has voting rights but we rarely exercise it..."

When respondents were asked who was the final decision maker in terms of the strategic direction of the hospital just under half cited the board, while a third mentioned the CEO and a fifth the senior management team.

"…The hospital board has the right to acquire and dispose assets…We have the legal right to acquire assets and dispose them…"

However when asked who was responsible for disposal of assets then the board was mentioned by just one out of five, compared to the senior management team including the CEO cited by two thirds of respondents indicating that actual power within the hospital lay with the senior management team especially the CEO/ MedSup not with the board (Figure 1).

(Figure 1: Who holds the power? Senior Management or Hospital Board ?



For public hospitals there was an added layer because of involvement of the county health authorities in managing assets.

"…if funds are there…the MedSup authorizes and then the procurement officer does the purchasing. The MedSup is the AIE holder."

"….the chief officer for health services…is now the accounting officer for all health functions in the county…the accounting chief officer…So he is the one who will also approve of whether to dispose of an item or acquire…"

"…The board will dispose the assets that are within here but when it comes to the major assets like vehicles and all that we do have policy how we interrelate with the church…"

The hospitals could raise funds in five different ways; donor funds, government funds (county and national), user fees, surpluses generated and commercial loans. All except the PFP hospital

used donor funding for capital projects and were alone in having to pay taxes on surpluses and accessing commercial loans for capital projects. Like the PFP, the NFP hospitals had a goal to generate surpluses from their operations, which were then ploughed back into capital projects, but often did not charge enough to generate adequate surpluses.

"…The hospital operates within a very 'funny' framework of financing because… we charge very little for our services, which is enough to cater for operational issues but not enough to cater for capital investments…"

"…Almost every investment is supported by the hospital operations we have a resource mobilization department; we created our own because all our infrastructure, all our capital all our assets we have developed them ourselves, through donations from friends..."

Senior Management Team

Each hospital was headed by a MedSup (four hospitals) or chief executive officer (CEO) (two hospitals) each of whom had a minimum of a master's degree. The hospitals were led by experienced managers with a median of six years in the position and sixteen and a half years of working in the medical field. Of interest was the difference in experience in the position of CEO/MedSup. While the average professional experience was the same, roughly 15 years, the CEO/MedSup in the PFP and NFP hospital had been in the same office for an average of 14 years, compared to the government hospital average of three years.

While all the CEOs were employed full time, those with the title MedSup had additional duties providing clinical services. Part of these duties included training and supervising students. This was in addition to what would be expected of a chief executive namely staff management; financial management; and planning. However it was noted that in public hospitals the MedSup did not have full authority to hire staff or over financial management of the hospital despite being the signatory for purchasing of supplies

Except for the PFP hospital where the CEO was head and shoulders above other department heads, the other hospitals had a similar senior management structure where the chief executive/MedSup was 'first among equals', with the other senior members of the management team being the nursing officer in charge and the administrator. This team met regularly, at least once a month, to decide on the management of the hospital.

"…The executive expenditure committee meets monthly and looks at revenue collection and expenditure in the revenue. They want to see the collection of revenue in this institution and how it is collected per department…"

Despite the lack of clear authority in decision-making the MedSup was still the titular head, being called upon to answer when things were not right.

"…The MedSup is the overall head; he is the coordinator of all the other parties that happen within the facility whether they are happening in the maternity or whenever it is happening. He is the one who is to be answerable if there are no supplies…."

"…The CEO is the eye of the board on the facility, so I have the responsibility of a day to day learning leading the strategy in the hospital…"

Each hospital had a median of seven committees to which senior management belonged. Procurement and maternal mortality were the two committees that cut across all the different types of hospitals. In public governance hospitals the senior management team administered affairs through committees for example executive expenditure, billing user fees, human resource advisory, ICT/automation, patient feeding, infection prevention, training. In the PFP and NFP emphasis of the role of committees were to manage the clinical side for example quality of care and drug/antibiotic.

Hospital Ownership

In this study, three ownership types were identified namely county (government), faith based and private. The ownership characteristics of the various hospitals when reviewed through the traditional classification of PFP, NFP and government, showed the expected differences. Legally all were expected to have as their primary oversight body the MPDB. In reality the medical officer who often provides supportive supervision within the health system comes from the county hospital level. As such after registration (and in the case of public hospitals almost never) there was no recorded contact from the MPDB at board or senior management level except through renewal of license. However other bodies such as National Environment Management Agency (NEMA), laboratory board reviewed specific operations of the hospitals that touched on the particular agencies mandate but not directly on the clinical care.

"…We started having NEMA coming recently when our waste system broke down…"

"…boards like for NEMA and pharmacies and poisons board come to inspect…The inspections occur annually…"

The NFP and PFP hospitals had many agencies that demanded fees from them, which the government hospitals were exempt.

"…we have to comply with a lot of things,… medical board license, lab license, pharmacy license, county license, CBD license, …I think it costs us…a million shillings each year to comply... because [with] county government you pay per bed and the medical board also has a fee which is based on bed. The lab gives a fee based on that and the staff themselves have to comply…There is NEMA, there is KRA, there is NHIF, there is NSSF and there is NITA what used to be called…' '…. they are called national industrial training institute, then there is OSHA the occupational health and training institute, there is the insurance for staff comply with the workman's compensation laws and we have to comply with RBA because we are a pension fund…".

In terms of financial management the PFP board directors who were also all shareholders had fiduciary responsibility to ensure that the hospital made profit. While the NFP hospitals also had to return a surplus the directors were not held responsible for the financial state of the hospital. In the case of public governance hospitals all operated under perpetual deficits and uncertainty over the budgets that they had and controlled, necessitating frequent reviews of budget. The uncertainty over revenue and expenditure control was reflected in the lack of strategic plans in all but one of the hospitals reviewed.

Table 2: Hospital Ownership Characteristics

Characteristic	**PFP**	**NFP**	**Public (government)**
Board reports to:	Shareholders	Owner Representative	County executive for health
Board representative	Director	Trustee	Trustee
Surplus/profit	Profit distribution	No profit distribution	Perpetual deficit management
Fiduciary responsibility	Yes	Yes	No
Hospitals	C2	C3, C1	P3, P2, P1
Primary Legal act	Cap 486	NGO Act 1992	County government act 2012

Characteristic	PFP	NFP	Public (government)
Primary Oversight body	MPDB	MPDB	MPDB
Board Formation	Election	Election	Selection
Term Limits	No	Yes	Yes
Inspecting agency	Inspected by GOK agencies e.g. training Laboratory Council, Radiation Protection Board, NEMA, NCK, PPB, Single Premises Permit License, Atomic Nuclear Act, the Medical Practitioners and Dentists Board (MPDB	Inspected by various GOK agencies e.g. training Laboratory Council, Radiation Protection Board, NEMA, NCK, PPB, Single Premises Permit License, Atomic Nuclear Act (MPDB	Not Inspected by MPDB the MOH
Board Secretary	CEO	CEO	MedSup

The private hospitals whether PFP or NFP shared many more characteristics when compared to the government owned hospital including fiduciary responsibility by the directors, the need to make profit or surplus, having a CEO as the management head.

"…The day the county and the national government will actually stop categorizing hospitals in this country as mission, private and government we don't mind being called by that name but we want to be seen to be part of the health system..."

Based on the foregoing hospitals were categorized into two governance structures. Hospitals with large boards representing diverse bodies, where board members held no fiduciary responsibilities and were managed through many administrative committees and had a weak CEO, first among equals. In the second category were hospitals with relatively smaller boards (<8), members represented shareholders/owners, board members held fiduciary responsibilities, management committees focused on clinical issues and had a strong CEO with functional administrative heads below them.

Discussion

In this study different governance structures in hospitals and how they related to hospital ownership. Two types of governance structures (Corporate and Public) spanning three ownership types, (Government, PFP and NFP) were identified. In the public governance category, hospitals had large boards representing diverse bodies with board members holding

no fiduciary responsibilities. A hospital board like other corporate boards has two primary roles of external accountability to shareholders and stakeholders including compliance with regulatory requirements and accountability; and monitoring of hospital performance (Chambers *et al.*, 2013a).

In this study, the public governance hospitals had relatively large boards (11+ members) with more diverse representation of professionals compared to corporate governance hospitals with relatively smaller boards of less than eight members. The size of board influences board performance. Keeping boards to a maximum of seven or eight members has been hypothesized to improve their performance since beyond this number, the members communicate less efficiently with each other and come to rely more on the chief executive, reducing their capacity to monitor management (Jensen, 1993). In addition large boards may because of too many members fail to operate effectively as decision-making groups as the members fail to take personal responsibility and consensus building among so many individuals becomes difficult (Pozen, 2010). This finding mirrors a previous study involving 40 agricultural companies in Kenya where a negative relationship existed between the number of board members and performance of the organizations (Mwamuye *et al.*, 2012). Yet in another multinational study (Ghana, Nigeria, Kenya and South Africa) it was found that the size of the firm was the only variable that positively explained board size across all the firms in the all the countries studied (Fiador, Abor and Abor, 2012); a finding inconsistent with this study. However large boards both in size and diversity of members are argued by resource dependence theorists to have arisen to help the organization secure critical resources by linking it to the external environment (Goodstein, Gautam and Boeker, 1994).

Across all boards, just under two thirds (62%) of board members belonged to a professional body, with half of those professionals belonging to the MPDB. A survey of German hospitals concluded that where board member diversity was low, collaboration quality was higher leading to higher board activity levels (Buchner, Schreyogg and Schultz, 2014). The church was also represented in every board except in the PFP hospital. Other professions found on the boards included the law society of Kenya, institute of certificated accountants and architectural association of Kenya. This finding is in concordance with previous studies among private NFP hospitals which concluded that the roles and responsibilities of governing boards are to ensure institutional viability and to fulfil their community obligations (Orlikoff and Totten, 2001). Stakeholder theory assumes multiple competing and co-operative interests within the hospital and the role then of board members is to represent and balance various stakeholder (including staff, patients and the public) interests (Mannion *et al.*, 2016).

Other than in the corporate hospital where shareholders elected board members, in the other hospitals an appointing authority nominated the board members to represent particular constituencies. While public governance hospitals had a process of gazetting board members, thereby defining term limits, more common were members who served without defined limits. However agency theory calls for more representation from independent board members to protect shareholders' equity and financial interests (Molinari *et al.*, 1993).

No hospital in this study paid any of its board members except for some nominal allowances; In contrast a review of hospital governance boards in Ethiopia that found that nearly 80% paid board members for participation [37]. A review of South American companies found that in order to align individual goals to corporate goals, board remuneration was based on company results with board members entitled to six per cent of profits (International Finance Corporation, 2009). However a study of Dutch hospitals found that higher board remuneration did not necessarily lead to better organizational performance (Blank and Hulst, 2011). A review of 1,733 independent non-executive directors' of listed Italian and UK non-financial firms found that their pay was mainly based on the observable effort they exerted and their responsibilities (Mallin, Melis and Gaia, 2014). A similar study of publicly quoted companies in the UK found that from 2001-2012, the director's age, tenure, and network size were positively correlated to remuneration (Goh and Gupta, 2015).These studies suggest that board pay is not a simple matter of paying for the duration of a meeting or a travel allowance, but that consideration needs to be taken of the fiduciary responsibility, which in this case was present in the PFP hospital but absent in the public hospitals. This study therefore suggests that using the principal-agency theory may not be a good model, that is, using high pay, as a tool to motivate board members to perform in hospitals. Across the two governance structures, it would appear that stewardship theory is more at play when it comes to board compensation with the assumption that the mechanism by which the board is aligned to the ownership goals is not pay.

In this study the chairman of the board was in all cases non-executive. This finding contradicts a study of 242 health sector NGOs in Nairobi County which found that 'CEO duality', where CEO served as both chief executive and board chair, the NGO performed better than where the roles were split (Gathayo *et al.*, 2016). Indeed managerial power theory proposes that participation by top-level management is often believed to enhance board decision-making and effectiveness (Chambers *et al.*, 2013a; Abor, 2015). In corporate governance hospitals the board was the final decision maker in terms of the strategic direction of the hospital. The CEO in these hospitals was more powerful when it came to disposal of assets. For public governance hospitals however, the board where present was relatively weak with the added layer of

authority of the county health authorities when disposing of assets. This finding contrasts with that from Ethiopia, where despite the boards being reported to have limited ability to control financial decisions when compared to their counterparts in high income countries they still had significant influence on hospital operations (McNatt *et al.*, 2014). Studies on influence of CEO'S tenure on organizational performance have reported mixed results thus, a short tenured CEO would lack legitimacy, be unable to influence the senior management team compared to a long-tenured (Simsek, 2007); while in other studies, the CEO tenure had no significant effect on firms' performance (Gacheru, 2011).Yet in a South African study, poor corporate performance was a major driver of CEO turnover (Wilkes, 2014).

In this study, while all the CEOs were employed as full time managers, those titled MedSup had additional medical and clinical duties including training and supervising students and providing individual clinical care to patients. This compares well with a previous study among hospitals in 17 developed countries where it was noted that doctors with management roles, contributed positively to implementation of quality management systems (Rotar *et al.*, 2016). This follows the theory of expert leadership that holds that under usual circumstances, performance will improve or be maintained when the head of an organization in any situation has core business knowledge and expertise [49]. Indeed in "the best-performing hospitals in the United States are led disproportionately by physicians" (Angood and Birk, 2014).

In the corporate governance hospitals there were many meetings with a greater emphasis on clinical management committees. This added board oversight potentially overcomes the information asymmetry where the board is may not be well informed on the work done by the medical practioners (Ludwig, Van Merode and Groot, 2010; McNatt *et al.*, 2014). In this study, patient/staff ratios were as expected very high in public governance hospitals compared to private corporate. Previous studies have showed strong associations between poor patient outcomes and low staffing levels (Aiken *et al.*, 2002; Kane *et al.*, 2007). These findings calls into question the performance of these public governance boards in obtaining the necessary resources needed.

A limitation that the study faced was that some key informants may have held back information given the sensitivity of the topic with some perhaps thinking that they would be held liable for revealing some poor governance practices or confidential information about their hospital.

Conclusions

This study sought to describe the different governance structures and how they relate to hospital ownership. Out of the three ownership types, government, private-for-profit and not-for-profit, two governance structures were identified labelled as public and corporate. While no single

theory explains adequately the features of either governance type, public governance had more features in line with stakeholder theory while the corporate governance was aligned with agency theory. However no hospital paid its board member, and all the boards were relatively weak when compared to the senior management. The public governance set up with large boards, a lack of fiduciary responsibility, and management without individual accountability. In the corporate governance hospitals board members had fiduciary responsibility, had senior management positions with greater accountability and management committees focused on clinical issues suggesting better clinical outcomes. Corporate governance hospitals' governance was in conflict with government and private sector governance policy which emphasizes separating ownership from management.

This study recommends a revision of classification of hospitals away from ownership towards recognition of the underlying governance structures. This would improve professional accountability and increase alignment of hospital governance to patient outcomes and therefore national health system goals.

Abbreviations

CEO Chief Executive Officer
GDP Gross Domestic Product
ICT Information and Communication Technology
KNH Kenyatta National Hospital
MPDB Medical Practioners and Dentists Board
NEMA National Environment Management Authority
NFP Not For Profit
NHIF National Hospital Insurance Fund
NITA National Industrial Training Authority
NSSF National Social Security Fund
OSHA Occupational Safety and Health Act
PFP Private for Profit
RBA Retirement Benefits Authority
THE Total Health Expenditure

Ethics

The study has been granted ethical approval from University of Nairobi/Kenyatta National Hospital Ethics Review Committee (KNH–ERC/RR/309).

Consent to Participate

Administrative consent was obtained from each facility head. Written consent was obtained from participants before interview.

Competing interests

There are no competing interests.

Author Contributions

RA: conceived the study, participated in the design, performed the statistical analysis and drafted the manuscript. DO, ATA: participated in the design. All authors read and approved the final manuscript.

Availability of data and materials

The data supporting the conclusions in this article are included within the article in the tables. Further datasets used and/or analysed including transcripts during the current study are available from the corresponding author on reasonable request.

Acknowledgements

The researchers acknowledge all the hospitals, especially the boards and senior management for allowing access for the study.

Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

References

Abimbola, S. *et al.* (2014) 'Towards people-centred health systems: A multi-level framework for analysing primary health care governance in low-and middle-income countries', *Health Policy and Planning*, 29, pp. ii29-ii39. doi: 10.1093/heapol/czu069.

Abor, P. A. (2011) *Healthcare Governance, Ownership Structure and Performance of Hospitals in Ghana*. Southampton.

Abor, P. A. (2015) 'The effects of healthcare governance and ownership structure on the performance of hospitals in Ghana', *International Journal of Law and Management*, 57(2), pp. 107–140. doi: 10.1108/IJLMA-04-2014-0031.

Abouchadi, S. *et al.* (2013) 'Preventable maternal mortality in Morocco: The role of hospitals', *Tropical Medicine and International Health*, 18(4), pp. 444–450. doi: 10.1111/tmi.12065.

Adam, T. and de Savigny, D. (2012) 'Systems thinking for strengthening health systems in LMICs: need for a paradigm shift.', *Health Policy and Planning*, 27 Suppl 4, pp. iv1-3. doi: 10.1093/heapol/czs084.

Adam, T. and Savigny, D. De (2012) 'Systems thinking for strengthening health systems in LMICs : need for a paradigm shift', pp. 2006–2008. doi: 10.1093/heapol/czs084.

Aiken, L. H. *et al.* (2002) 'Hospital Nurse Staffing and Patient Mortality , Nurse Burnout , and Job Dissatisfaction', 288(16), pp. 1987–1993.

Albanese, E. *et al.* (2011) 'Equity in the delivery of community healthcare to older people: findings from 10/66 Dementia Research Group cross-sectional surveys in Latin America, China, India and Nigeria.', *BMC Health Service Research*, 11(10), p. 153. doi: 10.1186/1472-6963-11-153.

Alexander, J. A. *et al.* (2008) 'Governance and Community Benefit : Are Nonprofit Hospitals Good Candidates for Sarbanes-Oxley Type Reforms ?', *Journal of health politics, policy and lawPolicy*, 33(2). doi: 10.1215/03616878-2007-053.

Alexander, J. A. and Lee, S. D. (2006) 'Does Governance Matter? Board Configuration and Performance in Not-for-Profit Hospitals', *The Milbank Quarterly*, 84(4), pp. 733–758.

Aliyu, L., Kada, A. and Hauwa, M. (2011) 'INSTRUMENTAL VAGINAL DELIVERY IN BAUCHI, NORTHEAST NIGERIA Aliyu', *Journal of West African College of Surgeons*, 1(4), pp. 18–27.

AllAfrica.com (2012) *Kenya Doctors' Strike Ends*, *allAfrica.com*.

Allin, S. and Grignon, M. (2014) 'Examining the role of amenable mortality as an indicator of health system effectiveness', *Healthcare Policy*, 9(3), pp. 12–19. doi: 10.12927/hcpol.2014.23733.

Aluvaala, J. *et al.* (2015) 'Delivery outcomes and patterns of morbidity and mortality for neonatal admissions in five Kenyan hospitals', *Journal of Tropical Pediatrics*, 61(4), pp. 255–259. doi: 10.1093/tropej/fmv024.

Amone, J. *et al.* (2005) 'International Journal for Equity in User fees in private non-for-profit hospitals in Uganda : a survey and intervention for equity', *International Journal for Equity in Health*, 4(6), pp. 1–9. doi: 10.1186/1475-9276-4-6.

Angood, P. and Birk, S. (2014) *The value of physician leadership.*, *Physician executive*.

Ansong-Tornui, J. *et al.* (2007) 'Hospital based maternity care in ghana - findings of a confidential enquiry into maternal deaths.', *Ghana medical journal*, 41(3), pp. 125–132. doi: 10.4314/gmj.v41i3.55280.

Atun, R. (2012) 'Health systems, systems thinking and innovation.', *Health Policy and Planning*, 27 Suppl 4, pp. iv4-iv8. doi: 10.1093/heapol/czs088.

Ayieko, P. *et al.* (2009) 'The economic burden of inpatient paediatric care in Kenya: household and provider costs for treatment of pneumonia, malaria and meningitis.', *Cost effectiveness and resource allocation : C/E*, 7, p. 3. doi: 10.1186/1478-7547-7-3.

Baez-Carmago, C. and Jacobs, E. (2011) *A Framework to Assess Governance of Health Systems in Low Income Countries Basel Institute on Governance*. 11. basel.

Bailey, P. (2015) 'An Update on the Status of Assisted Vaginal Delivery in Lower and Middle Income Countries', in *Global Maternal Newborn Health Conference*. Mexico City: Global Maternal Newborn Health Conference.

Baker, S. E. and Edwards, R. (2012) *How many qualitative interviews is enough ? Expert voices and early career reflections on sampling*. (Unpublished).

Banchani, E. and Tenkorang, E. Y. (2014) 'Implementation challenges of maternal health care in Ghana: the case of health care providers in the Tamale Metropolis.', *BMC health services research*, 14, p. 7. doi: 10.1186/1472-6963-14-7.

Barros, F. C. *et al.* (2005) 'The challenge of reducing neonatal mortality in middle-income countries: Findings from three Brazilian birth cohorts in 1982, 1993, and 2004', *Lancet*, 365, pp. 847–854. doi: 10.1016/S0140-6736(05)71042-4.

Bennett, S. *et al.* (2008) 'From Mexico to Mali : progress in health policy and systems research', *The Lancet*. Elsevier Ltd, 372(9649), pp. 1571–1578. doi: 10.1016/S0140-6736(08)61658-X.

Betran, A. P. *et al.* (2015) 'What is the optimal rate of caesarean section at population level? A systematic review of ecologic studies', *Reproductive Health*. Reproductive Health, 12(1), p. 57. doi: 10.1186/s12978-015-0043-6.

Betrán, A. P. *et al.* (2007) 'Rates of caesarean section: Analysis of global, regional and national estimates', *Paediatric and Perinatal Epidemiology*, 21(2), pp. 98–113. doi: 10.1111/j.1365-3016.2007.00786.x.

Bhuiyan, M. and Machowski, A. (2012) 'Impact of 20-day strike in Polokwane Hospital (18 August-6 September 2010).', *South Africa Medical Journal*, 102(9), pp. 755–6.

Bhutta, Z. A. *et al.* (2009) 'Delivering interventions to reduce the global burden of stillbirths: improving service supply and community demand.', *BMC pregnancy and childbirth*, 9 Suppl 1, p. S7. doi: 10.1186/1471-2393-9-S1-S7.

Bhutta, Z. A. *et al.* (2010) 'Countdown to 2015 decade report (2000-10): taking stock of maternal, newborn, and child survival.', *Lancet*, 375(9730), pp. 2032–44. doi: 10.1016/S0140-6736(10)60678-2.

Blanc, A. K., Winfrey, W. and Ross, J. (2013) 'New findings for maternal mortality age patterns: aggregated results for 38 countries.', *PloS one*, 8(4), p. e59864. doi: 10.1371/journal.pone.0059864.

Blank, J. and Hulst, B. L. Van (2011) 'Governance and Performance : The Performance of Dutch Hospitals Explained by Governance Characteristics', *Journal of Medical Systems*, pp. 991–999. doi: 10.1007/s10916-010-9437-8.

Blank, J. and Valdmans, V. (2008) *Evaluating Hospital Policy and Performance: Contributions from hospital policy and productivity research*. 1st edn, *Health Policy*. 1st edn. Edited by Mi. Grossman and L. Bjorn. Oxford: JAI Press, Elsevier Ltd.

Blum, J. D. (2010) 'The quagmire of hospital governance. Finding mission in a revised licensure model.', *The Journal of legal medicine*, 31(March 2015), pp. 35–57. doi: 10.1080/01947641003598229.

Boeckxstaens, P. *et al.* (2011) 'The equity dimension in evaluations of the quality and outcomes framework : A systematic review', *BMC Health Services Research*. BioMed Central Ltd, 11(1). doi: 10.1186/1472-6963-11-209.

Bogue, R. J., Hall, C. H. and Forgia, G. M. La (2007) *Hospital Governance in Latin America Results from a Four Nation Survey*, *Health, nutrition and population discussion paper*. Washington DC.

Bohren, M. A. *et al.* (2015) 'The Mistreatment of Women during Childbirth in Health Facilities Globally: A Mixed-Methods Systematic Review', *PLoS Medicine*, 12(6), pp. 1–32. doi: 10.1371/journal.pmed.1001847.

Botje, D., Klazinga, N. S. and Wagner, C. (2013) 'To what degree is the governance of Dutch hospitals orientated towards quality in care? Does this really affect performance?', *Health Policy*. Elsevier Ireland Ltd, 113(1–2), pp. 134–41. doi: 10.1016/j.healthpol.2013.07.015.

Bowers, J. and Cheyne, H. (2016) 'Reducing the length of postnatal hospital stay: implications for cost and quality of care.', *BMC health services research*. BMC Health Services Research, 16(1), p. 16. doi: 10.1186/s12913-015-1214-4.

Brickley, J. A., Van Horn, R. L. and Wedig, G. J. (2010) 'Board composition and nonprofit conduct: Evidence from hospitals', *Journal of Economic Behavior and Organization*, 76(2), pp. 196–208. doi: 10.1016/j.jebo.2010.06.008.

Brinkerhoff, D. W. and Bossert, T. J. (2013) 'Health governance: Principal-agent linkages and health system strengthening.', *Health Policy and Planning*, pp. 1–9. doi: 10.1093/heapol/czs132.

Van Den Broek, N. R. and Graham, W. J. (2009) 'Quality of care for maternal and newborn health: The neglected agenda', *BJOG*, 116, pp. 18–21. doi: 10.1111/j.1471-0528.2009.02333.x.

Buchner, V., Schreyogg, J. and Schultz, C. (2014) 'The impact of the board's strategy-setting role on board-management relations and hospital performance.', *Health Care Management Review*, 39(4), pp. 305–17.

Campbell, O. M. R. *et al.* (2016) 'Length of Stay After Childbirth in 92 Countries and Associated Factors in 30 Low- and Middle-Income Countries: Compilation of Reported Data and a Cross-sectional Analysis from Nationally Representative Surveys', *PLOS Medicine*, 13(3), p. e1001972. doi: 10.1371/journal.pmed.1001972.

Carver, J. (2010) 'A Case for Global Governance Theory: Practitioners Avoid It, Academics Narrow It, the World Needs It', *Corporate Governance: An International Review*, 18(2), pp. 149–157. doi: 10.1111/j.1467-8683.2010.00785.x.

Chambers, N. *et al.* (2013a) 'Towards a framework for enhancing the performance of NHS boards: a synthesis of the evidence about board governance, board effectiveness and board development', *Health Services and Delivery Research (HS&DR)*, 1(6). doi: 10.3310/hsdr01060.

Chambers, N. *et al.* (2013b) *Towards a framework for enhancing the performance of NHS boards: a synthesis of the evidence about board governance, board effectiveness and board development*, *Health Services and Delivery Research*. doi: 10.3310/hsdr01060.

Chan, G. J. *et al.* (2013) 'Risk of Early-Onset Neonatal Infection with Maternal Infection or Colonization: A Global Systematic Review and Meta-Analysis', *PLoS Medicine*, 10(8). doi: 10.1371/journal.pmed.1001502.

Chopra, M. *et al.* (2009) 'Saving the lives of South Africa's mothers, babies, and children: can the health system deliver?', *The Lancet*. Elsevier Ltd, 374(9692), pp. 835–846. doi: 10.1016/S0140-6736(09)61123-5.

Chu, K. *et al.* (2012) 'Cesarean section rates and indications in sub-Saharan Africa: a multi-country study from Medecins sans Frontieres.', *PloS one*. Edited by H. R. Baradaran. Public Library of Science, 7(9), p. e44484. doi: 10.1371/journal.pone.0044484.

Chuma, J. *et al.* (2009a) 'Reducing user fees for primary health care in Kenya : Policy on paper or policy in practice ?', 10, pp. 1–10. doi: 10.1186/1475-9276-8-15.

Chuma, J. *et al.* (2009b) 'Reducing user fees for primary health care in Kenya: Policy on paper or policy in practice?', *International journal for equity in health*, 8, p. 15. doi: 10.1186/1475-9276-8-15.

Chuma, J. and Okungu, V. (2011) 'Viewing the Kenyan health system through an equity lens: implications for universal coverage.', *International journal for equity in health*. BioMed Central Ltd, 10(1), p. 22. doi: 10.1186/1475-9276-10-22.

Collins-Nakai, R. (2006) 'Leadership in medicine', *McGill Journal of Medicine*, 9(1), pp. 68–73. doi: 10.1136/bmj.2.4206.244.

Cooper, Z. *et al.* (2012) *Does Competition Improve Public Hospitals ' Efficiency ? Evidence from a Quasi-Experiment in the English National Health Service*. 988. London.

Couper, I. and Hugo, J. (2005) 'Management of district hospitals - exploring success', *Rural and Hemote health*, 5(433).

Culyer, A. J. (2001) 'Equity - some theory and its policy implications', *Journal of Medical Ethics*, 27, pp. 275–283. doi: 10.1136/jme.27.4.275.

Cunningham, S. A. *et al.* (2008) 'Doctors' strikes and mortality: a review', *Social Science & Medicine*, 67(11), pp. 1784–8. doi: 10.1016/j.socscimed.2008.09.044.

Cutler, D. *et al.* (2015) *Physician Beliefs and Patient Preferences : A New Look at Regional Variation in Health Care Spending Physician Beliefs and Patient Preferences*. 15-090. Boston, USA.

Daft, R., Kendrick, M. and Vershinina, N. (2010) *Management*. 8th edn. Singapore: Cengage Learnng EMEA.

Dahlen, H. G. *et al.* (2012) 'Rates of obstetric intervention among low-risk women giving birth in private and public hospitals in NSW: a population-based descriptive study', *BMJ Open*, 2(5), p. e001723. doi: 10.1136/bmjopen-2012-001723.

Daily Nation (2012) *Kenya doctors start nationwide strike*, *Daily Nation*.

Dambisya, Y. M., Manenzhe, M. and Kibwika-muyinda, A. B. (2014) *Faith-based health services as an alternative to privatization ?* 25. Ottawa.

Damme, W. Van *et al.* (2010) *How Can Disease Control Program Contribute to Health System Strengthening in Sub-Saharan Africa*. Washington DC.

Davies, S. M. *et al.* (2013) 'Limitations of using same-hospital readmission metrics.', *International journal for quality in health care : journal of the International Society for Quality in Health Care / ISQua*, 25(6), pp. 633–9. doi: 10.1093/intqhc/mzt068.

Davis, J. H., Schoorman, F. D. and Donaldson, L. (1997) 'Toward a Stewardship Theory of Management', *Academy of Management Review*, 22(1), pp. 20–47. doi: doi: 10.5465/AMR.1997.9707180258.

Devereaux, P. J. *et al.* (2002) 'Comparison of mortality between private for-profit and private not-for-profit hemodialysis centers: a systematic review and meta-analysis.', *JAMA : the journal of the American Medical Association*, 288(19), pp. 2449–57. Available at: http://www.ncbi.nlm.nih.gov/pubmed/12435258.

Dickson, K. E. *et al.* (2014) 'Every Newborn: health-systems bottlenecks and strategies to accelerate scale-up in countries.', *Lancet*, 384(9941), pp. 438–54. doi: 10.1016/S0140-6736(14)60582-1.

Ditzel, E., Štrach, P. and Pirozek, P. (2006) 'Health Research Policy and Systems An inquiry into good hospital governance : A New Zealand-Czech comparison', *Health Research Policy and Systems*, 10, pp. 1–10. doi: 10.1186/1478-4505-4-2.

Dogba, M. and Fournier, P. (2009) 'Human resources and the quality of emergency obstetric care in developing countries: a systematic review of the literature', *Human Resources for Health*, 7(1), p. 7. doi: 10.1186/1478-4491-7-7.

Donaldson, L. and Davis, J. H. (1991) 'Stewardship Theory or Agency Theory: CEO Governance and Shareholder Returns', *Australian Journal of Management*, 16(1), pp. 49–64. doi: 10.1177/031289629101600103.

Donaldson, L. and Davis, J. H. (1991) 'Stewardship Theory or Agency Theory: CEO Governance and Shareholder Returns', *Australian Journal of Management*, 16(1), pp. 49–64. doi: 10.1177/031289629101600103.

Donaldson, T., Preston, L. E. and Preston, L. E. E. E. (1995) 'THE STAKEHOLDER THEORY OF THE CORPORATION: CONCEPTS , EVIDENCE , AND IMPLICATIONS', *Academy of Management Review*, 20(1), pp. 65–91.

Doyle, C., Lennox, L. and Bell, D. (2013) 'A systematic review of evidence on the links between patient experience and clinical safety and effectiveness', *BMJ Open*, 3(1), pp. 1–18. doi: 10.1136/bmjopen-2012-001570.

Edwards, N., Wyatt, S. and Mckee, M. (2004) *Configuring the hospital for the 21st Century*. 5. Copenhagen.

Eggleston, K. *et al.* (2010) 'Comparing public and private hospitals in China : Evidence from Guangdong', *BMC Health Services Research*, 10(76).

Einarsdóttir, K. *et al.* (2013) 'Neonatal complications in public and private patients: a retrospective cohort study', *BMJ Open*, 3(5), p. e002786. doi: 10.1136/bmjopen-2013-002786.

Emelumadu, O. F. *et al.* (2014) 'Perception of quality of maternal healthcare services among women utilising antenatal services in selected primary health facilities in Anambra State, Southeast Nigeria.', *Nigerian medical journal : journal of the Nigeria Medical Association*, 55(2), pp. 148–55. doi: 10.4103/0300-1652.129653.

English, M. *et al.* (2009) 'An intervention to improve paediatric and newborn care in Kenyan district hospitals : Understanding the context', *Implementation Science*, 8, pp. 1–8. doi: 10.1186/1748-5908-4-42.

Evans, D. B. and Etienne, C. (2010) 'Health systems financing and the path to universal coverage', *World Health Bullitin*, 87, pp. 892–893. doi: 10.2471/BLT.07.049387.

Evers, A. C. C. *et al.* (2010) 'Perinatal mortality and severe morbidity in low and high risk term pregnancies in the Netherlands: prospective cohort study', *British Medical Journal*, 341(c5639), pp. 65–66.

Farris, R. P. *et al.* (2007) 'Beyond effectiveness: evaluating the public health impact of the WISEWOMAN program.', *American journal of public health*, 97(4), pp. 641–7. doi: 10.2105/AJPH.2005.072264.

Fawole, A. *et al.* (2012) 'Predictors of maternal mortality in institutional deliveries in Nigeria', *African Health Sciences*, 12(1), pp. 32–40.

Fiador, Ve., Abor, P. A. and Abor, J. (2012) 'How do we explain corporate board structure in sub-Saharan Africa?', *Int. J. of Business Governance and Ethics*, 7(2), pp. 118–138.

Foster, D., Zrull, L. and Chenoweth, J. (2010) *Hospital Performance Differences by Ownership*, *100tophospitals.com*. Ann Arbor. Available at: http://www.100tophospitals.com/assets/HOSP_12678_0513_100TopHopPerfOwnershipPaper_RB_WEB.PDF.

Frohloff, A. (2008) 'Cost and Technical Efficiency of German Hospitals : Does Ownership Matter ?', pp. 1–18.

Fukuda, H., Okuma, K. and Imanaka, Y. (2014) 'Can Experience Improve Hospital Management ?', 9(9). doi: 10.1371/journal.pone.0106884.

Gacheru, A. (2011) *Relationship Between Chief Executive Officer Tenure and Firm Performance: For the Companies listed at the Nairobi Stock Exchange*. University of Nairobi.

Gale, N. K. *et al.* (2013) 'Using the framework method for the analysis of qualitative data in multi-disciplinary health research.', *BMC medical research methodology*. BMC Medical Research Methodology, 13(1), p. 117. doi: 10.1186/1471-2288-13-117.

Gathayo, P. *et al.* (2016) 'Board Composition and Performance of Health Sector Non-Governmental Organizations in Nairobi County', *Journal of Economics and Sustainable Development*, 7(8), pp. 80–91.

Gibbs, C. M. *et al.* (2012) 'The impact of early age at first childbirth on maternal and infant health', *Paediatr Perinat Epidemiol*, 26 Suppl 1(0 1), pp. 259–284. doi: 10.1111/j.1365-3016.2012.01290.x.

Gilson, L. (2012) *Health Policy and Systems Research: A methodology reader*. Geneva.

Goh, L. and Gupta, A. (2015) 'Remuneration of non-executive directors: Evidence from the UK', *The British Accounting Review*. doi: 10.1016/j.bar.2015.05.001.

Goodall, A. H. (2012) *A Theory of Expert Leadership*. 6566. Bonn.

Goodburn, E. and Campbell, O. (2001) 'Reducing maternal mortality in the developing world: Sector-wide approaches may be the key', *Bmj*, 322(7291), pp. 917–920. doi: 10.1136/bmj.322.7291.917.

Goodstein, J., Gautam, K. and Boeker, W. (1994) 'The Effects of Board Size and Diversity on Strategic Change', *Strategic Management Journal*, 15(3), pp. 241–250.

Governance Centre of Excellence (2014) 'Form 9.2 Sample Hospital Governance Audit Questionnaire'. Ontario: Ontario Hospital Association, pp. 1–5. Available at: https://www.thegce.ca/RESOURCES/Goodgovernance/Not For Profit Guide Templates Second Edition/Form 9.02 - Sample Governance Audit Questionnaire.doc.

Government of Kenya Health Systems 2020 Project (2009) *Kenya National Health Accounts 2005/06*. Bethesda, MD.

Graham, W. J. (2002) 'Now or Never: The Case for Measuring Maternal Mortality', *The Lancet*, 359(February 23).

Groene, O. *et al.* (2008) 'The World Health Organization Performance Assessment Tool for Quality Improvement in Hospitals (PATH): An Analysis of the Pilot Implementation in 37 Hospitals', *International Journal for Quality in Health Care*, 20(3), pp. 155–161.

Groene, O., Skau, J. K. H. and Frølich, A. (2008) 'An international review of projects on hospital performance assessment.', *International journal for quality in health care : journal of the International Society for Quality in Health Care / ISQua*, 20(3), pp. 162–71. doi: 10.1093/intqhc/mzn008.

Harding, A. and Preker, A. S. (2000) *Understanding Organizational Reforms The Corporatization of Public Hospitals*. Washington DC.

Harrison, M. S. and Goldenberg, R. L. (2016) 'Cesarean section in sub-Saharan Africa', *Maternal Health, Neonatology and Perinatology*. Maternal Health, Neonatology and Perinatology, 2(1), p. 6. doi: 10.1186/s40748-016-0033-x.

Hartley, J. and Martin, J. (2008) *Leadership in Healthcare: a Review of the Literature for Health Care Professionals , Managers and Researchers*. Coventry.

Health Governance and Transparency Association (2014) *Health Sector Governance: Better Governance for Better Health Principles & Guidelines for Governance in Hospitals*. Cairo.

Health Policy Project (2015) *Health Financing Profile - Kenya*, *Health Policy Project*. Nairobi. Available at: http://www.healthpolicyproject.com/pubs/7887/Botswana_HFP.pdf.

Herr, A. (2009) *Product differentiation and welfare in a mixed duopoly with regulated prices: The case of a public and a private hospital*. 08/2009. Nuremburg.

Herrera, C. A. *et al.* (2014) 'Does ownership matter? An overview of systematic reviews of the performance of private for-profit, private not-for-profit and public healthcare providers', *PLoS ONE*, 9(12), pp. 1–18. doi: 10.1371/journal.pone.0093456.

Hillman, A. J., Withers, M. C. and Collins, B. J. (2009) 'Resource Dependence Theory: A Review.', *Journal of Management*, 35(6), pp. 1404–1427. doi: 10.1177/0149206309343469.

Himmelstein, D. U. *et al.* (2014) 'A Comparison Of Hospital Administrative Costs In Eight Nations: US Costs Exceed All Others By Far', *Health Affairs*, 33(9), pp. 1586–1594. doi: 10.1377/hlthaff.2013.1327.

Hollingsworth, B. (2008) 'The measurement of efficiency and productivity of health care delivery', *Health Economics*, 17, pp. 1107–1128.

Horwitz, J. R. *et al.* (2007) *What Do Nonprofits Maximize? Nonprofit Hospital Service Provision and Market Ownership Mix*. 13246.

Horwitz, J. R. and Nichols, A. (2009) 'Hospital ownership and medical services: Market mix, spillover effects, and nonprofit objectives', *Journal of Health Economics*, 28(5), pp. 924–937. doi: 10.1016/j.jhealeco.2009.06.008.

Huang, L. *et al.* (2008) 'Maternal age and risk of stillbirth: a systematic review', *Canadian Medical Association Journal*, 178(8).

Hussey, P. S. *et al.* (2009) 'A systematic review of health care efficiency measures.', *Health services research*, 44(3), pp. 784–805. doi: 10.1111/j.1475-6773.2008.00942.x.

Hyman, D. A. and Sage, W. M. (2006) 'Subsidizing health care providers through the tax code:status or conduct?', *Health Affairs*, 25(4), pp. 312–315. doi: 10.1377/hlthaff.25.w312.

Institute of Medicine (2001) *Crossing the Quality Chasm A New Health System for the 21st Century*. 1st edn. Washington DC: National Academy Press.

International Finance Corporation (2009) *Practical guide to corporate governance: Experiences from the Latin American Companies Circle Motivation Motivat*, *International Finance Corporation*. Washington DC. Available at: file:///D:/Study/phd/Literature review corporate governance/OECD principles.pdf.

Ivankova, N. V, Creswell, J. W. and Stick, S. L. (2006) 'Using mixed methods sequential explanatory design: From theory to practice', *Field Methods*, 18(1), pp. 3–20. doi: 10.1177/1525822X05282260.

Jensen, M. C. (1993) 'The Modern Industrial Revolution, Exit, and the Failure of Internal Control Systems', *Journal of Finance*, 48(3), pp. 831–880. doi: 10.1111/j.1540-6261.1993.tb04022.x.

Jeurissen, P. (2010) *For-profit Hospitals: A comparative and longitudinal study of the for-profit hospital sector in four Western countries*. Erasmus University Rotterdam.

Jha, A. K. and Epstein, A. M. (2010) 'Hospital Governance And The Quality Of Care', *Health Affairs*, 1(1), pp. 182–187. doi: 10.1377/hlthaff.2009.0297.

Jha, A. K., Orav, E. J. and Epstein, A. M. (2011) 'Low-quality, high-cost hospitals, mainly in South, Care for sharply higher shares of elderly black, Hispanic, and medicaid patients.', *Health Affairs*, 30(10), pp. 1904–11. doi: 10.1377/hlthaff.2011.0027.

Jiang, H., Lockee, C. and Fraser, I. (2012) 'Enhancing board oversight on quality of hospital care: An agency theory perspective.', *Health Care Management Review*, 37(2), pp. 144–53. doi: 10.1097/HMR.0b013e3182224237.Enhancing.

Jonsdottir, G. *et al.* (2009) 'No correlation between cesarean section rates and perinatal mortality of singleton infants over 2,500 g', *Acta Obstet Gynecol Scand*, 88(5), pp. 621–3.

Kagawa, R. C., Anglemyer, A. and Montagu, D. (2012) 'The Scale of Faith Based Organization Participation in Health Service Delivery in Developing Countries : Systemic Review and Meta-Analysis', *PloS one*, 7(11), pp. 1–8. doi: 10.1371/journal.pone.0048457.

Kane, R. L. *et al.* (2007) *Nurse Staffing and Quality of Patient Care*. Rockville, MD.

Kapiriri, L. and Martin, D. K. (2006) 'Priority setting in developing countries health care institutions : the case of a Ugandan hospital', *BMC Health Services Research*, 9(i), pp. 1–9. doi: 10.1186/1472-6963-6-127.

Kariuki, J. *et al.* (2015) *Local Supply Chains for Medicines and Medical Supplies in Kenya : Understanding the Challenges*. 001/2015. Nairobi.

Katz, D. A. and McIntosh, L. A. (2014) 'Renewed Focus on Corporate Director Tenure', *New York Law Journal*, (May 22), pp. 1–5.

Kaufmann, D., Kraay, A. and Mastruzzi, M. (2010) *The Worldwide Governance Indicators Methodology and Analytical Issues*. 5430. Washington DC.

Kenny, L. C. *et al.* (2013) 'Advanced Maternal Age and Adverse Pregnancy Outcome: Evidence from a Large Contemporary Cohort', *PLoS ONE*, 8(2), pp. 1–9. doi: 10.1371/journal.pone.0056583.

Kenya Institute for Public Policy Research and Analysis (2010) *Review of the Kenya Health Policy Framework 1994 - 2010*, *In Health*. Nairobi.

Kenya National Bureau of Statistics & ICF Macro (2015) *Kenya Demographic and Health Survey 2014*. Nairobi.

Kenya National Bureau of Statistics and ICF Macro (2010) *Kenya Demographic and Health Survey 2008-9*, *Health (San Francisco)*. Nairobi.

Khan, A. and Zaman, S. (2010) 'Costs of vaginal delivery and Caesarean section at a tertiary level public hospital in Islamabad, Pakistan.', *BMC pregnancy and childbirth*, 10, p. 2. doi: 10.1186/1471-2393-10-2.

Kiambu County (2014) *The Kiambu County Health Services Bill 2014*. Kenya. doi: 10.1017/CBO9781107415324.004.

KIPPRA (2010) *Review of the Kenya Health Policy Framework 1994 - 2010*. Nairobi.

Kizza, I. B. *et al.* (2011) 'Makerere University College of Health Sciences' role in addressing challenges in health service provision at Mulago National Referral Hospital', *BMC International Health and Human Rights*, p. S7. doi: 10.1186/1472-698X-11-S1-S7.

Kozhimannil, K. B., Arcaya, M. C. and Subramanian, S. V. (2014) 'Maternal Clinical Diagnoses and Hospital Variation in the Risk of Cesarean Delivery: Analyses of a National US Hospital Discharge Database', *PLoS Medicine*, 11(10). doi: 10.1371/journal.pmed.1001745.

Kruk, M. E. *et al.* (2014) '"Big push" to reduce maternal mortality in Uganda and Zambia enhanced health systems but lacked a sustainability plan', *Health Affairs*, 33(6), pp. 1058–1066. doi: 10.1377/hlthaff.2013.0637.

Kutzin, J. (2008) *Health financing policy : a guide for decision-makers*, *World Health*. Copenhagen.

Lai, T. Y. Y. and Leung, G. M. (2010) 'Equity and efficiency in healthcare : are they mutually exclusive ?', *HKJOphthalmol*, 16(1), pp. 2–5.

Laopaiboon, M. *et al.* (2014) 'Advanced Maternal Age and Pregnancy Outcomes: A Multicountry Assessment.', *BJOG*, 121 Suppl, pp. 49–56. doi: 10.1111/1471-0528.12659.

Lee, Q. Y. *et al.* (2011) 'Maternal mortality in Ghana: a hospital-based review', *Acta Obstet Gynecol Scand*.

Lee, S. D. *et al.* (2008) 'An Empirical Taxonomy of Hospital Governing Board Roles', *Health Research and Educational Trust*, 43(4), pp. 1223–1243. doi: 10.1111/j.1475-6773.2008.00835.x.

Van Lerberghe, W. *et al.* (2014) 'Country experience with strengthening of health systems and deployment of midwives in countries with high maternal mortality', *The Lancet*. Elsevier Ltd, 384(9949), pp. 1215–1225. doi: 10.1016/S0140-6736(14)60919-3.

Lewis, M. and Pettersson, G. (2009) *Governance in Health Care Delivery: Raising Performance*, *WPS*. 5074. Washington DC.

Lin, H.-C., Xirasagar, S. and Tang, C. (2004) 'Costs per discharge and hospital ownership under prospective payment and cost-based reimbursement systems in Taiwan', *Health Policy and Planning*, 19(3), pp. 166–176. doi: 10.1093/heapol/czh020.

Ludwig, M., Van Merode, F. and Groot, W. (2010) 'Principal agent relationships and the efficiency of hospitals.', *The European journal of health economics : HEPAC : health economics in prevention and care*, 11(3), pp. 291–304. doi: 10.1007/s10198-009-0176-z.

Lumbiganon, P. *et al.* (2010) 'Method of delivery and pregnancy outcomes in Asia: the WHO global survey on maternal and perinatal health 2007-08', *The Lancet*, 375(9713), pp. 490–499. doi: 10.1016/S0140-6736(09)61870-5.

Lunenburg, F. C. (2012) 'Decision Making in Organizations', *International Journal of Management, Business, and Administration*, 15(1), pp. 1–9. Available at: http://www.nationalforum.com/Electronic Journal Volumes/Lunenburg, Fred C. Decision Making in Organizations IJMBA V15 N1 2011.pdf.

Luoma, M. *et al.* (2010) *Kenya Health System Assessment 2010*, *Health Systems 20/20 Project*. Bethesda, MD. doi: Health Systems 20/20 project.

Maina, T., Chen, A. and Perales, N. (2014) *October 2014 HEALTHCARE FINANCING OPTIONS FOR KENYA*.

Malkin, R. and Keane, A. (2010) 'Evidence-based approach to the maintenance of laboratory and medical equipment in resource-poor settings.', *Medical & biological engineering & computing*, 48(7), pp. 721–6. doi: 10.1007/s11517-010-0630-1.

Mallin, C., Melis, A. and Gaia, S. (2014) 'The remuneration of independent directors in the UK and Italy: An empirical analysis based on agency theory', *International Business Review*, 24(2), pp. 175–186. doi: 10.1016/j.ibusrev.2014.07.006.

Management Science for Health (2010) *Health Systems in Action an e-handbook for leaders and managers*, *Management*. Cambridge, MA: Management Sciences for Health, Inc. Available at: http://www.msh.org/ resource-center/health-systems-in-action.cfm.

Mannion, R. *et al.* (2016) *Effective board governance of safe care: a (theoretically underpinned) cross-sectioned examination of the breadth and depth of relationships through national quantitative surveys and in-depth qualitative case studies*, *Health Services and Delivery Research*. doi: 10.1016/j.jbusres.2014.06.013.The.

Mason, D. J. *et al.* (2013) 'The representation of health professionals on governing boards of health care organizations in New York City', *Journal of Urban Health*, 90(5), pp. 888–901. doi: 10.1007/s11524-012-9772-9.

McDonagh, K. J. and Spohn, C. (2006) 'Hospital Governing Boards: A Study of Their Effectiveness in Relation to Organizational Performance', *Journal of Healthcare Management*, 51(6), pp. 377–89.

Mckee, M. and Healy, J. (2000) 'The role of the hospital in a changing environment', *differences*, pp. 803–810.

Mckeon, K., Gitonga, N. and Decker, C. (2009) *Kenya private health sector assessment*.

McNatt, Z. *et al.* (2014) 'Implementation of hospital governing boards: views from the field.', *BMC health services research*, 14(1), p. 178. doi: 10.1186/1472-6963-14-178.

Metcalfe, D., Chowdhury, R. and Salim, A. (2015) 'What are the consequences when doctors strike?', *BMJ Online*, (November). doi: 10.1136/bmj.h6231.

Mikkelsen-Lopez, I., Wyss, K. and de Savigny, D. (2011) 'An approach to addressing governance from a health system framework perspective.', *BMC international health and human rights*. BioMed Central Ltd, 11(1), p. 13. doi: 10.1186/1472-698X-11-13.

Millar, R. *et al.* (2013) 'Hospital Board Oversight of Quality and Patient Safety : A Narrative Review and Synthesis of Recent Empirical Research', *The Milbank Quarterly*, 91(4), pp. 738–770.

Mills, A. *et al.* (2012) 'Equity in financing and use of health care in Ghana, South Africa, and Tanzania : implications for paths to universal coverage', *The Lancet*, 6736(12), pp. 1–8. doi: 10.1016/S0140-6736(12)60357-2.

Mills, S. *et al.* (2009) *REDUCING MATERNAL MORTALITY : Strengthening the World Bank Response*.

Ministry of Health (2006) *NORMS AND STANDARDS For Health Service Delivery*, *Health (San Francisco)*. Nairobi.

Ministry of Health (2012) *Kenya National Health Accounts 2012/13*. Nairobi.

Ministry of Health (2013) *KENYA HEALTH SECTOR STRATEGIC AND INVESTMENT PLAN (KHSSP) JULY 2013-JUNE 2017*. Nairobi.

Ministry of Health (2014a) *Government of Kenya, 2014: Kenya Service Availability and Readiness Assessment Mapping (SARAM)*. Nairobi.

Ministry of Health (2014b) *Health Sector: Human Resources Strategy 2014-2018*. Nairobi.

Ministry of Health (2014c) *Human Resources For Health Norms and Standards Guidelines For The Health Sector*. Nairobi.

Ministry of Health (2014d) *Kenya Health Policy 2014-2030*. Nairobi.

Ministry of Health (2014e) 'Kenya Health Sector Referral Strategy 2014-2018', *Government of Kenya*, pp. 1–44. Available at: http://www.cpc.unc.edu/measure/pima/referral-systems/referral-strategy-insert.

Ministry of Health (2016) *Kenya Reproductive, Maternal, Newborn, Child and Adolescent Health (RMNCAH) Investment Framework*, *Ministry of Health*. Nairobi. Available at: http://www.globalfinancingfacility.org/sites/gff_new/files/documents/Kenya RMNCAH Investment Framework_March 2016.pdf.

Ministry of Medical Services & Ministry of Public Health and Sanitation (2009) *NATIONAL HEALTH ACCOUNTS 2009/10*. Nairobi.

Ministry of Medical Services & Ministry of Public Health and Sanitation (2010a) *Master Facility List - Implementation Guide*. Nairobi.

Ministry of Medical Services & Ministry of Public Health and Sanitation (2010b) *National Human Resources for Health (HRH) Annual Report*.

Ministry of Medical Services & Ministry of Public Health and Sanitation (2012) *Kenya Health Policy 2012-2030*. Nairobi.

Ministry of Medical Services Kenya (2008) *Ministry of Medical Services Strategic Plan 2008-2012*. Nairobi.

Ministry of Public Health and Sanitation (2008) *Ministry of Public Health and Sanitation Strategic plan 2008-2012*. Nairobi.

Ministry of Public Health and Sanitation (2010) *EVALUATION REPORT OF THE COMMUNITY HEALTH STRATEGY IMPLEMENTATION IN KENYA*. Nairobi.

Ministry of Public Health and Sanitation & Ministry of Medical Services (2009) *National Reproductive Health Strategy 2009-2015*. Nairobi.

Ministry of Public Health and Sanitation & Ministry of Medical Services (2011) *Kenya Health Policy Framework 1994 - 2010 Analysis of Performance Health Situation trends & distribution : 1994-2010 , And Projections for 2011 – 2030*, *Health (San Francisco)*. Nairobi.

Mintzberg, H. (1993) *Structure in fives: Designing effective organizations*. Englewood Cliffs, New Jersey: Prentice-Hall Inc. doi: 10.1017/CBO9781107415324.004.

Molinari, C. *et al.* (1993) 'Hospital Board Effectiveness : Relationships between Governing Board Composition and Hospital Financial Viability', *Health services research*, 28(3).

Mori, N. and Olomi, D. (2012) *The effect of Boards on the Performance of Microfinance Institutions: Evidence from Tanzania and Kenya*, *Research Report 12/2*. Dar-es-Salaam. doi: 10.1017/CBO9781107415324.004.

MP&DB-Kenya (2013) *Medical Practitioners and Dentists Board: Strategic Plan 2013-2018*. Nairobi.

Murphy, C. and O'Donohoe, S. (2006) 'Hospital Governance : An Insight from the South East of Ireland', in *IAFA Annual Conference*. Dublin: Irish Accounting & Financing Association, pp. 1–42. Available at: www.repositorywit.ie/267/1/cath.

Murray, C. J. L. and Evans, D. B. (2003) *Health Systems Performance Assessment: Debates, Methods and Empiricism*. Geneva.

Murthy, B. K., Murthy, M. B. and Prabhu, P. M. (2013) 'Maternal Mortality in a Tertiary Care Hospital: A 10-year Review', *international journal of preventive medicine*, 4(1), pp. 105–109.

Muthaka, D. I., Kimani, D. N. and Manda, D. K. (2004) *A Review of the Regulatory Framework for Private Healthcare Services in Kenya*, *Development*. nairobi.

Mwamuye, M. K. *et al.* (2012) 'Factors Influencing Performance of Agricultural Companies in Kenya : A Case of Coast Province', *International Journal of Business and Commerce*, 2(4), pp. 25–38.

Mwaniki, M. K. *et al.* (2010) 'An increase in the burden of neonatal admissions to a rural district hospital in Kenya over 19 years', *BMC Hublic health*, 10(591).

Mwase, T. (2006) *The Application of National Health Accounts to Hospital Efficiency Analyses in Eastern and Southern Africa*, *Health (San Francisco)*. WP019. Bethesda, MD.

NACPD (2011) *Kenya Service Provision Assessment (SPA) 2010*. Nairobi.

Nagpal, J. *et al.* (2015) 'Widespread non-adherence to evidence-based maternity care guidelines: A population-based cluster randomised household survey', *International Journal of Obstetrics and Gynaecology*, 122(2), pp. 238–247. doi: 10.1111/1471-0528.13054.

NCAPD *et al.* (2010) *Kenya Service Provision Assessment (SPA) 2010*. Nairobi.

Nemec, J., Meričková, B. and Štrangfeldová, J. (2010) 'The ownership form of hospitals from the viewpoints of economic theory and slovak practice', *Ekonomie a Management*, 13(2), pp. 19–31.

Neves, A. P. (2012) *Do Boards Matter? The Links Between Governance, Organizational Monitoring and Alignment Capacity and Hospital performance*, *ProQuest Dissertations and Theses*. Toronto.

Nzinga, J., Mbaabu, L. and English, M. (2013) 'Service delivery in Kenyan district hospitals - what can we learn from literature on mid-level managers?', *Human resources for health*. Human Resources for Health, 11(1), p. 10. doi: 10.1186/1478-4491-11-10.

OECD (2005) *OECD Guidelines on Corporate Governance of State-owned Enterprises*, *Corporate Governance*. OECD Publishing.

Olafsdottir, A. E. *et al.* (2011) 'Health systems performance in sub-Saharan Africa : governance , outcome and equity', *BMC Public Health*. BioMed Central Ltd, 11(1), p. 237. doi: 10.1186/1471-2458-11-237.

Olivier, J. *et al.* (2015) 'Faith-based health care 1 Understanding the roles of faith-based health-care providers in Africa : review of the evidence with a focus on magnitude , reach , cost , and satisfaction'. Elsevier Ltd, pp. 1765–1775. doi: 10.1016/S0140-6736(15)60251-3.

Orlikoff, J. E. and Totten, M. K. (2001) *The Trustee Handbook for Health Care Governance , 2nd Edition*. 2nd edn. Jossey-Bass.

Osei, D. *et al.* (2005) 'Cost Effectiveness and Resource Technical efficiency of public district hospitals and health centres in Ghana : a pilot study', *Cost Effectiveness and Resource Allocation*, 13, pp. 1–13. doi: 10.1186/1478-7547-3-9.

Owuondo, P. A. *et al.* (2015) 'Preparedness of County Referral Health Facilities in Implementing Adolescent Friendly Health Services: A Case of Mama Lucy Kibaki County Refferal Hospital, Kenya', *Global Journal of Health Science*, 7(6). doi: 10.5539/gjhs.v7n6p11.

Ozumba, B. and Nwogo-Ikojo, E. (2008) 'Avoidable maternal mortality in Enugu, Nigeria', *Public Health*, 122(4), pp. 354–60.

Parent, F. *et al.* (2005) 'Health Research Policy and Systems Analysis of adequacy levels for human resources improvement within primary health care framework in Africa', *Health Research Policy and Systems*, 8, pp. 1–8. doi: 10.1186/1478-4505-3-8.

Parkhurst, J. O. *et al.* (2004) 'Health systems factors influencing maternal health services: A four-country comparison', *Health Policy*, 73, pp. 127–138. doi: 10.1016/j.healthpol.2004.11.001.

Pedraza, C. C. *et al.* (2015) 'Mortality outcomes in hospitals with public, private not-for-profit and private for-profit ownership in Chile 2001-2010', *Health Policy and Planning*, 30, pp. i75–i81. doi: 10.1093/heapol/czu143.

Pitt, C. *et al.* (2012) 'Donor funding for newborn survival: an analysis of donor-reported data, 2002-2010.', *PLoS medicine*, 9(10), p. e1001332. doi: 10.1371/journal.pmed.1001332.

Pozen, R. C. (2010) 'The Case for Professional Boards', *Harvard Business Review*, December, pp. 50–59.

Prata, N. *et al.* (2010) 'Maternal mortality in developing countries: challenges in scaling-up priority interventions', *Women's Health*, 6(2), pp. 311–327. doi: 10.2217/whe.10.8.

Private Sector Corporate Governance Trust (2000) *Principles for Corporate Governance in Kenya*. Nairobi.

Van Puyvelde, S. *et al.* (2012) 'The governance of nonprofit organizations: Integrating agency theory with stakeholder and stewardship theories', *Nonprofit and Voluntary Sector Quarterly*, 41(3), pp. 431–451. doi: 10.1177/0899764011409757.

Pyone, T., Smith, H. and van den Broek, N. (2017) 'Frameworks to assess health systems governance: a systematic review', *Health Policy and Planning*, (March), pp. 710–722. doi: 10.1093/heapol/czx007.

Quansah, A. (2013) *The Impacts of Free Maternal Delivery Policy on Maternal MOrtality in Ghana; A case study of Kumasi Metropolis*. Kwame Nkrumah University of Science and Technology.

Raheja, C. G. (2016) 'Determinants of Board Size and Composition : A Theory of Corporate Boards', *JOURNAL OF FINANCIAL AND QUANTITATIVE ANALYSIS*, 40(2), pp. 283–306.

Rajaratnam, J. K. *et al.* (2010) 'for 187 countries , 1970 – 2010 : a systematic analysis of progress towards Millennium Development Goal 4', *Online*. Elsevier Ltd, 6736(9730), pp. 1988–2008. doi: 10.1016/S0140-6736(10)60703-9.

Raven, J. *et al.* (2011) 'Methodology and tools for quality improvement in maternal and newborn health care', *International journal of Obstetrics and Gynecology*, 114(1), pp. 4–9.

Reidpath, D. D. *et al.* (2012) 'The fallacy of the equity-efficiency trade off: rethinking the efficient health system', *BMC Public Health*. BioMed Central Ltd, 12(Suppl 1), p. S3. doi: 10.1186/1471-2458-12-S1-S3.

Remme, J. H. F. *et al.* (2010) 'Defining Research to Improve Health Systems', *PLoS Medicine*, 7(11). doi: 10.1371/journal.pmed.1001000.

Republic of Kenya (2010) *The Constitution of Kenya, 2010*, *Human Rights*. Kenya: National Council for Law Reporting with the Authority of the Attorney General.

Rotar, A. M. *et al.* (2016) 'The involvement of medical doctors in hospital governance and implications for quality management: a quick scan in 19 and an in depth study in 7 OECD countries', *BMC Health Services Research*. BMC Health Services Research, 16(S2), p. 160. doi: 10.1186/s12913-016-1396-4.

Rudrum, J. (2010) *Understanding governance in the NHS*. London.

Santerre, R. and Vernon, J. (2005) *HOSPITAL OWNERSHIP MIX EFFICIENCY IN THE US : AN EXPLORATORY STUDY*. 11192. Cambridge, MA.

de Savigny, D. and Adam, T. E. (2009) *Systems Thinking: for Health Systems Strengthening. Alliance for health policy and systems research*.

Say, L. *et al.* (2007) 'A systematic review of inequalities in the use of maternal health care in developing countries : examining the scale of the problem and the importance of context', *Bulletin of the World Health Organization*, 035659(August 2006). doi: 10.2471/BLT.

Schlesinger, M. and Gray, B. H. (2006) 'How nonprofits matter in American medicine, and what to do about it', *Health Affairs*, 25(4), pp. W287-303. doi: 10.1377/hlthaff.25.w287.

Seitio-kgokgwe, O. *et al.* (2014) 'Assessing performance of Botswana ' s public hospital system : the use of the World Health Organization Health System Performance Assessment Framework', *International journal of health policy and management*, 3(4), pp. 179–189. doi: 10.15171/ijhpm.2014.85.

Shen, Y. *et al.* (2005) *HOSPITAL OWNERSHIP AND FINANCIAL PERFORMANCE: A QUANTITATIVE RESEARCH REVIEW*. 11662.

Shukla, M., and Johnson Lassner, K. (2012) *Governing for Better Health: A Targeted Literature Review*. Cambridge, MA. Available at: http://www.msh.org/sites/msh.org/files/4-governancelitreviewmay2012final_print.pdf%5Cnhttp://www.msh.org/our-work/projects/leadership-management-and-governance-project.

Shukla, M. and Lassner, J. (2012) *Governing for Better Health: A targeted literature review*. Arlington VA.

Siddiqi, S. *et al.* (2009) 'Framework for assessing governance of the health system in developing countries: gateway to good governance.', *Health Policy*, 90(1), pp. 13–25. doi: 10.1016/j.healthpol.2008.08.005.

Simsek, Z. (2007) 'CEO tenure and organizational performance: An intervening model', *Strategic Management Journal*, 28(6), pp. 653–662. doi: 10.1002/smj.599.

Song, P. and Reiter, K. (2011) 'Trends in Asset Structure between Not-for-Profit and Investor Owned Hospitals', *Med Care Res Rev.*, 67(6), pp. 1–12. doi: 10.1177/1077558710368807.Trends.

Sørbye, I. K. *et al.* (2011) 'Caesarean section among referred and self-referred birthing women: a cohort study from a tertiary hospital, northeastern Tanzania', *BMC Pregnancy and Childbirth*, 11(1), p. 55. doi: 10.1186/1471-2393-11-55.

Souza, J. P. *et al.* (2011) 'The world health organization multicountry survey on maternal and newborn health: study protocol', *BMC Health Services Research*. BioMed Central Ltd, 11(September 2010). doi: 10.1186/1472-6963-11-286.

Spangler, S. (2012) 'Assessing skilled birth attendants and emergency obstetric care in rural Tanzania: the inadequacy of using global standards and indicators to measure local realities', *Reproductive Health Matters*, 20(39), pp. 133–141.

Starfield, B. (2011) 'The hidden inequity in health care.', *International journal for equity in health*. BioMed Central Ltd, 10(1), p. 15. doi: 10.1186/1475-9276-10-15.

Street, A. *et al.* (2010) *Determinants of hospital costs and performance variation : Methods, models and variables for the EuroDRG project*. Available at: http://eprints.whiterose.ac.uk/52330/.

Swanson, R. C. *et al.* (2012) 'Rethinking health systems strengthening : key systems thinking tools and strategies for transformational change', *Health Policy and Planning*, 27(iv), pp. 54–61. doi: 10.1093/heapol/czs090.

The Republic of Kenya (2009) *The Companies Act-Chapter 486*. Kenya: National Council for Law Reporting.

The Republic of Kenya (2012a) *Clincial Officers (Training , Registration and Licensing) Act*. Kenya: National Council for Law Reporting.

The Republic of Kenya (2012b) *Education Act*. Kenya: National Council for Law Reporting.

The Republic of Kenya (2012c) *Kenya Medical Training College Act*. Kenya: National Council for Law Reporting. Available at: http://www.issafrica.org/crimehub/uploads/consumer_protection_pocketguide.pdf.

The Republic of Kenya (2012d) *MEDICAL LABORATORY TECHNICIANS AND TECHNOLOGISTS ACT*. Kenya: National Council for Law Reporting. doi: 10.1136/bmj.1.5491.860.

The Republic of Kenya (2012e) *Medical Practitioners and Dentists Act*. Kenya: National Council for Law Reporting.

The Republic of Kenya (2012f) *Nurses Act*. Kenya: National Council for Law Reporting.

The Republic of Kenya (2012g) *Pharmacy and Poisons Act*. Kenya: National Council for Law Reporting. doi: 10.1136/bmj.2.4676.455.

The Republic of Kenya (2012h) *PUBLIC HEALTH ACT: Chapter 242*. Kenya: National Council for Law Reporting.

The Republic of Kenya (2013a) *THE PUBLIC BENEFIT ORGANIZATIONS ACT, 2013*. Republic of Kenya: Kenya Gazette Supplement No. 30.

The Republic of Kenya (2013b) *The Public Benefits Organizations Act, 2013*. Kenya: National Council for Law Reporting.

The Republic of Kenya (2015) *State corporations Act Kenya*. National Council for Law Reporting.

The Urban Institute (2010) *Vulnerable Populations | Health Policy Center at the Urban Institute | Independent research for better health policy*. Available at: http://www.urban.org/health_policy/vulnerable_populations/ (Accessed: 28 July 2013).

The World Bank (2014) *Universal Health Coverage for Inclusive and Sustainable Development*. Edited by A. Maeda et al. Washington DC.

Tiemann, O., Schreyogg, J. and Busse, R. (2012) 'Hospital ownership and efficiency : a review of studies with particular focus on Germany', *Health Policy*, 104(2), pp. 163–71. doi: 10.1016/j.healthpol.2011.11.010.

Tlotlego, N. *et al.* (2010) 'Assessment of productivity of hospitals in Botswana : A DEA application', *International Archives of Medicine*, 3(1), p. 27. doi: 10.1186/1755-7682-3-27.

Transparency International-Kenya (2011) *The Kenya Health Sector Integrity Study Report*. Nairobi.

UNDP (2010) *What will it take to achieve the Millennium Development Goals ?* Geneva.

United Nations (2014) *The Millennium Development Goals Report 2014*. New York. Available at: https://visit.un.org/millenniumgoals/2008highlevel/pdf/MDG_Report_2008_Addendum.pdf.

United Nations (2016) *The Sustainable Development Goals Report 2016*. New York.

Vos, M. D. E. *et al.* (2009) 'Using quality indicators to improve hospital care : a review of the literature', *International Journal for Quality in Health Care*, 21(2), pp. 119–129.

Wachterman, M. W. *et al.* (2011) 'Association of hospice agency profit status with patient diagnosis, location of care, and length of stay.', *JAMA : the journal of the American Medical Association*, 305(5), pp. 472–9. doi: 10.1001/jama.2011.70.

Wamai, R. G. (2009) 'The Kenya Health System — Analysis of the situation and enduring challenges', *JMAJ*, 52(2), pp. 134–140.

Wangui, M. L. (2014) *A Clinical Audit of Emergency Caesarian Delivery at Kenyatta National Hospital*. Nairobi.

WHO (1985) 'Appropriate technology for birth', *Lancet*, 24(2), pp. 436–7.

Widmer, M. *et al.* (2011) 'The role of faith-based organizations in maternal and newborn health care in Africa', *International Journal of Gynecology and Obstetrics*. World Health Organisation and Ireland Ltd, 114(3), pp. 218–222. doi: 10.1016/j.ijgo.2011.03.015.

Wilkes, J. (2014) *CEO turnover and changes in corporate performance in South Africa*. Pretoria.

Wilmoth, J. *et al.* (2010) 'Maternal deaths drop by one-third from 1990 to 2008: a United Nations analysis.', *Bulletin of the World Health Organization*, 88(10), p. 718–718A. doi: 10.2471/BLT.10.082446.

Witter, S. *et al.* (2010) 'The national free delivery and caesarean policy in Senegal: Evaluating process and outcomes', *Health Policy and Planning*, 25(5), pp. 384–392. doi: 10.1093/heapol/czq013.

WORLD BANK (2012) *DEVOLUTION WITHOUT DISRUPTION*. Nairobi.

World Bank Group (2010a) *Private Health Sector Assessment in Kenya*. 193. Washington DC.

World Bank Group (2010b) *REVIEW OF WORLD BANK ' S EXPERIENCE WITH COUNTRY-LEVEL HEALTH SYSTEM ANALYSIS*. Washington DC.

World Bank Group (2015) *Kenya Country Data*, *http://data.worldbank.org/country/kenya*. Available at: http://data.worldbank.org/country/kenya (Accessed: 5 March 2015).

World Health Organization (2000) *The World Health Report 2000: Health Systems: Improving Perfomance*. Geneva. doi: 10.1146/annurev.ecolsys.35.021103.105711.

World Health Organization (2002) 'Prevention of hospital-acquired infections: A Practical Guide 2nd Edition'. Geneva: World Health Organization, pp. 1–64. doi: WHO/CDS/CSR/EPH/2002.12.

World Health Organization (2007) *EVERYBODY'S BUSINESS STRENGTHENING HEALTH SYSTEMS TO IMPROVE HEALTH OUTCOMES: WHO'S FRAMEWORK FOR ACTION*. Geneva.

World Health Organization (2011) *Maternal, newborn, child and adolescent health. Adolescent pregnancy.* Available at: http://www.who.int/maternal_child_adolescent/topics/maternal/adolescent_pregnancy/en/ (Accessed: 7 July 2016).

World Health Organization (2012) *World Health Statistics 2012*. Geneva.

World Health Organization (2015) *WHO Statement on Caesarean Section Rates*. Geneva. doi: 10.1111/1471-0528.13526.

World Organization Health (WHO) (2017) *Managing Complications in Pregnancy and Childbirth: A guide for midwives and doctors*. @nd. Geneva.

Yeager, V. A. *et al.* (2014) 'Using resource dependency theory to measure the environment in health care organizational studies', *Health Care Management Review*, 39(1), pp. 50–65. doi: 10.1097/HMR.0b013e3182826624.

Yego, F. *et al.* (2014) 'A case-control study of risk factors for fetal and early neonatal deaths in a tertiary hospital in Kenya', *BMC Pregnancy and Childbirth*, 14, pp. 1–9. doi: 10.1186/s12884-014-0389-8.

Zaidi, A. *et al.* (2005) 'Hospital-acquired neonatal infections in developing countries', *Lancet*, 365(9465), pp. 1175–88.

Zere, E. *et al.* (2006) 'Cost Effectiveness and Resource Technical efficiency of district hospitals : Evidence from Namibia using Data Envelopment Analysis', *Cost Effectiveness and Resource Allocation*, 9, pp. 1–9. doi: 10.1186/1478-7547-4-5.

Ziraba, A. K. *et al.* (2009) 'Maternal mortality in the informal settlements of Nairobi city: what do we know?', *Reproductive Health*, 6, p. 6. doi: 10.1186/1742-4755-6-6.

Figures

(Figure 1: Who holds the power? Senior Management or Hospital Board ?

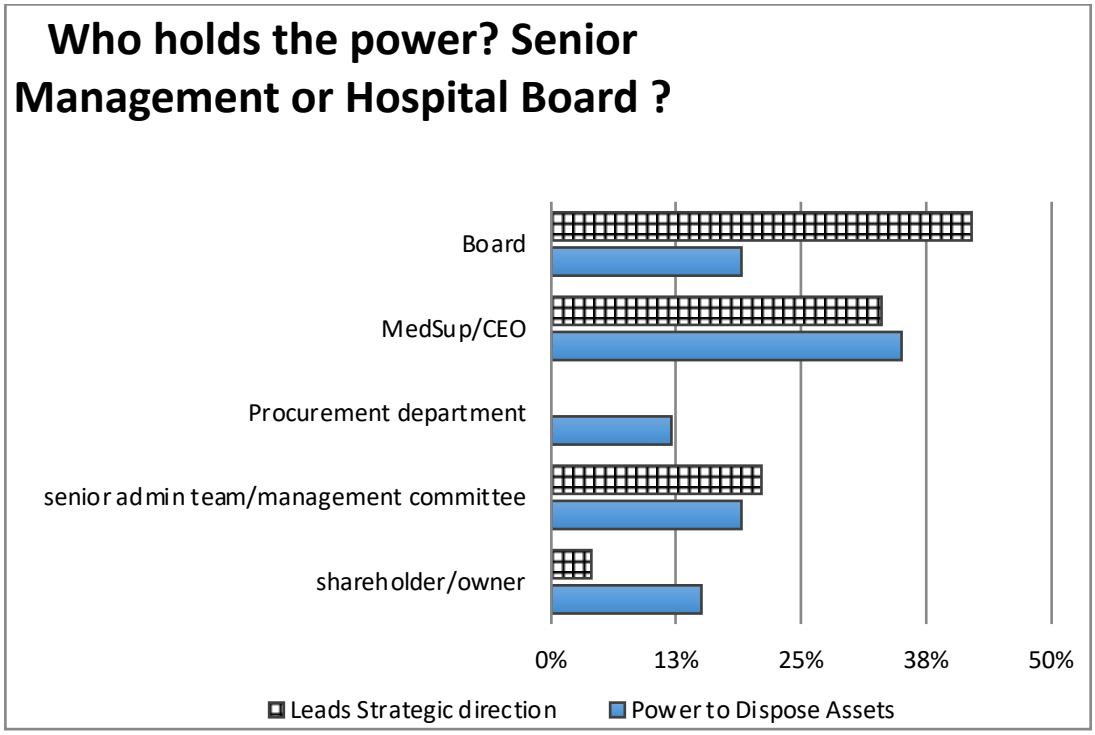


Table 2: Hospital Ownership Characteristics

Characteristic	PFP	NFP	Public (government)
Board reports to:	Shareholders	Owner Representative	County executive for health
Board representative	Director	Trustee	Trustee
Surplus/profit	Profit distribution	No profit distribution	Perpetual deficit management
Fiduciary responsibility	Yes	Yes	No
Hospitals	C2	C3, C1	P3, P2, P1
Primary Legal act	Cap 486	NGO Act 1992	County government act 2012
Primary Oversight body	MPDB	MPDB	MPDB
Board Formation	Election	Election	Selection
Term Limits	No	Yes	Yes

Inspecting agency	Inspected by GOK agencies e.g. training Laboratory Council, Radiation Protection Board, NEMA, NCK, PPB, Single Premises Permit License, Atomic Nuclear Act, the Medical Practitioners and Dentists Board (MPDB	Inspected by various GOK agencies e.g. training Laboratory Council, Radiation Protection Board, NEMA, NCK, PPB, Single Premises Permit License, Atomic Nuclear Act (MPDB	Not Inspected by MPDB the MOH
Board Secretary	CEO	CEO	MedSup

Appendix Nineteen: Publication 2

RESEARCH ARTICLE

Measuring the effectiveness of maternal delivery services: A cross-sectional and qualitative study of perinatal mortality in six primary referral hospitals, Kenya [version 1; referees: awaiting peer review]

Richard Ayah [1], Dismas Ongore[1], Alfred T.O. Agwanda[2]

[1]School of Public Health, College of Health Sciences, University of Nairobi, Nairobi, Kenya
[2]Population Studies and Research Institute, University of Nairobi, Nairobi, Kenya

v1 **First published:** 12 Jun 2018, **7**:732 (doi: 10.12688/f1000research.14862.1)
Latest published: 12 Jun 2018, **7**:732 (doi: 10.12688/f1000research.14862.1)

Abstract

Background: The effective performance of hospitals is critical to overall health system goal achievement. Global health system performance frameworks are often used as part of global benchmarking, but not within low and middle-income countries as part of service delivery performance measurement. This study explored the utility of perinatal mortality as a measure of hospital effectiveness.

Methods: A cross sectional, mixed methods study of six primary referral hospitals, differentiated by ownership, was conducted from 10th June to 9th October 2015. Monthly summary hospital data of maternal delivery services (MDS) were abstracted to determine the perinatal mortality. Tests of associations were used to correlate bed turnover, skilled staffing, method of delivery and perinatal mortality. Additionally, 40 questionnaire interviews were held with hospital board members and the management team to assess the availability of standard operating procedures (SOP) in MDS. Qualitative data was analysed thematically.

Results: All six hospitals reported having SOP in managing MDS. The average perinatal mortality rate for all the hospitals was 24.63 per 1,000 live births. However, a perinatal death was 2.6 times more likely in public hospitals compared to private hospitals (29.8 vs 11.4 per 1,000 births respectively). The average caesarean section rate for all hospitals was 25.9%, but the odds of a caesarean section were 1.67 higher in a private hospital compared to a public hospital (P<0.001 95% CI: 1.58-1.77). Perinatal mortality was associated with bed turnover ratio (R squared 0.260, P=0.001), and skilled staff availability (R squared 0.064,P<0.001).

Discussion: The high perinatal mortality reported in public hospitals may be due to high bed turnover and relatively low caesarean section rate. Input measures of performance such as reporting standards of care and staffing levels are not useful performance indicators. Perinatal mortality as a performance indicator may be an ideal measure of the effectiveness of hospitals.

Keywords

Health system effectiveness , Hospital performance, perinatal death

Corresponding author: Richard Ayah (ayah@uonbi.ac.ke)

Author roles: Ayah R: Conceptualization, Data Curation, Formal Analysis, Funding Acquisition, Investigation, Methodology, Project Administration, Writing – Original Draft Preparation, Writing – Review & Editing; **Ongore D**: Conceptualization, Supervision; **Agwanda ATO**: Conceptualization, Supervision

Competing interests: No competing interests were disclosed.

How to cite this article: Ayah R, Ongore D and Agwanda ATO. **Measuring the effectiveness of maternal delivery services: A cross-sectional and qualitative study of perinatal mortality in six primary referral hospitals, Kenya [version 1; referees: awaiting peer review]** *F1000Research* 2018, **7**:732 (doi: 10.12688/f1000research.14862.1)

Grant information: The author(s) declared that no grants were involved in supporting this work.

First published: 12 Jun 2018, **7**:732 (doi: 10.12688/f1000research.14862.1)

Introduction

The hospital sector represents approximately 45–69% of government health expenditure in sub-Saharan Africa and the effective performance of the sub-sector is therefore critical to overall health system goal achievement[1]. Globally considerable efforts have been made to develop health system performance (HSP) assessment frameworks that take into consideration the peculiarities of health systems and the multiplicity of stakeholders in health with different perspectives[2]. But HSP benchmarking is often done between countries as part of a global health comparison, rather than being used at a subnational level, where policymakers in low income countries with high disease burden seek to understand how well the delivery of healthcare meets the needs of citizens[3].

In Kenya, overall health status is measured by indicators including life expectancy, and under-five and maternal mortality[4]. However, health system performance is measured mainly through process input indicators such as health per capita spend and human resource availability[5]. This disconnect leads to poor performance accountability defined as "demonstrating and accounting for performance in the light of agreed-upon performance targets focusing on services, outputs and results"[6]. An ideal health system performance indicator would link hospital process and outcomes to overall health system effectiveness, allow for hospital comparisons, be sensitive to outcomes under the control of the health system and ensure provider accountability[6,7].

Maternal delivery service (MDS) indicators and outcomes, such as skilled delivery levels, coverage of caesarean sections and neonatal mortality, are sensitive indicators of the effectiveness of the whole health system[8]. The core impact indicators are also well defined; however the Every Newborn Action Plan (ENAP), launched in 2014, recognised that efforts are needed to improve data quantity and quality, with only 17 countries that have a policy for reporting and reviewing stillbirths and neonatal deaths[9,10].

Roughly one third of 363 interventions in the Kenya Essential Package for Health focus on reproductive health[11]. Despite the focus, Kenya did not meet the Millennium Development Goal (MDG) target for maternal deaths of 147 per 100,000 live births by 2015, and little advancement has been made in reducing mortality among newborns, which now accounts for 45% of all child deaths[4,12]. Facility-based delivery has gained traction as a key strategy for reducing perinatal mortality in developing countries[13]. In Kenya, healthcare provision is devolved to the 47 counties, which provide care to geographical defined populations[14]. In the delivery of MDS, primary referral hospitals are expected to provide comprehensive emergency obstetric care, which includes all basic emergency obstetric care interventions and caesarean sections[15,16].

Efforts to reduce maternal mortality and morbidity in low-resource settings often depend on global standards and indicators to assess obstetric care. However these standards often do not take into account the local context especially in terms of skill and resource availability[17]. Moreover, using a national average does not provide timely and accurate measurements of levels and trends at local levels, which are crucial to assess progress, allow benchmarking and provide policymakers with the data to prioritize the areas of greatest need[18].

Objective

This study explored the utility of perinatal mortality as a measure of hospital effectiveness in six primary referral hospitals in Kenya.

Methods

Study setting

A cross-sectional study of six primary referral hospitals in Kiambu and Nairobi Counties differentiated by ownership was conducted. In 2013, Kiambu County was estimated to have a population of 1,838,397 including 59,191 pregnant women[19]. In Kiambu, there were six faith-based, one private and four government hospitals. Nairobi County's population in 2013 was estimated at 3,554,261 including 172,143 pregnant women[19]. Nairobi had four faith-based, seven private and two government hospitals. Kiambu and Nairobi Counties were chosen for this study because compared to the national averages (32%), health facilities in Kiambu and Nairobi counties (40% and 48%, respectively) had above average maternal health service readiness[19]. Census data analysis of the county Maternal Mortality Ratio (MMR) estimated Kiambu and Nairobi at 230 and 212 per 100,000 live births, respectively, roughly half the national average (495 per 100,000)[20].

All the level four health facilities, that is primary referral hospitals, were picked from the list of hospitals in the two counties. The hospitals were grouped according to ownership, public (government), not for profit, faith-based and for profit hospitals. In the two counties there were six public, eight private and ten faith-based hospitals. Hospitals that did not offer maternal delivery services were excluded. A list of all public hospitals was developed and computer generated random numbers were used to select three government hospitals, which were selected and then matched by bed capacity with two faith-based and one for profit hospitals across both counties.

Data collection

Data was collected from 10th June to 9th October 2015. Monthly summary hospital data of patients who had been admitted to the maternity unit of each selected hospital in the period 1st January 2014 – 31st December 2014 were abstracted between 10th June and 9th October 2015 to determine: number of patients admitted, type of delivery, skilled staff per 1,000 deliveries, length of stay, bed capacity, bed turnover ratio, caesarean section rate, number of perinatal deaths, perinatal mortality per 1,000 live births.

Additionally, 40 questionnaire interviews were held with board members and members of the hospital management team to assess the availability of standard operating procedures in MDS. In each hospital, a minimum of three board members (including the chair, chief executive and one other), and ensuring that at least one third of members were interviewed. For each hospital management team, the medical superintendent, hospital nursing officer in charge, administrator and nurse in charge

of maternity unity were interviewed. Consequently, the combined participants from the six facilities provided at least 40 interviewees - an adequate medium size sample pool of interviews (Baker and Edwards, 2012). Informed written consent was sought with interviews audio recorded except where participants were uncomfortable, only field notes were taken (Supplementary File 1). The length of stay was determined by abstracting dates of admission and discharge from 200 randomly selected patient files from each hospital.

Data analysis

Effectiveness of MDS was defined as the extent to which the hospital manages all major causes of maternal and newborn mortality as measured by the perinatal mortality rate. The World Health Organization defines perinatal mortality as the "number of stillbirths and deaths in the first week of life per 1,000 total births". The perinatal mortality rate was calculated as: (No. of perinatal deaths / total No. of births (still births + live births)) x 1000.

Correlations and tests of associations of chi-square (X2) were used to show the relationships between MDS patients, bed turnover, average length of stay, skilled delivery staff, bed capacity and patient outcomes of normal, caesarean section; and perinatal mortality. Data was analysed using the Statistical Products and Service Solutions (SPSS) and MS-Excel.

Qualitative data was analysed thematically, by manually reviewing the transcripts. Using priori codes emanating from the questionnaire, a code book (Supplementary File 2) was developed that provided a working analytical framework that was then used to code the transcripts. Two independent coders reviewed the transcripts and consequently agreed on emergent codes and resultant thematic findings.

Ethical statement

Ethical clearance was obtained from the Ethics and Research Committee of Kenyatta National Hospital and University of Nairobi (P128/03/2015). To facilitate carrying out the study, administrative consent was obtained from both Kiambu County and Nairobi County to facilitate access to the hospitals. Before starting data collection at each hospital, written consent was obtained from each facility in-charge. Respondents in the study were asked to provide informed written consent before being interviewed.

Results

The six hospitals ranged in maternity bed capacity from 13 – 70 with a median of 55 beds. Total deliveries in the calendar year ranged from 381 at the 13 maternity bed private hospital to 8,279 at a 70 bed public hospital. The bed turnover ratio ranged from 29 – 163 with a median of 80. The lowest number of perinatal deaths was 1, while the highest was 208. The average length of stay varied from 0.7 to 5.1 days and was associated with perinatal mortality P<0.001, 95% CI: 0.6472–0.7542) (Table 1).

The average caesarean section rate for the all the hospitals was 25.9%. When the public hospitals (P) were grouped together and compared to the private [for profit (PFP) and faith based organisation hospital (FBO)], public hospitals had caesarean section rates of 18.4%, 23% and 27.1%, (P2-Kiambu, P3-Nairobi and P1-Kaimbu, respectively), while the private hospital caesarean sections rates were 31.6%, 42.5% and 43.4% (FBO1-Kiambu, PFP-Nairobi, FBO2-Kiambu, respectively). The odds of a caesarean section were 1.67 higher in a private hospital compared to a public hospital (P<0.001 95% CI: 1.5833-1.7763). The number of perinatal deaths per 1,000 live births in private hospitals were 2.62, 9.91, 13.15 (PFP-Nairobi, FBO2-Kiambu, FBO1-Kiambu, respectively), while in the public hospitals they were 25.12, 29.74, 39.17 (P2-Kiambu, P3-Nairobi, P1-Kiambu, respectively) (Table 2).

The perinatal death rate was 2.6 times higher in public hospitals (29.76 per 1,000 births) compared to private hospitals (11.39 per 1,000 births). The number of skilled delivery staff

Table 1. Volume and outputs of maternal delivery services by hospital in Nairobi and Kiambu Counties, Kenya.

Hospital-County	Maternity Beds	Bed Turnover Ratio	Average Length of Stay (days)	Skilled delivery staff per 1000 patient	Delivery by spontaneous vaginal delivery	No of perinatal deaths	Total deliveries
PFP-Nairobi	13	29	2.9	235	223	1	381
P1-Kiambu	25	163	2.3	4	2,978	160	4,085
P3-Nairobi	55	97	2.1	22	4,090	158	5,312
FBO1-Kiambu	62	64	5.1	15	2,257	52	3,955
FBO2-Kiambu	54	47	3.1	34	1,428	25	2,522
P2-Kiambu	70	118	0.7	7	6,754	208	8,279

PFP=Private for Profit Hospital; P=Public Hospital; FBO=Faith-based Organisation Hospital

Table 2. Caesarean section rates and perinatal mortality rates by hospital in Nairobi and Kiambu Counties, Kenya.

Hospital	Caesarean section rate	No of perinatal deaths	Perinatal mortality rate/1000 live births
PFP-Nairobi	41.5%	1	2.62
P1-Kiambu	27.1%	160	39.17
P3-Nairobi	23.0%	158	29.74
FBO1-Kiambu	31.6%	52	13.15
FBO2-Kiambu	43.4%	25	9.91
P2-Kiambu	18.4%	208	25.12
Average	**25.9%**	**100**	**24.63**

available per 1,000 patients were as follows: P1-Kiambu, 4; P2-Kiambu, 7; FBO1-Kiambu, 15; P3-Nairobi, 22; FBO2-Kiambu, 34; PFP-Nairobi,235. Despite the wide range of skilled delivery staff availability, there was an association between the skilled staff availability and the perinatal mortality (R squared 0.260, P<0.001). The bed turnover ratio and perinatal mortality were associated (R squared 0.064, P<0.001).

Dataset 1. Effectiveness of maternal delivery services and perinatal mortality in six primary referral hospitals

http://dx.doi.org/10.5256/f1000research.14862.d206064

Methods of monitoring standards of care

From the 40 interviews conducted the following information was found. All six hospitals reported having standard operating procedures in managing MDS. Three of the facilities, P2-Kiambu, P1-Kiambu and FBO2-Kiambu, reported having annual work plans. All six hospitals had a scheme of service and code of conduct for their employees. None reported having been inspected by the national Ministry of Health, but county health teams had visited all the hospitals in the past year except for PFP hospital. With respect to inspection by a non-MOH regulator such as the National Environmental Agency, only FBO2-Kiambu and PFP-Nairobi had interactions (Table 3).

Maintaining standards of care

All the hospitals reported having SOPs in managing maternal delivery services. All had a scheme of service and code of conduct for their employees. None reported having been inspected by the national ministry of health, but county health teams visited.

"…I want to say that the county comes to the ground very often and especially to check and monitor maternal outcomes and hold discussion…which we do with them..." (Hospital Management Team Member, FBO1-Kiambu).

Half the facilities reported having annual work plans. With respect to following external regulations only the non-government hospitals were subjected to some inspection by non ministry of health regulator such as NEMA. Of interest is that the hospitals with the worst perinatal mortalities reported to have the same number of methods to maintain standards of service as the hospital with the best mortality figures (Table 2).

Respondents at senior management level also reported a lack of engagement with ministry of health at county and national level in strategy development of maternal delivery services.

"…The county ministry of health have not given us an opportunity to contribute towards the formation of the county health strategy...we would want to be equal partners in provision of strategy and implementation strategy...we will go for discussions… they will set a circular and we are told from now on xyz will be happening and you are not involved..." (Hospital Management Team Member, FBO2-Kiambu.

Discussion

County referral hospitals play an increasingly significant role in maternal delivery services. Kenya recorded an increase in the proportion of facility based deliveries from 44% in 2008 to 61% in 2014[20]. A total of 186,688 deliveries in 2014 occurred in such facilities, roughly 15% of all deliveries in Kenya[21]. In this study the total number of deliveries were 24,534 in 2014. The average length of stay for patients admitted for maternal delivery services was just under 2.7 days (median 2 days). This is in line with global practice; in a 92 country review of hospital the mean length of stay after child birth ranged from 1.3 to 6.6 days with the majority of women staying too short a time to receive adequate postnatal care[22]. However, the average masked considerable differences between the different hospitals, with the public hospitals discharging patients in less than 24 hours compared to two days for private hospitals. Developing countries have reported neonatal infection rates 3–20 times that of developed countries due to poor intra-partum and postnatal infection-control practices[23]. Neonatal infection in the first week of life account for 26% of neonatal deaths in sub-Saharan Africa[24]. The short time available to monitor the mother and newborn could explain the association between the high bed turnover ratio in the public hospitals and high perinatal mortality.

Table 3. Standards of care used to monitor maternal delivery services by hospital in Nairobi and Kiambu Counties, Kenya.

Standards of Care	P1-Kiambu	P2-Kiambu	FBO2-Kiambu	P3-Nairobi	PFP-Nairobi	FBO1-Kiambu
Scheme of service	X	X	X	X	X	X
Written SOP	X	X	X	X	X	X
Annual work plans	X	X	X			
Donor inspection	X	X				
MoH supervision						
External regulations		X		X	X	
Non-MoH regulator inspection			X		X	
Total number of SOPs	4	5	3	3	4	2

'X' = availability of method of standards of care, MoH – Ministry of Health; SOP – standards operating procedures

This study reported the average perinatal mortality rate for all the hospitals at 24.63 per 1,000 live births. This is a little higher than the national average of 22.5 per 1,000 live births in 2015[25]. Yet it is reported that in sub-Saharan Africa the risk of perinatal mortality is 21% higher for home compared to facility-based deliveries[13]. In agreement with our study results, a Bangladesh study looking at whether facility delivery modified the risk of intra-partum related perinatal deaths found that the risks were higher for facility deliveries compared to home deliveries[26]. The reported perinatal mortality in the present study compared poorly with an assessment of facility quality and association with neonatal mortality in Malawi; it found an average of 17 per 1,000 live births with the newborn mortality rate of 28 per 1,000 births at low-quality facilities and of 5 per 1,000 births at the top 25% of facilities[27]. However, perinatal mortality in South Africa was reported at 33.4 deaths per 1,000 births in 2013[28]; while a cross sectional descriptive study of eight major hospitals in Dar es Salaam in January 2009 established a perinatal mortality rate was 44/1000 births (range: 17 – 147)[29].

Public hospitals had a perinatal mortality rate 2.6 times higher than private hospital (29.8 and 11.4 per 1,000 live births respectively) in the present study. In Bangladesh, the risk of perinatal mortality in a public health facility was twice that of a private facility, with the difference being attributed to quality of care[26]. Emergency obstetric care including caesarean section has been recommended as the first priority intervention in reducing stillbirths[30]. One of the key differences observed in our study was that mothers in private hospitals were almost twice as likely to undergo a caesarean section compared to those in a public hospital. The reported difference here is consistent with studies that show that regardless of a woman's risk and contextual factors, for profit hospitals are more likely to perform caesarean sections compared to not for profit hospitals because of financial incentives[31]. As expected, the hospitals with higher caesarean section rates also reported lower perinatal mortality[32].

Previous studies have shown strong associations between patient mortality and low staffing levels[33,34]. However, there was weak association between the ratio of skilled birth attendant and patients, indicating that perhaps primary referral hospitals had met the threshold of minimum number of staff required. This finding contrasts with a study that found that the presence of a doctor at birth reduced maternal and infant mortality[35]. Since staffing numbers weakly predicted mortality rates, it can be hypothesised that the quality of clinical decision making in not identifying mothers requiring caesarean sections was poorer in those hospitals with relatively low caesarean section rates.

All the hospitals in this study reported having at least two, with a median of three, methods of monitoring standards of care, including SOPs in managing maternal delivery services. Public hospitals in particular had more methods compared to private, though none reported having Ministry of Health oversight. This finding may appear to contradict an assessment of the quality of maternity care in an Indian metropolitan city that concluded that public hospitals practices fell short of evidence-based guidelines, while there was relative overuse of interventions in private hospitals[36]. However, it is known that reporting having certain quality improvement methodologies is not enough to lead to an outcome of high standards of care without an imbedded culture of quality improvement[37]. It is possible that a weakness in the health system building blocks of leadership and health information are the weak links in not enabling health workers to champion the process of improvement and use of best practice guidelines to monitor performance[10].

In this study, none of the hospitals reported having been inspected by the national Ministry of Health, but county health teams had visited the three public hospitals. Despite these visits and the reporting of available protocols to ensure quality of care, the public hospitals reported worse perinatal outcomes. Quality-of-care audits have been promoted as useful in identifying and changing suboptimal care, and therefore reducing perinatal mortality; however a study in South Africa, did not demonstrate that quality-of-care audits improved perinatal mortality[28]. However, in the monitoring of external non medical regulations only the non-government hospitals were

subjected to inspection by a non ministry of health regulator such as the National Environmental Agency, symptomatic of many policies in developing countries where there are often conflicting existing laws and legislations and overlapping bureaucratic mandates leading to policy implementation failure[38]. This uneven treatment of hospitals does not augur well for policymakers and hospital boards efforts to relate hospital performance to overall health system effectiveness.

Study limitations

Focusing on a specific service such as MDS allows for greater comparison between hospitals because patient heterogeneity, which can be a major factor in measuring effectiveness, is reduced[1,39,40]. This study chose mortality as the health outcome because it is relatively easy to measure and therefore likely to achieve valid results. However, the study relied on hospital records, and therefore there may have been elements of underreporting. Perinatal mortality includes live births and still births, which is a comprehensive indicator for assessing outcomes of both intrapartum and immediate post-partum care services; however without perinatal audit systems in place, there is often underreporting of stillbirths[13,41].

Conclusions and recommendations

The study demonstrates that the average perinatal mortality in primary referral hospitals was high with considerable variation between public and private hospitals. This is despite all the hospitals reporting having various methods of maintaining standards of care. While there was considerable variance in size and patient numbers among the hospitals, staffing levels were not associated with perinatal mortality, suggesting that the quality of clinical decision making as measured by the caesarean section rate was a factor in improving outcomes. Given the heterogeneity of primary referral hospitals, the use of perinatal mortality as a performance indicator to measure the effectiveness of maternal delivery services and hold hospitals to account in relation to the entire health system is recommended.

Data availability

Dataset 1: Effectiveness of maternal delivery services and perinatal mortality in six primary referral hospitals. DOI, 10.5256/f1000research.14862.d206064[42]

The datasets generated and/or analysed during this study, other than those provided herein, are not publicly available as ethical restrictions apply to publicly sharing the qualitative interviews transcripts due to potentially identifiable information detailed in the transcripts. Excerpts of the data are however available from the corresponding author on reasonable request and approval by the Kenyatta National Hospital/University of Nairobi- Ethics Review Committee (KNH/UoN-ERC) by contacting ayah@uonbi.ac.ke or uonknh_erc@uonbi.ac.ke.

Competing interests

No competing interests were disclosed.

Grant information

The author(s) declared that no grants were involved in supporting this work.

Acknowledgements

The authors would like to acknowledge the Boards of the hospitals, study participants, Kenneth Mutai and Kellen Karimi.

Supplementary material

Supplementary File 1: Hospital governance questionnaire.

Click here to access the data.

Supplementary File 2: Code Book Perinatal Mortality.

Click here to access the data.

References

1. Zere E, Mbeeli T, Shangula K, *et al.*: **Technical efficiency of district hospitals: evidence from Namibia using data envelopment analysis.** *Cost Eff Resour Alloc.* 2006; 4: 5.
PubMed Abstract | Publisher Full Text | Free Full Text

2. Tashobya CK, da Silveira VC, Ssengooba F, *et al.*: **Health systems performance assessment in low-income countries: learning from international experiences.** *Global Health.* 2014; **10**: 5.
PubMed Abstract | Publisher Full Text | Free Full Text

3. Noor AM: **Subnational benchmarking of health systems performance in Africa using health outcome and coverage indicators.** *BMC Med.* 2015; **13**: 299.
PubMed Abstract | Publisher Full Text | Free Full Text

4. Ministry of Health: **Kenya Health Policy 2014–2030**. Nairobi; 2014.
Reference Source

5. Ministry of Medical Services Kenya: **Ministry of Medical Services Strategic Plan 2008–2012**. Nairobi; 2008.
Reference Source

6. Martin Hilber A, Blake C, Bohle LF, *et al.*: **Strengthening accountability for improved maternal and newborn health: A mapping of studies in Sub-Saharan Africa.** *Int J Gynecol Obstet.* 2016; **135**(3): 345–357.
PubMed Abstract | Publisher Full Text

7. Allin S, Grignon M: **Examining the role of amenable mortality as an indicator of health system effectiveness.** *Healthc Policy.* 2014; **9**(3): 12–19.
PubMed Abstract | Publisher Full Text | Free Full Text

8. Mills S, Chowdhury S, Miranda E, *et al.*: **REDUCING MATERNAL MORTALITY: Strengthening the World Bank Response**. Washington (DC); 2009.
Reference Source

9. Moxon SG, Ruysen H, Kerber KJ, *et al.*: **Count every newborn; a measurement improvement roadmap for coverage data.** *BMC Pregnancy Childbirth.* 2015; **15 Suppl 2**: S8.
PubMed Abstract | Publisher Full Text | Free Full Text

10. Kerber KJ, Mathai M, Lewis G, *et al.*: **Counting every stillbirth and neonatal death through mortality audit to improve quality of care for every pregnant woman and her baby.** *BMC Pregnancy Childbirth.* 2015; **15 Suppl 2**: S9.
PubMed Abstract | Publisher Full Text | Free Full Text

11. Ministry of Public Health and Sanitation: **Ministry of Public Health and Sanitation Strategic Plan 2008–2012**. Nairobi; 2008.
Reference Source

12. Murphy GA, Gathara D, Aluvaala J, *et al.*: **Nairobi Newborn Study: A protocol for an observational study to estimate the gaps in provision and quality of inpatient newborn care in Nairobi City County, Kenya.** *BMJ Open.* 2016; **6**(12): e012448.
PubMed Abstract | Publisher Full Text | Free Full Text

13. Chinkhumba J, De Allegri M, Muula AS, *et al.*: **Maternal and perinatal mortality by place of delivery in sub-Saharan Africa: A meta-analysis of population-based cohort studies.** *BMC Public Health.* 2014; **14**: 1014.
PubMed Abstract | Publisher Full Text | Free Full Text

14. Republic of Kenya: **The Constitution of Kenya, 2010**. Kenya: National Council for Law Reporting with the Authority of the Attorney General; 2010.
Reference Source

15. Ministry of Health: **Kenya Health Sector Referral Strategy 2014–2018.** *Gov Kenya.* 2014; 1–44.
Reference Source

16. NCAPD, Ministry of Medical Services, Sanitation M of PH, *et al.*: **Kenya Service Provision Assessment (SPA) 2010**. Nairobi; 2010.
Reference Source

17. Spangler SA: **Assessing skilled birth attendants and emergency obstetric care in rural Tanzania: the inadequacy of using global standards and indicators to measure local realities.** *Reprod Health Matters.* 2012; **20**(39): 133–141.
PubMed Abstract | Publisher Full Text

18. Colson KE, Dwyer-Lindgren L, Achoki T, *et al.*: **Benchmarking health system performance across districts in Zambia: A systematic analysis of levels and trends in key maternal and child health interventions from 1990 to 2010.** *BMC Med.* 2015; **13**: 69.
PubMed Abstract | Publisher Full Text | Free Full Text

19. Ministry of Health: **Government of Kenya, 2014: Kenya Service Availability and Readiness Assessment Mapping (SARAM)**. Nairobi; 2014.

20. Kenya National Bureau of Statistics & ICF Macro: **Kenya Demographic and Health Survey 2014**. Nairobi; 2015.
Reference Source

21. Njuguna J, Kamau N, Muruka C: **Impact of free delivery policy on utilization of maternal health services in county referral hospitals in Kenya.** *BMC Health Serv Res.* 2017; **17**(1): 429.
PubMed Abstract | Publisher Full Text | Free Full Text

22. Campbell OM, Cegolon L, Macleod D, *et al.*: **Length of Stay After Childbirth in 92 Countries and Associated Factors in 30 Low- and Middle-Income Countries: Compilation of Reported Data and a Cross-sectional Analysis from Nationally Representative Surveys.** *PLOS Med.* 2016; **13**(3): e1001972.
PubMed Abstract | Publisher Full Text | Free Full Text

23. Zaidi AK, Huskins WC, Thaver D, *et al.*: **Hospital-acquired neonatal infections in developing countries.** *Lancet.* 2005; **365**(9465): 1175–88.
PubMed Abstract | Publisher Full Text

24. Seale AC, Mwaniki M, Newton CR, *et al.*: **Maternal and early onset neonatal bacterial sepsis: burden and strategies for prevention in sub-Saharan Africa.** *Lancet Infect Dis.* 2009; **9**(7): 428–438.
PubMed Abstract | Publisher Full Text | Free Full Text

25. Keats EC, Ngugi A, Macharia W, *et al.*: **Progress and priorities for reproductive, maternal, newborn, and child health in Kenya: a Countdown to 2015 country case study.** *Lancet Glob Heal.* 2017; **5**(8): e782–e795.
PubMed Abstract | Publisher Full Text | Free Full Text

26. Khanam R, Baqui AH, Syed MIM, *et al.*: **Can facility delivery reduce the risk of intrapartum complications-related perinatal mortality? Findings from a cohort study.** *J Glob Health.* 2018; **8**(1): 010408.
PubMed Abstract | Publisher Full Text | Free Full Text

27. Leslie HH, Fink G, Nsona H, *et al.*: **Obstetric Facility Quality and Newborn Mortality in Malawi: A Cross-Sectional Study.** *PLoS Med.* 2016; **13**(10): e1002151.
PubMed Abstract | Publisher Full Text | Free Full Text

28. Allanson ER, Pattinson RC: **Quality-of-care audits and perinatal mortality in South Africa.** *Bull World Health Organ.* 2015; **93**(6): 424–428.
PubMed Abstract | Publisher Full Text | Free Full Text

29. Nyamtema AS, Urassa DP, Pembe AB, *et al.*: **Factors for change in maternal and perinatal audit systems in Dar es Salaam hospitals, Tanzania.** *BMC Pregnancy Childbirth.* 2010; **10**: 29.
PubMed Abstract | Publisher Full Text | Free Full Text

30. Bhutta ZA, Yakoob MY, Lawn JE, *et al.*: **Stillbirths: what difference can we make and at what cost?** *Lancet.* 2011; **377**(9776): 1523–38.
PubMed Abstract | Publisher Full Text

31. Hoxha I, Syrogiannouli L, Luta X, *et al.*: **Caesarean sections and for-profit status of hospitals: systematic review and meta-analysis.** *BMJ Open.* 2017; **7**(2): e013670.
PubMed Abstract | Publisher Full Text | Free Full Text

32. Mcclure EM, Goldenberg RL, Bann CM: **Maternal mortality stillbirth and measures of obstetric care in developing and developed countries.** *Int J Gynaecol Obstet.* 2007; **96**(2): 139–146.
PubMed Abstract | Publisher Full Text

33. Kane RL, Shamliyan T, Mueller C, *et al.*: **Nurse Staffing and Quality of Patient Care.** *Evid Rep Technol Assess (Full Rep).* Rockville, MD; 2007; (151): 1–115.
PubMed Abstract | Free Full Text

34. Aiken LH, Clarke SP, Sloane DM, *et al.*: **Hospital nurse staffing and patient mortality, nurse burnout, and job dissatisfaction.** *JAMA.* 2002; **288**(16): 1987–1993.
PubMed Abstract | Publisher Full Text

35. Yego F, D'Este C, Byles J, *et al.*: **A case-control study of risk factors for fetal and early neonatal deaths in a tertiary hospital in Kenya.** *BMC Pregnancy Childbirth.* 2014; **14**: 389.
PubMed Abstract | Publisher Full Text | Free Full Text

36. Nagpal J, Sachdeva A, Sengupta Dhar R, *et al.*: **Widespread non-adherence to evidence-based maternity care guidelines: a population-based cluster randomised household survey.** *BJOG.* 2015; **122**(2): 238–247.
PubMed Abstract | Publisher Full Text

37. Raven J, Hofman J, Adegoke A, *et al.*: **Methodology and tools for quality improvement in maternal and newborn health care.** *Int J Gynaecol Obstet.* 2011; **114**(1): 4–9.
PubMed Abstract | Publisher Full Text

38. Banchani E, Tenkorang EY: **Implementation challenges of maternal health care in Ghana: the case of health care providers in the Tamale Metropolis.** *BMC Health Serv Res.* 2014; **14**: 7.
PubMed Abstract | Publisher Full Text | Free Full Text

39. Osei D, d'Almeida S, George MO, *et al.*: **Technical efficiency of public district hospitals and health centres in Ghana: a pilot study.** *Cost Eff Resour Alloc.* 2005; **3**: 9.
PubMed Abstract | Publisher Full Text | Free Full Text

40. Blank J, Valdmans V: **Evaluating Hospital Policy and Performance: Contributions from Hospital Policy and Productivity Research.** 1st edition. Oxford: JAI Press, Elsevier Ltd; 2008.
Reference Source

41. Bhutta ZA, Darmstadt GL, Haws RA, *et al.*: **Delivering interventions to reduce the global burden of stillbirths: improving service supply and community demand.** *BMC Pregnancy Childbirth.* 2009; **9 Suppl 1**: S7.
PubMed Abstract | Publisher Full Text | Free Full Text

42. Ayah R, Ongore D, Agwanda ATO: **Dataset 1 in: Measuring the effectiveness of maternal delivery services: A cross-sectional and qualitative study of perinatal mortality in six primary referral hospitals, Kenya.** *F1000Research.* 2018.
Data Source

Bibliography

Abimbola, S. *et al.* (2014) 'Towards people-centred health systems: A multi-level framework for analysing primary health care governance in low-and middle-income countries', *Health Policy and Planning*, 29, pp. ii29-ii39. doi: 10.1093/heapol/czu069.

Abor, P. A. (2011) *Healthcare Governance, Ownership Structure and Performance of Hospitals in Ghana*. Southampton.

Abor, P. A. (2015) 'The effects of healthcare governance and ownership structure on the performance of hospitals in Ghana', *International Journal of Law and Management*, 57(2), pp. 107–140. doi: 10.1108/IJLMA-04-2014-0031.

Abouchadi, S. *et al.* (2013) 'Preventable maternal mortality in Morocco: The role of hospitals', *Tropical Medicine and International Health*, 18(4), pp. 444–450. doi: 10.1111/tmi.12065.

Adam, T. and de Savigny, D. (2012) 'Systems thinking for strengthening health systems in LMICs: need for a paradigm shift.', *Health Policy and Planning*, 27 Suppl 4, pp. iv1-3. doi: 10.1093/heapol/czs084.

Adam, T. and Savigny, D. De (2012) 'Systems thinking for strengthening health systems in LMICs : need for a paradigm shift', pp. 2006–2008. doi: 10.1093/heapol/czs084.

Aiken, L. H. *et al.* (2002) 'Hospital Nurse Staffing and Patient Mortality , Nurse Burnout , and Job Dissatisfaction', 288(16), pp. 1987–1993.

Albanese, E. *et al.* (2011) 'Equity in the delivery of community healthcare to older people: findings from 10/66 Dementia Research Group cross-sectional surveys in Latin America, China, India and Nigeria.', *BMC Health Service Research*, 11(10), p. 153. doi: 10.1186/1472-6963-11-153.

Alexander, J. A. *et al.* (2008) 'Governance and Community Benefit : Are Nonprofit Hospitals Good Candidates for Sarbanes-Oxley Type Reforms ?', *Journal of health politics, policy and lawPolicy*, 33(2). doi: 10.1215/03616878-2007-053.

Alexander, J. A. and Lee, S. D. (2006) 'Does Governance Matter? Board Configuration and Performance in Not-for-Profit Hospitals', *The Milbank Quarterly*, 84(4), pp. 733–758.

Aliyu, L., Kada, A. and Hauwa, M. (2011) 'INSTRUMENTAL VAGINAL DELIVERY IN BAUCHI, NORTHEAST NIGERIA Aliyu', *Journal of West African College of Surgeons*, 1(4), pp. 18–27.

AllAfrica.com (2012) *Kenya Doctors' Strike Ends*, *allAfrica.com*.

Allin, S. and Grignon, M. (2014) 'Examining the role of amenable mortality as an indicator of health system effectiveness', *Healthcare Policy*, 9(3), pp. 12–19. doi: 10.12927/hcpol.2014.23733.

Aluvaala, J. *et al.* (2015) 'Delivery outcomes and patterns of morbidity and mortality for neonatal admissions in five Kenyan hospitals', *Journal of Tropical Pediatrics*, 61(4), pp. 255–259. doi: 10.1093/tropej/fmv024.

Amone, J. *et al.* (2005) 'International Journal for Equity in User fees in private non-for-profit hospitals in Uganda : a survey and intervention for equity', *International Journal for Equity in Health*, 4(6), pp. 1–9. doi: 10.1186/1475-9276-4-6.

Angood, P. and Birk, S. (2014) *The value of physician leadership.*, *Physician executive*.

Ansong-Tornui, J. *et al.* (2007) 'Hospital based maternity care in ghana - findings of a confidential enquiry into maternal deaths.', *Ghana medical journal*, 41(3), pp. 125–132. doi: 10.4314/gmj.v41i3.55280.

Atun, R. (2012) 'Health systems, systems thinking and innovation.', *Health Policy and Planning*, 27 Suppl 4, pp. iv4-iv8. doi: 10.1093/heapol/czs088.

Ayieko, P. *et al.* (2009) 'The economic burden of inpatient paediatric care in Kenya: household and provider costs for treatment of pneumonia, malaria and meningitis.', *Cost effectiveness and resource allocation : C/E*, 7, p. 3. doi: 10.1186/1478-7547-7-3.

Baez-Carmago, C. and Jacobs, E. (2011) *A Framework to Assess Governance of Health Systems in Low Income Countries Basel Institute on Governance*. 11. basel.

Bailey, P. (2015) 'An Update on the Status of Assisted Vaginal Delivery in Lower and Middle Income Countries', in *Global Maternal Newborn Health Conference*. Mexico City: Global Maternal Newborn Health Conference.

Baker, S. E. and Edwards, R. (2012) *How many qualitative interviews is enough ? Expert voices and early career reflections on sampling*. (Unpublished).

Banchani, E. and Tenkorang, E. Y. (2014) 'Implementation challenges of maternal health care in Ghana: the case of health care providers in the Tamale Metropolis.', *BMC health services research*, 14, p. 7. doi: 10.1186/1472-6963-14-7.

Barros, F. C. *et al.* (2005) 'The challenge of reducing neonatal mortality in middle-income countries: Findings from three Brazilian birth cohorts in 1982, 1993, and 2004', *Lancet*, 365, pp. 847–854. doi: 10.1016/S0140-6736(05)71042-4.

Bennett, S. *et al.* (2008) 'From Mexico to Mali : progress in health policy and systems research', *The Lancet*. Elsevier Ltd, 372(9649), pp. 1571–1578. doi: 10.1016/S0140-6736(08)61658-X.

Betran, A. P. *et al.* (2015) 'What is the optimal rate of caesarean section at population level? A systematic review of ecologic studies', *Reproductive Health*. Reproductive Health, 12(1), p. 57. doi: 10.1186/s12978-015-0043-6.

Betrán, A. P. *et al.* (2007) 'Rates of caesarean section: Analysis of global, regional and national estimates', *Paediatric and Perinatal Epidemiology*, 21(2), pp. 98–113. doi: 10.1111/j.1365-3016.2007.00786.x.

Bhuiyan, M. and Machowski, A. (2012) 'Impact of 20-day strike in Polokwane Hospital (18 August-6 September 2010).', *South Africa Medical Journal*, 102(9), pp. 755–6.

Bhutta, Z. A. *et al.* (2009) 'Delivering interventions to reduce the global burden of stillbirths: improving service supply and community demand.', *BMC pregnancy and childbirth*, 9 Suppl 1, p. S7. doi: 10.1186/1471-2393-9-S1-S7.

Bhutta, Z. A. *et al.* (2010) 'Countdown to 2015 decade report (2000-10): taking stock of maternal, newborn, and child survival.', *Lancet*, 375(9730), pp. 2032–44. doi: 10.1016/S0140-6736(10)60678-2.

Blanc, A. K., Winfrey, W. and Ross, J. (2013) 'New findings for maternal mortality age patterns: aggregated results for 38 countries.', *PloS one*, 8(4), p. e59864. doi: 10.1371/journal.pone.0059864.

Blank, J. and Hulst, B. L. Van (2011) 'Governance and Performance : The Performance of Dutch Hospitals Explained by Governance Characteristics', *Journal of Medical Systems*, pp. 991–999. doi: 10.1007/s10916-010-9437-8.

Blank, J. and Valdmans, V. (2008) *Evaluating Hospital Policy and Performance: Contributions from hospital policy and productivity research*. 1st edn, *Health Policy*. 1st edn. Edited by Mi. Grossman and L. Bjorn. Oxford: JAI Press, Elsevier Ltd.

Blum, J. D. (2010) 'The quagmire of hospital governance. Finding mission in a revised licensure model.', *The Journal of legal medicine*, 31(March 2015), pp. 35–57. doi: 10.1080/01947641003598229.

Boeckxstaens, P. *et al.* (2011) 'The equity dimension in evaluations of the quality and outcomes framework : A systematic review', *BMC Health Services Research*. BioMed Central Ltd, 11(1). doi: 10.1186/1472-6963-11-209.

Bogue, R. J., Hall, C. H. and Forgia, G. M. La (2007) *Hospital Governance in Latin America Results from a Four Nation Survey*, *Health, nutrition and population discussion paper*. Washington DC.

Bohren, M. A. *et al.* (2015) 'The Mistreatment of Women during Childbirth in Health Facilities Globally: A Mixed-Methods Systematic Review', *PLoS Medicine*, 12(6), pp. 1–32. doi: 10.1371/journal.pmed.1001847.

Botje, D., Klazinga, N. S. and Wagner, C. (2013) 'To what degree is the governance of Dutch hospitals orientated towards quality in care? Does this really affect performance?', *Health Policy*. Elsevier Ireland Ltd, 113(1–2), pp. 134–41. doi: 10.1016/j.healthpol.2013.07.015.

Bowers, J. and Cheyne, H. (2016) 'Reducing the length of postnatal hospital stay: implications for cost and quality of care.', *BMC health services research*. BMC Health Services Research, 16(1), p. 16. doi: 10.1186/s12913-015-1214-4.

Brickley, J. A., Van Horn, R. L. and Wedig, G. J. (2010) 'Board composition and nonprofit conduct: Evidence from hospitals', *Journal of Economic Behavior and Organization*, 76(2), pp. 196–208. doi: 10.1016/j.jebo.2010.06.008.

Brinkerhoff, D. W. and Bossert, T. J. (2013) 'Health governance: Principal-agent linkages and health system strengthening.', *Health Policy and Planning*, pp. 1–9. doi: 10.1093/heapol/czs132.

Van Den Broek, N. R. and Graham, W. J. (2009) 'Quality of care for maternal and newborn health: The neglected agenda', *BJOG*, 116, pp. 18–21. doi: 10.1111/j.1471-0528.2009.02333.x.

Buchner, V., Schreyogg, J. and Schultz, C. (2014) 'The impact of the board's strategy-setting role on board-management relations and hospital performance.', *Health Care Management Review*, 39(4), pp. 305–17.

Campbell, O. M. R. *et al.* (2016) 'Length of Stay After Childbirth in 92 Countries and Associated Factors in 30 Low- and Middle-Income Countries: Compilation of Reported Data and a Cross-sectional Analysis from Nationally Representative Surveys', *PLOS Medicine*, 13(3), p. e1001972. doi: 10.1371/journal.pmed.1001972.

Carver, J. (2010) 'A Case for Global Governance Theory: Practitioners Avoid It, Academics Narrow It, the World Needs It', *Corporate Governance: An International Review*, 18(2), pp. 149–157. doi: 10.1111/j.1467-8683.2010.00785.x.

Chambers, N. *et al.* (2013a) 'Towards a framework for enhancing the performance of NHS boards: a synthesis of the evidence about board governance, board effectiveness and board development', *Health Services and Delivery Research (HS&DR)*, 1(6). doi: 10.3310/hsdr01060.

Chambers, N. *et al.* (2013b) *Towards a framework for enhancing the performance of NHS boards: a synthesis of the evidence about board governance, board effectiveness and board development*, *Health Services and Delivery Research*. doi: 10.3310/hsdr01060.

Chan, G. J. *et al.* (2013) 'Risk of Early-Onset Neonatal Infection with Maternal Infection or Colonization: A Global Systematic Review and Meta-Analysis', *PLoS Medicine*, 10(8). doi: 10.1371/journal.pmed.1001502.

Chopra, M. *et al.* (2009) 'Saving the lives of South Africa's mothers, babies, and children: can the health system deliver?', *The Lancet*. Elsevier Ltd, 374(9692), pp. 835–846. doi: 10.1016/S0140-6736(09)61123-5.

Chu, K. *et al.* (2012) 'Cesarean section rates and indications in sub-Saharan Africa: a multi-country study from Medecins sans Frontieres.', *PloS one*. Edited by H. R. Baradaran. Public Library of Science, 7(9), p. e44484. doi: 10.1371/journal.pone.0044484.

Chuma, J. *et al.* (2009a) 'Reducing user fees for primary health care in Kenya : Policy on paper or policy in practice ?', 10, pp. 1–10. doi: 10.1186/1475-9276-8-15.

Chuma, J. *et al.* (2009b) 'Reducing user fees for primary health care in Kenya: Policy on paper or policy in practice?', *International journal for equity in health*, 8, p. 15. doi: 10.1186/1475-9276-8-15.

Chuma, J. and Okungu, V. (2011) 'Viewing the Kenyan health system through an equity lens: implications for universal coverage.', *International journal for equity in health*. BioMed Central Ltd, 10(1), p. 22. doi: 10.1186/1475-9276-10-22.

Collins-Nakai, R. (2006) 'Leadership in medicine', *McGill Journal of Medicine*, 9(1), pp. 68–73. doi: 10.1136/bmj.2.4206.244.

Cooper, Z. *et al.* (2012) *Does Competition Improve Public Hospitals ' Efficiency ? Evidence from a Quasi-Experiment in the English National Health Service*. 988. London.

Couper, I. and Hugo, J. (2005) 'Management of district hospitals - exploring success', *Rural and Hemote health*, 5(433).

Culyer, A. J. (2001) 'Equity - some theory and its policy implications', *Journal of Medical Ethics*, 27, pp. 275–283. doi: 10.1136/jme.27.4.275.

Cunningham, S. A. *et al.* (2008) 'Doctors' strikes and mortality: a review', *Social Science & Medicine*, 67(11), pp. 1784–8. doi: 10.1016/j.socscimed.2008.09.044.

Cutler, D. *et al.* (2015) *Physician Beliefs and Patient Preferences : A New Look at Regional Variation in Health Care Spending Physician Beliefs and Patient Preferences*. 15-090. Boston, USA.

Daft, R., Kendrick, M. and Vershinina, N. (2010) *Management*. 8th edn. Singapore: Cengage Learnng EMEA.

Dahlen, H. G. *et al.* (2012) 'Rates of obstetric intervention among low-risk women giving birth in private and public hospitals in NSW: a population-based descriptive study', *BMJ Open*, 2(5), p. e001723. doi: 10.1136/bmjopen-2012-001723.

Daily Nation (2012) *Kenya doctors start nationwide strike*, *Daily Nation*.

Dambisya, Y. M., Manenzhe, M. and Kibwika-muyinda, A. B. (2014) *Faith-based health services as an alternative to privatization ?* 25. Ottawa.

Damme, W. Van *et al.* (2010) *How Can Disease Control Program Contribute to Health System Strengthening in Sub-Saharan Africa*. Washington DC.

Davies, S. M. *et al.* (2013) 'Limitations of using same-hospital readmission metrics.', *International journal for quality in health care : journal of the International Society for Quality in Health Care / ISQua*, 25(6), pp. 633–9. doi: 10.1093/intqhc/mzt068.

Davis, J. H., Schoorman, F. D. and Donaldson, L. (1997) 'Toward a Stewardship Theory of Management', *Academy of Management Review*, 22(1), pp. 20–47. doi: doi: 10.5465/AMR.1997.9707180258.

Devereaux, P. J. *et al.* (2002) 'Comparison of mortality between private for-profit and private not-for-profit hemodialysis centers: a systematic review and meta-analysis.', *JAMA : the journal of the American Medical Association*, 288(19), pp. 2449–57. Available at: http://www.ncbi.nlm.nih.gov/pubmed/12435258.

Dickson, K. E. *et al.* (2014) 'Every Newborn: health-systems bottlenecks and strategies to accelerate scale-up in countries.', *Lancet*, 384(9941), pp. 438–54. doi: 10.1016/S0140-6736(14)60582-1.

Ditzel, E., Štrach, P. and Pirozek, P. (2006) 'Health Research Policy and Systems An inquiry into good hospital governance : A New Zealand-Czech comparison', *Health Research Policy and Systems*, 10, pp. 1–10. doi: 10.1186/1478-4505-4-2.

Dogba, M. and Fournier, P. (2009) 'Human resources and the quality of emergency obstetric care in developing countries: a systematic review of the literature', *Human Resources for Health*, 7(1), p. 7. doi: 10.1186/1478-4491-7-7.

Donaldson, L. and Davis, J. H. (1991) 'Stewardship Theory or Agency Theory: CEO Governance and Shareholder Returns', *Australian Journal of Management*, 16(1), pp. 49–64. doi: 10.1177/031289629101600103.

Donaldson, L. and Davis, J. H. (1991) 'Stewardship Theory or Agency Theory: CEO Governance and Shareholder Returns', *Australian Journal of Management*, 16(1), pp. 49–64. doi: 10.1177/031289629101600103.

Donaldson, T., Preston, L. E. and Preston, L. E. E. E. (1995) 'THE STAKEHOLDER THEORY OF THE CORPORATION: CONCEPTS , EVIDENCE , AND IMPLICATIONS', *Academy of Management Review*, 20(1), pp. 65–91.

Doyle, C., Lennox, L. and Bell, D. (2013) 'A systematic review of evidence on the links between patient experience and clinical safety and effectiveness', *BMJ Open*, 3(1), pp. 1–18. doi: 10.1136/bmjopen-2012-001570.

Edwards, N., Wyatt, S. and Mckee, M. (2004) *Configuring the hospital for the 21st Century*. 5. Copenhagen.

Eggleston, K. *et al.* (2010) 'Comparing public and private hospitals in China : Evidence from Guangdong', *BMC Health Services Research*, 10(76).

Einarsdóttir, K. *et al.* (2013) 'Neonatal complications in public and private patients: a retrospective cohort study', *BMJ Open*, 3(5), p. e002786. doi: 10.1136/bmjopen-2013-002786.

Emelumadu, O. F. *et al.* (2014) 'Perception of quality of maternal healthcare services among women utilising antenatal services in selected primary health facilities in Anambra State, Southeast Nigeria.', *Nigerian medical journal : journal of the Nigeria Medical Association*, 55(2), pp. 148–55. doi: 10.4103/0300-1652.129653.

English, M. *et al.* (2009) 'An intervention to improve paediatric and newborn care in Kenyan district hospitals : Understanding the context', *Implementation Science*, 8, pp. 1–8. doi: 10.1186/1748-5908-4-42.

Evans, D. B. and Etienne, C. (2010) 'Health systems financing and the path to universal coverage', *World Health Bullitin*, 87, pp. 892–893. doi: 10.2471/BLT.07.049387.

Evers, A. C. C. *et al.* (2010) 'Perinatal mortality and severe morbidity in low and high risk term pregnancies in the Netherlands: prospective cohort study', *British Medical Journal*, 341(c5639), pp. 65–66.

Farris, R. P. *et al.* (2007) 'Beyond effectiveness: evaluating the public health impact of the WISEWOMAN program.', *American journal of public health*, 97(4), pp. 641–7. doi: 10.2105/AJPH.2005.072264.

Fawole, A. *et al.* (2012) 'Predictors of maternal mortality in institutional deliveries in Nigeria', *African Health Sciences*, 12(1), pp. 32–40.

Fiador, Ve., Abor, P. A. and Abor, J. (2012) 'How do we explain corporate board structure in sub-Saharan Africa?', *Int. J. of Business Governance and Ethics*, 7(2), pp. 118–138.

Foster, D., Zrull, L. and Chenoweth, J. (2010) *Hospital Performance Differences by Ownership*, *100tophospitals.com*. Ann Arbor. Available at: http://www.100tophospitals.com/assets/HOSP_12678_0513_100TopHopPerfOwnershipPaper_RB_WEB.PDF.

Frohloff, A. (2008) 'Cost and Technical Efficiency of German Hospitals : Does Ownership Matter ?', pp. 1–18.

Fukuda, H., Okuma, K. and Imanaka, Y. (2014) 'Can Experience Improve Hospital Management ?', 9(9). doi: 10.1371/journal.pone.0106884.

Gacheru, A. (2011) *Relationship Between Chief Executive Officer Tenure and Firm Performance: For the Companies listed at the Nairobi Stock Exchange*. University of Nairobi.

Gale, N. K. *et al.* (2013) 'Using the framework method for the analysis of qualitative data in multi-disciplinary health research.', *BMC medical research methodology*. BMC Medical Research Methodology, 13(1), p. 117. doi: 10.1186/1471-2288-13-117.

Gathayo, P. *et al.* (2016) 'Board Composition and Performance of Health Sector Non-Governmental Organizations in Nairobi County', *Journal of Economics and Sustainable Development*, 7(8), pp. 80–91.

Gibbs, C. M. *et al.* (2012) 'The impact of early age at first childbirth on maternal and infant health', *Paediatr Perinat Epidemiol*, 26 Suppl 1(0 1), pp. 259–284. doi: 10.1111/j.1365-3016.2012.01290.x.

Gilson, L. (2012) *Health Policy and Systems Research: A methodology reader*. Geneva.

Goh, L. and Gupta, A. (2015) 'Remuneration of non-executive directors: Evidence from the UK', *The British Accounting Review*. doi: 10.1016/j.bar.2015.05.001.

Goodall, A. H. (2012) *A Theory of Expert Leadership*. 6566. Bonn.

Goodburn, E. and Campbell, O. (2001) 'Reducing maternal mortality in the developing world: Sector-wide approaches may be the key', *Bmj*, 322(7291), pp. 917–920. doi: 10.1136/bmj.322.7291.917.

Goodstein, J., Gautam, K. and Boeker, W. (1994) 'The Effects of Board Size and Diversity on Strategic Change', *Strategic Management Journal*, 15(3), pp. 241–250.

Governance Centre of Excellence (2014) 'Form 9.2 Sample Hospital Governance Audit Questionnaire'. Ontario: Ontario Hospital Association, pp. 1–5. Available at: https://www.thegce.ca/RESOURCES/Goodgovernance/Not For Profit Guide Templates Second Edition/Form 9.02 - Sample Governance Audit Questionnaire.doc.

Government of Kenya Health Systems 2020 Project (2009) *Kenya National Health Accounts 2005/06*. Bethesda, MD.

Graham, W. J. (2002) 'Now or Never: The Case for Measuring Maternal Mortality', *The Lancet*, 359(February 23).

Groene, O. *et al.* (2008) 'The World Health Organization Performance Assessment Tool for Quality Improvement in Hospitals (PATH): An Analysis of the Pilot Implementation in 37 Hospitals', *International Journal for Quality in Health Care*, 20(3), pp. 155–161.

Groene, O., Skau, J. K. H. and Frølich, A. (2008) 'An international review of projects on hospital performance assessment.', *International journal for quality in health care : journal of the International Society for Quality in Health Care / ISQua*, 20(3), pp. 162–71. doi: 10.1093/intqhc/mzn008.

Harding, A. and Preker, A. S. (2000) *Understanding Organizational Reforms The Corporatization of Public Hospitals*. Washington DC.

Harrison, M. S. and Goldenberg, R. L. (2016) 'Cesarean section in sub-Saharan Africa', *Maternal Health, Neonatology and Perinatology*. Maternal Health, Neonatology and Perinatology, 2(1), p. 6. doi: 10.1186/s40748-016-0033-x.

Hartley, J. and Martin, J. (2008) *Leadership in Healthcare: a Review of the Literature for Health Care Professionals , Managers and Researchers*. Coventry.

Health Governance and Transparency Association (2014) *Health Sector Governance: Better Governance for Better Health Principles & Guidelines for Governance in Hospitals*. Cairo.

Health Policy Project (2015) *Health Financing Profile - Kenya*, *Health Policy Project*. Nairobi. Available at: http://www.healthpolicyproject.com/pubs/7887/Botswana_HFP.pdf.

Herr, A. (2009) *Product differentiation and welfare in a mixed duopoly with regulated prices: The case of a public and a private hospital*. 08/2009. Nuremburg.

Herrera, C. A. *et al.* (2014) 'Does ownership matter? An overview of systematic reviews of the performance of private for-profit, private not-for-profit and public healthcare providers', *PLoS ONE*, 9(12), pp. 1–18. doi: 10.1371/journal.pone.0093456.

Hillman, A. J., Withers, M. C. and Collins, B. J. (2009) 'Resource Dependence Theory: A Review.', *Journal of Management*, 35(6), pp. 1404–1427. doi: 10.1177/0149206309343469.

Himmelstein, D. U. *et al.* (2014) 'A Comparison Of Hospital Administrative Costs In Eight Nations: US Costs Exceed All Others By Far', *Health Affairs*, 33(9), pp. 1586–1594. doi: 10.1377/hlthaff.2013.1327.

Hollingsworth, B. (2008) 'The measurement of efficiency and productivity of health care delivery', *Health Economics*, 17, pp. 1107–1128.

Horwitz, J. R. *et al.* (2007) *What Do Nonprofits Maximize? Nonprofit Hospital Service Provision and Market Ownership Mix*. 13246.

Horwitz, J. R. and Nichols, A. (2009) 'Hospital ownership and medical services: Market mix, spillover effects, and nonprofit objectives', *Journal of Health Economics*, 28(5), pp. 924–937. doi: 10.1016/j.jhealeco.2009.06.008.

Huang, L. *et al.* (2008) 'Maternal age and risk of stillbirth: a systematic review', *Canadian Medical Association Journal*, 178(8).

Hussey, P. S. *et al.* (2009) 'A systematic review of health care efficiency measures.', *Health services research*, 44(3), pp. 784–805. doi: 10.1111/j.1475-6773.2008.00942.x.

Hyman, D. A. and Sage, W. M. (2006) 'Subsidizing health care providers through the tax code:status or conduct?', *Health Affairs*, 25(4), pp. 312–315. doi: 10.1377/hlthaff.25.w312.

Institute of Medicine (2001) *Crossing the Quality Chasm A New Health System for the 21st Century*. 1st edn. Washington DC: National Academy Press.

International Finance Corporation (2009) *Practical guide to corporate governance: Experiences from the Latin American Companies Circle Motivation Motivat*, *International Finance Corporation*. Washington DC. Available at: file:///D:/Study/phd/Literature review corporate governance/OECD principles.pdf.

Ivankova, N. V, Creswell, J. W. and Stick, S. L. (2006) 'Using mixed methods sequential explanatory design: From theory to practice', *Field Methods*, 18(1), pp. 3–20. doi: 10.1177/1525822X05282260.

Jensen, M. C. (1993) 'The Modern Industrial Revolution, Exit, and the Failure of Internal Control Systems', *Journal of Finance*, 48(3), pp. 831–880. doi: 10.1111/j.1540-6261.1993.tb04022.x.

Jeurissen, P. (2010) *For-profit Hospitals: A comparative and longitudinal study of the for-profit hospital sector in four Western countries*. Erasmus University Rotterdam.

Jha, A. K. and Epstein, A. M. (2010) 'Hospital Governance And The Quality Of Care', *Health Affairs*, 1(1), pp. 182–187. doi: 10.1377/hlthaff.2009.0297.

Jha, A. K., Orav, E. J. and Epstein, A. M. (2011) 'Low-quality, high-cost hospitals, mainly in South, Care for sharply higher shares of elderly black, Hispanic, and medicaid patients.', *Health Affairs*, 30(10), pp. 1904–11. doi: 10.1377/hlthaff.2011.0027.

Jiang, H., Lockee, C. and Fraser, I. (2012) 'Enhancing board oversight on quality of hospital care: An agency theory perspective.', *Health Care Management Review*, 37(2), pp. 144–53. doi: 10.1097/HMR.0b013e3182224237.Enhancing.

Jonsdottir, G. *et al.* (2009) 'No correlation between cesarean section rates and perinatal mortality of singleton infants over 2,500 g', *Acta Obstet Gynecol Scand*, 88(5), pp. 621–3.

Kagawa, R. C., Anglemyer, A. and Montagu, D. (2012) 'The Scale of Faith Based Organization Participation in Health Service Delivery in Developing Countries : Systemic Review and Meta-Analysis', *PloS one*, 7(11), pp. 1–8. doi: 10.1371/journal.pone.0048457.

Kane, R. L. *et al.* (2007) *Nurse Staffing and Quality of Patient Care*. Rockville, MD.

Kapiriri, L. and Martin, D. K. (2006) 'Priority setting in developing countries health care institutions : the case of a Ugandan hospital', *BMC Health Services Research*, 9(i), pp. 1–9. doi: 10.1186/1472-6963-6-127.

Kariuki, J. *et al.* (2015) *Local Supply Chains for Medicines and Medical Supplies in Kenya : Understanding the Challenges*. 001/2015. Nairobi.

Katz, D. A. and McIntosh, L. A. (2014) 'Renewed Focus on Corporate Director Tenure', *New York Law Journal*, (May 22), pp. 1–5.

Kaufmann, D., Kraay, A. and Mastruzzi, M. (2010) *The Worldwide Governance Indicators Methodology and Analytical Issues*. 5430. Washington DC.

Kenny, L. C. *et al.* (2013) 'Advanced Maternal Age and Adverse Pregnancy Outcome: Evidence from a Large Contemporary Cohort', *PLoS ONE*, 8(2), pp. 1–9. doi: 10.1371/journal.pone.0056583.

Kenya Institute for Public Policy Research and Analysis (2010) *Review of the Kenya Health Policy Framework 1994 - 2010*, *In Health*. Nairobi.

Kenya National Bureau of Statistics & ICF Macro (2015) *Kenya Demographic and Health Survey 2014*. Nairobi.

Kenya National Bureau of Statistics and ICF Macro (2010) *Kenya Demographic and Health Survey 2008-9*, *Health (San Francisco)*. Nairobi.

Khan, A. and Zaman, S. (2010) 'Costs of vaginal delivery and Caesarean section at a tertiary level public hospital in Islamabad, Pakistan.', *BMC pregnancy and childbirth*, 10, p. 2. doi: 10.1186/1471-2393-10-2.

Kiambu County (2014) *The Kiambu County Health Services Bill 2014*. Kenya. doi: 10.1017/CBO9781107415324.004.

KIPPRA (2010) *Review of the Kenya Health Policy Framework 1994 - 2010*. Nairobi.

Kizza, I. B. *et al.* (2011) 'Makerere University College of Health Sciences' role in addressing challenges in health service provision at Mulago National Referral Hospital', *BMC International Health and Human Rights*, p. S7. doi: 10.1186/1472-698X-11-S1-S7.

Kozhimannil, K. B., Arcaya, M. C. and Subramanian, S. V. (2014) 'Maternal Clinical Diagnoses and Hospital Variation in the Risk of Cesarean Delivery: Analyses of a National US Hospital Discharge Database', *PLoS Medicine*, 11(10). doi: 10.1371/journal.pmed.1001745.

Kruk, M. E. *et al.* (2014) '"Big push" to reduce maternal mortality in Uganda and Zambia enhanced health systems but lacked a sustainability plan', *Health Affairs*, 33(6), pp. 1058–1066. doi: 10.1377/hlthaff.2013.0637.

Kutzin, J. (2008) *Health financing policy : a guide for decision-makers*, *World Health*. Copenhagen.

Lai, T. Y. Y. and Leung, G. M. (2010) 'Equity and efficiency in healthcare : are they mutually exclusive ?', *HKJOphthalmol*, 16(1), pp. 2–5.

Laopaiboon, M. *et al.* (2014) 'Advanced Maternal Age and Pregnancy Outcomes: A Multicountry Assessment.', *BJOG*, 121 Suppl, pp. 49–56. doi: 10.1111/1471-0528.12659.

Lee, Q. Y. *et al.* (2011) 'Maternal mortality in Ghana: a hospital-based review', *Acta Obstet Gynecol Scand*.

Lee, S. D. *et al.* (2008) 'An Empirical Taxonomy of Hospital Governing Board Roles', *Health Research and Educational Trust*, 43(4), pp. 1223–1243. doi: 10.1111/j.1475-6773.2008.00835.x.

Van Lerberghe, W. *et al.* (2014) 'Country experience with strengthening of health systems and deployment of midwives in countries with high maternal mortality', *The Lancet*. Elsevier Ltd, 384(9949), pp. 1215–1225. doi: 10.1016/S0140-6736(14)60919-3.

Lewis, M. and Pettersson, G. (2009) *Governance in Health Care Delivery: Raising Performance*, *WPS*. 5074. Washington DC.

Lin, H.-C., Xirasagar, S. and Tang, C. (2004) 'Costs per discharge and hospital ownership under prospective payment and cost-based reimbursement systems in Taiwan', *Health Policy and Planning*, 19(3), pp. 166–176. doi: 10.1093/heapol/czh020.

Ludwig, M., Van Merode, F. and Groot, W. (2010) 'Principal agent relationships and the efficiency of hospitals.', *The European journal of health economics : HEPAC : health economics in prevention and care*, 11(3), pp. 291–304. doi: 10.1007/s10198-009-0176-z.

Lumbiganon, P. *et al.* (2010) 'Method of delivery and pregnancy outcomes in Asia: the WHO global survey on maternal and perinatal health 2007-08', *The Lancet*, 375(9713), pp. 490–499. doi: 10.1016/S0140-6736(09)61870-5.

Lunenburg, F. C. (2012) 'Decision Making in Organizations', *International Journal of Management, Business, and Administration*, 15(1), pp. 1–9. Available at: http://www.nationalforum.com/Electronic Journal Volumes/Lunenburg, Fred C. Decision Making in Organizations IJMBA V15 N1 2011.pdf.

Luoma, M. *et al.* (2010) *Kenya Health System Assessment 2010*, *Health Systems 20/20 Project*. Bethesda, MD. doi: Health Systems 20/20 project.

Maina, T., Chen, A. and Perales, N. (2014) *October 2014 HEALTHCARE FINANCING OPTIONS FOR KENYA*.

Malkin, R. and Keane, A. (2010) 'Evidence-based approach to the maintenance of laboratory and medical equipment in resource-poor settings.', *Medical & biological engineering & computing*, 48(7), pp. 721–6. doi: 10.1007/s11517-010-0630-1.

Mallin, C., Melis, A. and Gaia, S. (2014) 'The remuneration of independent directors in the UK and Italy: An empirical analysis based on agency theory', *International Business Review*, 24(2), pp. 175–186. doi: 10.1016/j.ibusrev.2014.07.006.

Management Science for Health (2010) *Health Systems in Action an e-handbook for leaders and managers*, *Management*. Cambridge, MA: Management Sciences for Health, Inc. Available at: http://www.msh.org/ resource-center/health-systems-in-action.cfm.

Mannion, R. *et al.* (2016) *Effective board governance of safe care: a (theoretically underpinned) cross-sectioned examination of the breadth and depth of relationships through national quantitative surveys and in-depth qualitative case studies*, *Health Services and Delivery Research*. doi: 10.1016/j.jbusres.2014.06.013.The.

Mason, D. J. *et al.* (2013) 'The representation of health professionals on governing boards of health care organizations in New York City', *Journal of Urban Health*, 90(5), pp. 888–901. doi: 10.1007/s11524-012-9772-9.

McDonagh, K. J. and Spohn, C. (2006) 'Hospital Governing Boards: A Study of Their Effectiveness in Relation to Organizational Performance', *Journal of Healthcare Management*, 51(6), pp. 377–89.

Mckee, M. and Healy, J. (2000) 'The role of the hospital in a changing environment', *differences*, pp. 803–810.

Mckeon, K., Gitonga, N. and Decker, C. (2009) *Kenya private health sector assessment*.

McNatt, Z. *et al.* (2014) 'Implementation of hospital governing boards: views from the field.', *BMC health services research*, 14(1), p. 178. doi: 10.1186/1472-6963-14-178.

Metcalfe, D., Chowdhury, R. and Salim, A. (2015) 'What are the consequences when doctors strike?', *BMJ Online*, (November). doi: 10.1136/bmj.h6231.

Mikkelsen-Lopez, I., Wyss, K. and de Savigny, D. (2011) 'An approach to addressing governance from a health system framework perspective.', *BMC international health and human rights*. BioMed Central Ltd, 11(1), p. 13. doi: 10.1186/1472-698X-11-13.

Millar, R. *et al.* (2013) 'Hospital Board Oversight of Quality and Patient Safety : A Narrative Review and Synthesis of Recent Empirical Research', *The Milbank Quarterly*, 91(4), pp. 738–770.

Mills, A. *et al.* (2012) 'Equity in financing and use of health care in Ghana, South Africa, and Tanzania : implications for paths to universal coverage', *The Lancet*, 6736(12), pp. 1–8. doi: 10.1016/S0140-6736(12)60357-2.

Mills, S. *et al.* (2009) *REDUCING MATERNAL MORTALITY : Strengthening the World Bank Response*.

Ministry of Health (2006) *NORMS AND STANDARDS For Health Service Delivery*, *Health (San Francisco)*. Nairobi.

Ministry of Health (2012) *Kenya National Health Accounts 2012/13*. Nairobi.

Ministry of Health (2013) *KENYA HEALTH SECTOR STRATEGIC AND INVESTMENT PLAN (KHSSP) JULY 2013-JUNE 2017*. Nairobi.

Ministry of Health (2014a) *Government of Kenya, 2014: Kenya Service Availability and Readiness Assessment Mapping (SARAM)*. Nairobi.

Ministry of Health (2014b) *Health Sector: Human Resources Strategy 2014-2018*. Nairobi.

Ministry of Health (2014c) *Human Resources For Health Norms and Standards Guidelines For The Health Sector*. Nairobi.

Ministry of Health (2014d) *Kenya Health Policy 2014-2030*. Nairobi.

Ministry of Health (2014e) 'Kenya Health Sector Referral Strategy 2014-2018', *Government of Kenya*, pp. 1–44. Available at: http://www.cpc.unc.edu/measure/pima/referral-systems/referral-strategy-insert.

Ministry of Health (2016) *Kenya Reproductive, Maternal, Newborn, Child and Adolescent Health (RMNCAH) Investment Framework*, *Ministry of Health*. Nairobi. Available at: http://www.globalfinancingfacility.org/sites/gff_new/files/documents/Kenya RMNCAH Investment Framework_March 2016.pdf.

Ministry of Medical Services & Ministry of Public Health and Sanitation (2009) *NATIONAL HEALTH ACCOUNTS 2009/10*. Nairobi.

Ministry of Medical Services & Ministry of Public Health and Sanitation (2010a) *Master Facility List - Implementation Guide*. Nairobi.

Ministry of Medical Services & Ministry of Public Health and Sanitation (2010b) *National Human Resources for Health (HRH) Annual Report*.

Ministry of Medical Services & Ministry of Public Health and Sanitation (2012) *Kenya Health Policy 2012-2030*. Nairobi.

Ministry of Medical Services Kenya (2008) *Ministry of Medical Services Strategic Plan 2008-2012*. Nairobi.

Ministry of Public Health and Sanitation (2008) *Ministry of Public Health and Sanitation Strategic plan 2008-2012*. Nairobi.

Ministry of Public Health and Sanitation (2010) *EVALUATION REPORT OF THE COMMUNITY HEALTH STRATEGY IMPLEMENTATION IN KENYA*. Nairobi.

Ministry of Public Health and Sanitation & Ministry of Medical Services (2009) *National Reproductive Health Strategy 2009-2015*. Nairobi.

Ministry of Public Health and Sanitation & Ministry of Medical Services (2011) *Kenya Health Policy Framework 1994 - 2010 Analysis of Performance Health Situation trends & distribution : 1994-2010 , And Projections for 2011 – 2030*, *Health (San Francisco)*. Nairobi.

Mintzberg, H. (1993) *Structure in fives: Designing effective organizations*. Englewood Cliffs, New Jersey: Prentice-Hall Inc. doi: 10.1017/CBO9781107415324.004.

Molinari, C. *et al.* (1993) 'Hospital Board Effectiveness : Relationships between Governing Board Composition and Hospital Financial Viability', *Health services research*, 28(3).

Mori, N. and Olomi, D. (2012) *The effect of Boards on the Performance of Microfinance Institutions: Evidence from Tanzania and Kenya*, *Research Report 12/2*. Dar-es-Salaam. doi: 10.1017/CBO9781107415324.004.

MP&DB-Kenya (2013) *Medical Practitioners and Dentists Board: Strategic Plan 2013-2018*. Nairobi.

Murphy, C. and O'Donohoe, S. (2006) 'Hospital Governance : An Insight from the South East of Ireland', in *IAFA Annual Conference*. Dublin: Irish Accounting & Financing Association, pp. 1–42. Available at: www.repositorywit.ie/267/1/cath.

Murray, C. J. L. and Evans, D. B. (2003) *Health Systems Performance Assessment: Debates, Methods and Empiricism*. Geneva.

Murthy, B. K., Murthy, M. B. and Prabhu, P. M. (2013) 'Maternal Mortality in a Tertiary Care Hospital: A 10-year Review', *international journal of preventive medicine*, 4(1), pp. 105–109.

Muthaka, D. I., Kimani, D. N. and Manda, D. K. (2004) *A Review of the Regulatory Framework for Private Healthcare Services in Kenya*, *Development*. nairobi.

Mwamuye, M. K. *et al.* (2012) 'Factors Influencing Performance of Agricultural Companies in Kenya : A Case of Coast Province', *International Journal of Business and Commerce*, 2(4), pp. 25–38.

Mwaniki, M. K. *et al.* (2010) 'An increase in the burden of neonatal admissions to a rural district hospital in Kenya over 19 years', *BMC Hublic health*, 10(591).

Mwase, T. (2006) *The Application of National Health Accounts to Hospital Efficiency Analyses in Eastern and Southern Africa*, *Health (San Francisco)*. WP019. Bethesda, MD.

NACPD (2011) *Kenya Service Provision Assessment (SPA) 2010*. Nairobi.

Nagpal, J. *et al.* (2015) 'Widespread non-adherence to evidence-based maternity care guidelines: A population-based cluster randomised household survey', *International Journal of Obstetrics and Gynaecology*, 122(2), pp. 238–247. doi: 10.1111/1471-0528.13054.

NCAPD *et al.* (2010) *Kenya Service Provision Assessment (SPA) 2010*. Nairobi.

Nemec, J., Meričková, B. and Štrangfeldová, J. (2010) 'The ownership form of hospitals from the viewpoints of economic theory and slovak practice', *Ekonomie a Management*, 13(2), pp. 19–31.

Neves, A. P. (2012) *Do Boards Matter? The Links Between Governance, Organizational Monitoring and Alignment Capacity and Hospital performance*, *ProQuest Dissertations and Theses*. Toronto.

Nzinga, J., Mbaabu, L. and English, M. (2013) 'Service delivery in Kenyan district hospitals - what can we learn from literature on mid-level managers?', *Human resources for health*. Human Resources for Health, 11(1), p. 10. doi: 10.1186/1478-4491-11-10.

OECD (2005) *OECD Guidelines on Corporate Governance of State-owned Enterprises*, *Corporate Governance*. OECD Publishing.

Olafsdottir, A. E. *et al.* (2011) 'Health systems performance in sub-Saharan Africa : governance , outcome and equity', *BMC Public Health*. BioMed Central Ltd, 11(1), p. 237. doi: 10.1186/1471-2458-11-237.

Olivier, J. *et al.* (2015) 'Faith-based health care 1 Understanding the roles of faith-based health-care providers in Africa : review of the evidence with a focus on magnitude , reach , cost , and satisfaction'. Elsevier Ltd, pp. 1765–1775. doi: 10.1016/S0140-6736(15)60251-3.

Orlikoff, J. E. and Totten, M. K. (2001) *The Trustee Handbook for Health Care Governance , 2nd Edition*. 2nd edn. Jossey-Bass.

Osei, D. *et al.* (2005) 'Cost Effectiveness and Resource Technical efficiency of public district hospitals and health centres in Ghana : a pilot study', *Cost Effectiveness and Resource Allocation*, 13, pp. 1–13. doi: 10.1186/1478-7547-3-9.

Owuondo, P. A. *et al.* (2015) 'Preparedness of County Referral Health Facilities in Implementing Adolescent Friendly Health Services: A Case of Mama Lucy Kibaki County Refferal Hospital, Kenya', *Global Journal of Health Science*, 7(6). doi: 10.5539/gjhs.v7n6p11.

Ozumba, B. and Nwogo-Ikojo, E. (2008) 'Avoidable maternal mortality in Enugu, Nigeria', *Public Health*, 122(4), pp. 354–60.

Parent, F. *et al.* (2005) 'Health Research Policy and Systems Analysis of adequacy levels for human resources improvement within primary health care framework in Africa', *Health Research Policy and Systems*, 8, pp. 1–8. doi: 10.1186/1478-4505-3-8.

Parkhurst, J. O. *et al.* (2004) 'Health systems factors influencing maternal health services: A four-country comparison', *Health Policy*, 73, pp. 127–138. doi: 10.1016/j.healthpol.2004.11.001.

Pedraza, C. C. *et al.* (2015) 'Mortality outcomes in hospitals with public, private not-for-profit and private for-profit ownership in Chile 2001-2010', *Health Policy and Planning*, 30, pp. i75–i81. doi: 10.1093/heapol/czu143.

Pitt, C. *et al.* (2012) 'Donor funding for newborn survival: an analysis of donor-reported data, 2002-2010.', *PLoS medicine*, 9(10), p. e1001332. doi: 10.1371/journal.pmed.1001332.

Pozen, R. C. (2010) 'The Case for Professional Boards', *Harvard Business Review*, December, pp. 50–59.

Prata, N. *et al.* (2010) 'Maternal mortality in developing countries: challenges in scaling-up priority interventions', *Women's Health*, 6(2), pp. 311–327. doi: 10.2217/whe.10.8.

Private Sector Corporate Governance Trust (2000) *Principles for Corporate Governance in Kenya*. Nairobi.

Van Puyvelde, S. *et al.* (2012) 'The governance of nonprofit organizations: Integrating agency theory with stakeholder and stewardship theories', *Nonprofit and Voluntary Sector Quarterly*, 41(3), pp. 431–451. doi: 10.1177/0899764011409757.

Pyone, T., Smith, H. and van den Broek, N. (2017) 'Frameworks to assess health systems governance: a systematic review', *Health Policy and Planning*, (March), pp. 710–722. doi: 10.1093/heapol/czx007.

Quansah, A. (2013) *The Impacts of Free Maternal Delivery Policy on Maternal MOrtality in Ghana; A case study of Kumasi Metropolis*. Kwame Nkrumah University of Science and Technology.

Raheja, C. G. (2016) 'Determinants of Board Size and Composition : A Theory of Corporate Boards', *JOURNAL OF FINANCIAL AND QUANTITATIVE ANALYSIS*, 40(2), pp. 283–306.

Rajaratnam, J. K. *et al.* (2010) 'for 187 countries , 1970 – 2010 : a systematic analysis of progress towards Millennium Development Goal 4', *Online*. Elsevier Ltd, 6736(9730), pp. 1988–2008. doi: 10.1016/S0140-6736(10)60703-9.

Raven, J. *et al.* (2011) 'Methodology and tools for quality improvement in maternal and newborn health care', *International journal of Obstetrics and Gynecology*, 114(1), pp. 4–9.

Reidpath, D. D. *et al.* (2012) 'The fallacy of the equity-efficiency trade off: rethinking the efficient health system', *BMC Public Health*. BioMed Central Ltd, 12(Suppl 1), p. S3. doi: 10.1186/1471-2458-12-S1-S3.

Remme, J. H. F. *et al.* (2010) 'Defining Research to Improve Health Systems', *PLoS Medicine*, 7(11). doi: 10.1371/journal.pmed.1001000.

Republic of Kenya (2010) *The Constitution of Kenya, 2010*, *Human Rights*. Kenya: National Council for Law Reporting with the Authority of the Attorney General.

Rotar, A. M. *et al.* (2016) 'The involvement of medical doctors in hospital governance and implications for quality management: a quick scan in 19 and an in depth study in 7 OECD countries', *BMC Health Services Research*. BMC Health Services Research, 16(S2), p. 160. doi: 10.1186/s12913-016-1396-4.

Rudrum, J. (2010) *Understanding governance in the NHS*. London.

Santerre, R. and Vernon, J. (2005) *HOSPITAL OWNERSHIP MIX EFFICIENCY IN THE US : AN EXPLORATORY STUDY*. 11192. Cambridge, MA.

de Savigny, D. and Adam, T. E. (2009) *Systems Thinking: for Health Systems Strengthening. Alliance for health policy and systems research*.

Say, L. *et al.* (2007) 'A systematic review of inequalities in the use of maternal health care in developing countries : examining the scale of the problem and the importance of context', *Bulletin of the World Health Organization*, 035659(August 2006). doi: 10.2471/BLT.

Schlesinger, M. and Gray, B. H. (2006) 'How nonprofits matter in American medicine, and what to do about it', *Health Affairs*, 25(4), pp. W287-303. doi: 10.1377/hlthaff.25.w287.

Seitio-kgokgwe, O. *et al.* (2014) 'Assessing performance of Botswana ' s public hospital system : the use of the World Health Organization Health System Performance Assessment Framework', *International journal of health policy and management*, 3(4), pp. 179–189. doi: 10.15171/ijhpm.2014.85.

Shen, Y. *et al.* (2005) *HOSPITAL OWNERSHIP AND FINANCIAL PERFORMANCE: A QUANTITATIVE RESEARCH REVIEW*. 11662.

Shukla, M., and Johnson Lassner, K. (2012) *Governing for Better Health: A Targeted Literature Review*. Cambridge, MA. Available at: http://www.msh.org/sites/msh.org/files/4-governancelitreviewmay2012final_print.pdf%5Cnhttp://www.msh.org/our-work/projects/leadership-management-and-governance-project.

Shukla, M. and Lassner, J. (2012) *Governing for Better Health: A targeted literature review*. Arlington VA.

Siddiqi, S. *et al.* (2009) 'Framework for assessing governance of the health system in developing countries: gateway to good governance.', *Health Policy*, 90(1), pp. 13–25. doi: 10.1016/j.healthpol.2008.08.005.

Simsek, Z. (2007) 'CEO tenure and organizational performance: An intervening model', *Strategic Management Journal*, 28(6), pp. 653–662. doi: 10.1002/smj.599.

Song, P. and Reiter, K. (2011) 'Trends in Asset Structure between Not-for-Profit and Investor Owned Hospitals', *Med Care Res Rev.*, 67(6), pp. 1–12. doi: 10.1177/1077558710368807.Trends.

Sørbye, I. K. *et al.* (2011) 'Caesarean section among referred and self-referred birthing women: a cohort study from a tertiary hospital, northeastern Tanzania', *BMC Pregnancy and Childbirth*, 11(1), p. 55. doi: 10.1186/1471-2393-11-55.

Souza, J. P. *et al.* (2011) 'The world health organization multicountry survey on maternal and newborn health: study protocol', *BMC Health Services Research*. BioMed Central Ltd, 11(September 2010). doi: 10.1186/1472-6963-11-286.

Spangler, S. (2012) 'Assessing skilled birth attendants and emergency obstetric care in rural Tanzania: the inadequacy of using global standards and indicators to measure local realities', *Reproductive Health Matters*, 20(39), pp. 133–141.

Starfield, B. (2011) 'The hidden inequity in health care.', *International journal for equity in health*. BioMed Central Ltd, 10(1), p. 15. doi: 10.1186/1475-9276-10-15.

Street, A. *et al.* (2010) *Determinants of hospital costs and performance variation : Methods, models and variables for the EuroDRG project*. Available at: http://eprints.whiterose.ac.uk/52330/.

Swanson, R. C. *et al.* (2012) 'Rethinking health systems strengthening : key systems thinking tools and strategies for transformational change', *Health Policy and Planning*, 27(iv), pp. 54–61. doi: 10.1093/heapol/czs090.

The Republic of Kenya (2009) *The Companies Act-Chapter 486*. Kenya: National Council for Law Reporting.

The Republic of Kenya (2012a) *Clincial Officers (Training , Registration and Licensing) Act*. Kenya: National Council for Law Reporting.

The Republic of Kenya (2012b) *Education Act*. Kenya: National Council for Law Reporting.

The Republic of Kenya (2012c) *Kenya Medical Training College Act*. Kenya: National Council for Law Reporting. Available at: http://www.issafrica.org/crimehub/uploads/consumer_protection_pocketguide.pdf.

The Republic of Kenya (2012d) *MEDICAL LABORATORY TECHNICIANS AND TECHNOLOGISTS ACT*. Kenya: National Council for Law Reporting. doi: 10.1136/bmj.1.5491.860.

The Republic of Kenya (2012e) *Medical Practitioners and Dentists Act*. Kenya: National Council for Law Reporting.

The Republic of Kenya (2012f) *Nurses Act*. Kenya: National Council for Law Reporting.

The Republic of Kenya (2012g) *Pharmacy and Poisons Act*. Kenya: National Council for Law Reporting. doi: 10.1136/bmj.2.4676.455.

The Republic of Kenya (2012h) *PUBLIC HEALTH ACT: Chapter 242*. Kenya: National Council for Law Reporting.

The Republic of Kenya (2013a) *THE PUBLIC BENEFIT ORGANIZATIONS ACT, 2013*. Republic of Kenya: Kenya Gazette Supplement No. 30.

The Republic of Kenya (2013b) *The Public Benefits Organizations Act, 2013*. Kenya: National Council for Law Reporting.

The Republic of Kenya (2015) *State corporations Act Kenya*. National Council for Law Reporting.

The Urban Institute (2010) *Vulnerable Populations | Health Policy Center at the Urban Institute | Independent research for better health policy*. Available at: http://www.urban.org/health_policy/vulnerable_populations/ (Accessed: 28 July 2013).

The World Bank (2014) *Universal Health Coverage for Inclusive and Sustainable Development*. Edited by A. Maeda et al. Washington DC.

Tiemann, O., Schreyogg, J. and Busse, R. (2012) 'Hospital ownership and efficiency : a review of studies with particular focus on Germany', *Health Policy*, 104(2), pp. 163–71. doi: 10.1016/j.healthpol.2011.11.010.

Tlotlego, N. *et al.* (2010) 'Assessment of productivity of hospitals in Botswana : A DEA application', *International Archives of Medicine*, 3(1), p. 27. doi: 10.1186/1755-7682-3-27.

Transparency International-Kenya (2011) *The Kenya Health Sector Integrity Study Report*. Nairobi.

UNDP (2010) *What will it take to achieve the Millennium Development Goals ?* Geneva.

United Nations (2014) *The Millennium Development Goals Report 2014*. New York. Available at: https://visit.un.org/millenniumgoals/2008highlevel/pdf/MDG_Report_2008_Addendum.pdf.

United Nations (2016) *The Sustainable Development Goals Report 2016*. New York.

Vos, M. D. E. *et al.* (2009) 'Using quality indicators to improve hospital care : a review of the literature', *International Journal for Quality in Health Care*, 21(2), pp. 119–129.

Wachterman, M. W. *et al.* (2011) 'Association of hospice agency profit status with patient diagnosis, location of care, and length of stay.', *JAMA : the journal of the American Medical Association*, 305(5), pp. 472–9. doi: 10.1001/jama.2011.70.

Wamai, R. G. (2009) 'The Kenya Health System — Analysis of the situation and enduring challenges', *JMAJ*, 52(2), pp. 134–140.

Wangui, M. L. (2014) *A Clinical Audit of Emergency Caesarian Delivery at Kenyatta National Hospital*. Nairobi.

WHO (1985) 'Appropriate technology for birth', *Lancet*, 24(2), pp. 436–7.

Widmer, M. *et al.* (2011) 'The role of faith-based organizations in maternal and newborn health care in Africa', *International Journal of Gynecology and Obstetrics*. World Health Organisation and Ireland Ltd, 114(3), pp. 218–222. doi: 10.1016/j.ijgo.2011.03.015.

Wilkes, J. (2014) *CEO turnover and changes in corporate performance in South Africa*. Pretoria.

Wilmoth, J. *et al.* (2010) 'Maternal deaths drop by one-third from 1990 to 2008: a United Nations analysis.', *Bulletin of the World Health Organization*, 88(10), p. 718–718A. doi: 10.2471/BLT.10.082446.

Witter, S. *et al.* (2010) 'The national free delivery and caesarean policy in Senegal: Evaluating process and outcomes', *Health Policy and Planning*, 25(5), pp. 384–392. doi: 10.1093/heapol/czq013.

WORLD BANK (2012) *DEVOLUTION WITHOUT DISRUPTION*. Nairobi.

World Bank Group (2010a) *Private Health Sector Assessment in Kenya*. 193. Washington DC.

World Bank Group (2010b) *REVIEW OF WORLD BANK ' S EXPERIENCE WITH COUNTRY-LEVEL HEALTH SYSTEM ANALYSIS*. Washington DC.

World Bank Group (2015) *Kenya Country Data*, *http://data.worldbank.org/country/kenya*. Available at: http://data.worldbank.org/country/kenya (Accessed: 5 March 2015).

World Health Organization (2000) *The World Health Report 2000: Health Systems: Improving Perfomance*. Geneva. doi: 10.1146/annurev.ecolsys.35.021103.105711.

World Health Organization (2002) 'Prevention of hospital-acquired infections: A Practical Guide 2nd Edition'. Geneva: World Health Organization, pp. 1–64. doi: WHO/CDS/CSR/EPH/2002.12.

World Health Organization (2007) *EVERYBODY'S BUSINESS STRENGTHENING HEALTH SYSTEMS TO IMPROVE HEALTH OUTCOMES: WHO'S FRAMEWORK FOR ACTION*. Geneva.

World Health Organization (2011) *Maternal, newborn, child and adolescent health. Adolescent pregnancy.* Available at: http://www.who.int/maternal_child_adolescent/topics/maternal/adolescent_pregnancy/en/ (Accessed: 7 July 2016).

World Health Organization (2012) *World Health Statistics 2012*. Geneva.

World Health Organization (2015) *WHO Statement on Caesarean Section Rates*. Geneva. doi: 10.1111/1471-0528.13526.

World Organization Health (WHO) (2017) *Managing Complications in Pregnancy and Childbirth: A guide for midwives and doctors*. @nd. Geneva.

Yeager, V. A. *et al.* (2014) 'Using resource dependency theory to measure the environment in health care organizational studies', *Health Care Management Review*, 39(1), pp. 50–65. doi: 10.1097/HMR.0b013e3182826624.

Yego, F. *et al.* (2014) 'A case-control study of risk factors for fetal and early neonatal deaths in a tertiary hospital in Kenya', *BMC Pregnancy and Childbirth*, 14, pp. 1–9. doi: 10.1186/s12884-014-0389-8.

Zaidi, A. *et al.* (2005) 'Hospital-acquired neonatal infections in developing countries', *Lancet*, 365(9465), pp. 1175–88.

Zere, E. *et al.* (2006) 'Cost Effectiveness and Resource Technical efficiency of district hospitals : Evidence from Namibia using Data Envelopment Analysis', *Cost Effectiveness and Resource Allocation*, 9, pp. 1–9. doi: 10.1186/1478-7547-4-5.

Ziraba, A. K. *et al.* (2009) 'Maternal mortality in the informal settlements of Nairobi city: what do we know?', *Reproductive Health*, 6, p. 6. doi: 10.1186/1742-4755-6-6.