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Effect of Devolution of Health Services on Availability of Medicines for Non-Communicable Diseases: A Case Study of the Makueni County Referral Hospital

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MBA HCM 87967/2015



Submitted in Partial Fulfillment of the Requirements for the Award of Degree of
Master's in Business Administration in Healthcare Management

Strathmore University Business School

Strathmore University

Nairobi, Kenya

May 2019

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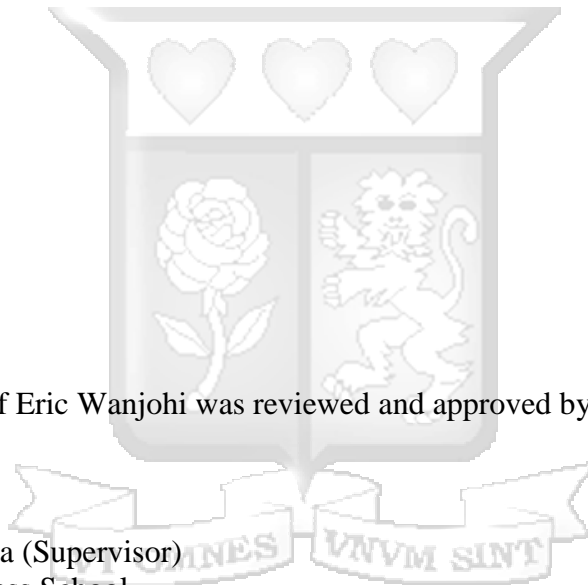
DECLARATION AND APPROVAL

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Eric Wanjohi
May 2019



Approval

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Abstract

Kenya has witnessed a rapid epidemiological shift, with a surge in non-communicable diseases (NCDs) like diabetes and cardiovascular diseases, which often require lifelong treatment and can lead to impoverishment. One driver of excessive expenditure is medicines and related products. To prevent impoverishment from NCDs, counties must strengthen the management of commodities. However, frequent stock-outs at public facilities suggest weaknesses in supply chain management. This study sought to establish the effect of devolution of health services on the availability of medicines for NCDs at the Makueni County Referral Hospital in Makueni County.

To achieve this, the study employed a mixed methods approach. First, the availability of selected medicines for NCDs was described before and after devolution (2011-2012 and 2017-2018). Then, the reasons underlying observed patterns, and staff perception on factors that may have influenced availability, both examined through in-depth interviews.

The study found that three cardiovascular products, nifedipine, enalapril and hydrochlorothiazide were mostly unavailable pre-devolution. Post devolution, availability of nifedipine and hydrochlorothiazide improved substantially with enalapril availability remaining a challenge post devolution. Tracer diabetes medicines, metformin and glibenclamide had steady availability pre and post-devolution period. However, Insulin had good availability post devolution. Asthma drugs (salbutamol inhaler, salbutamol nebulising solution and budesonide inhaler) had higher stock out post-devolution. The relatively affordable amoxicillin, paracetamol and ibuprofen had good pre- and post-devolution availabilities, with ceftriaxone, a much more costly antibiotic, only having good availability post-devolution. Reasons for the increased availability included increased funding, better structured quarterly orders, better collaboration across actors, better public participation and an overall increase staff numbers. The study recommends that other health financing avenues be sought and that the county government reviews medicines budgets frequently. The study also recommends that county government should encourage public participation so as to know areas that need improvement.

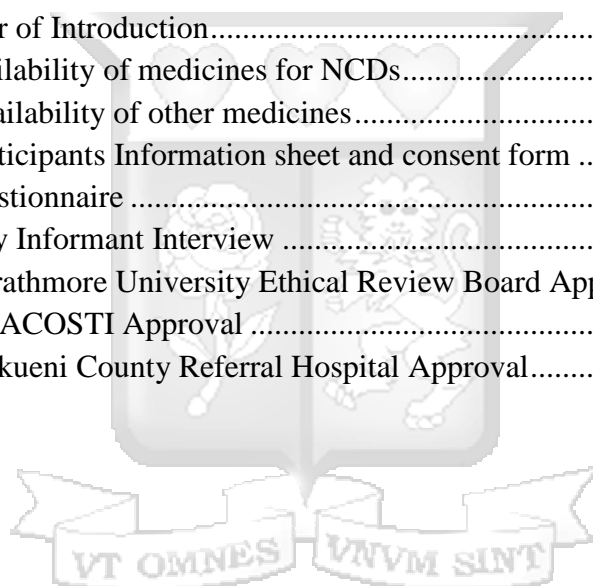
Keywords: Devolution, Availability, Stock outs, Essential Medicines

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Dedication

This document is dedicated to my family: Caroline Kaeni, my partner and Gabrielle Wangu, my daughter for the motivation to finalize the study.

Mum and dad, for getting me thus far

To God, nothing is possible without the Almighty.



List of Abbreviations

AGM	Annual General Meeting
AIDS	Acquired Immune Deficiency Syndrome
CIDP	County Integrated Development Plan
EmOC	Emergency Obstetric Care
HAI	Health Action International
HIV	Human Immunodeficiency Virus
ICT	Information and Communication Technology
IDF	International Diabetes Federation
INRUD	International Network for the Rational Use of Drugs
KEML	Kenya Essential Medicines List
KEMSA	Kenya Medical Supply Authority
KEMSL	Kenya Essential Medicines Supplies List
KIIs	Key Informant Interviews
LAO	Lead Amateur Operation
MDGs	Millennium Development Goals
MEDS	Mission for Essential Drugs and Supplies
NACOSTI	National Commission for Science, Technology and Innovation
NCDs	Non-Communicable Diseases
NGO	Non-Governmental Organization
NHIF	National Hospital Insurance Fund
SARA	Service Availability and Readiness Assessment
UN	United Nations
WHO	World Health Organization

Definition of Terms

Availability	is used to refer to the presence of a specific medicine in a certain day of the year
Devolution	refers to decentralization of government functions to county governments.
Essential medicine	refers to drugs which are vital for a particular kind of illness
Governance	refers to a set way of managing a county through collaborating with all stakeholders in health ministry and others
Health personnel	are individuals working in health centers and dealing directly with patients
Health services	refers to all examinations and tasks that are provided by hospitals and health centers
Post-devolution	this is the period after the new Kenyan constitution was implemented. It starts from the year 2013 when the county governments operation set out. The period was represented by the years 2017 and 2018 for this study.
Pre-devolution	refers to the period before the implementation of the new Kenyan constitution. The period starts from 2013 backwards. In this study two years (2011 and 2012) were used to represent this period.
Stock-outs	is used to refer to the number of days when the selected medicines for NCDs were not available in the hospital

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

1.1.1 NCDs and medicines

Non-communicable diseases (NCDs) account for an estimated 63% of deaths globally (WHO, 2016). This recognition led the United Nations World Health Assembly to adopt the goal of reducing preventable NCD-related deaths by 25% by the year 2025 (Mirzoev, Green, Orgill, Komba, Esena & Gilson, 2014). To achieve this, countries would need to strengthen health leadership, service delivery, financing and availability of essential medicines. The most common NCDs are cardiovascular diseases, chronic respiratory diseases, diabetes and cancer, all of which are linked to similar risk factors that include physical inactivity, tobacco use, unhealthy diet and harmful use of alcohol (Abegunde, 2011).

In their study on the availability of NCDs in 36 low-income and middle-income countries, (Hogerzeil, Liberman, Wirtz, Kishore, Selvaraj & Kiddell-Monroe, 2013) established that the mean availability of medicines was about 36% for NCDs against 54% for acute diseases in the public sector (Hogerzeil et al., 2013). Sub Saharan Africa constitutes the largest population that lacks access to essential medicines. Stock-outs could be attributed to the availability of other formulations of the same medicine, staff turn-over, logistical issues such as lead time and special orders during campaigns (Nditunze, Makuza, Amoroso, Odhiambo, Ntakirutimana, Cedro & Hedt-gauthier, 2015).

1.1.2 Before and after devolution

The 2010 constitution of Kenya ushered in a devolved system of governance which enshrines the right to the highest attainable standard of health to all citizens (Savage & Lumbasi, 2016). With the creation of county governments, the need to address the planning, administration and management of health care services including pharmaceutical supply chain in response to the changes became imminent (Thuku,

2014a).In Kenya NCDs account for 27% of deaths for people aged between 30 and 70 years. The probability of dying prematurely from an NCD is 18%. More than 50% of total hospital admissions and over 55% of hospital deaths in Kenya were caused by NCDs in the year 2012 (Savage & Lumbasi, 2016). Current average morbidity rate in Makeni County is 33.3% against a national average of 24.7% (McCollum, 2017).

The transition process from centrally managed health care services to devolution at county levels was envisaged to be a gradual one as power and functions increasingly shifted from the national to county governments (Wamuswa, 2015). This would allow for the creation of necessary capacities at the county level. In practice, however, this did not happen, and devolution was almost achieved overnight. The newly formed county structures were in a rush to consolidate their power and hold over the lucrative health sector. As a result, the transition from the national to county government has been marred by inconsistency, inadequate staffing of the system, management challenges and lack of coordination between the national and county governments (Muchomba, 2015).

The county governments, facing severe capacity challenges, have left the management of facilities in the hands of health personnel (Kimathi, 2017). While they have a lot of technical and professional expertise, most health workers lack adequate strategic management skills to access and make proper use of resources and mitigate against new devolution challenges. Furthermore, the procurement of goods and services at the county level has been centralized at county headquarters. That has led to confusion and procurement challenges which affect the quality of procured products and service delivery (Miriti, 2017)

With the creation of county governments, there is a need to strengthen the management of health commodities, which requires rigorous research and analyses to understand how counties are performing. This includes understanding how post-devolution changes across factors such as governance, financing and human resource for health intersect to affect availability and usage of health commodities.

1.2 Problem Statement

Non-communicable diseases (NCDs) are on the rise in Kenya, affecting persons across all age cohorts. They are already the leading cause of hospital deaths in Kenya. Worse still, management of NCDs is more complicated, costly and often requires life-long treatment for affected persons. Medicines for NCDs are costly and out of reach for the majority of Kenyans, most of who live below the poverty line. Insurance coverage remains below 20%, meaning large sections of the population have to pay out of pocket for essential services. This has resulted in reduced access to NCD care, thereby hampering progress towards universal health coverage.

Devolution of health was envisioned as a solution to problems of low access to costly treatments. It was expected that by devolving decision-making to lower levels, counties would be able to ensure sufficient access to those in need better. Before devolution, the government allocated medicine funds to public health facilities as drawing rights, which allowed respective facilities to order medicines directly from the Kenya Medical Supplies Authority (KEMSA). However, the model changed after devolution. KEMSA is no longer funded directly by the government, and it is expected to generate its own money from the direct sale of essential medicines and medical supplies to counties. Consequently, counties have to quantify their needs, place their orders and pay before the health commodities are delivered.

Counties design and approve their budgets through the county assemblies, additionally; they determine the allocation of crucial priorities such as medicines and health services. Anecdotal evidence suggests that this has not worked well so far, with county assemblies allocating insufficient funds towards healthcare services and commodities. To protect Kenyans from impoverishment from treatment costs of NCDs, it is vital that counties prioritize commodity procurement and management. The media has continually reported medicine stock-outs, an indication that county governments are not keen in managing health commodities. Moreover, it is not clear how counties are coping with the shortages, whether they are using alternative medicines and in extreme cases, inappropriate procurement strategies (such as direct procurement from private commercial

pharmaceutical distributors), or whether they are merely sending patients away to purchase medicines from private pharmacies.

This study sought to establish the effect of devolution of health services on the availability of medicines for non-communicable diseases in Makueni County Referral Hospital and suggest possible solutions for policy.

1.3 Research Objectives

Overall objective

To examine the availability of medicines for non-communicable diseases before and after devolution and explore reasons underlying the observed patterns

Specific objective

- i. To examine the temporal patterns in the availability of medicines for NCDs before and after devolution
- ii. To explore reasons underlying the observed availability patterns of NCD medicines pre and post-devolution
- iii. To establish the views, opinions and perceptions of staff on the availability patterns for medicines used in treating NCDs pre and post-devolution

1.4 Research Questions

- i. What is the difference in availability of medicines for NCDs pre and post-devolution?
- ii. What are the reasons underlying the observed availability patterns of NCD medicines pre and post-devolution?
- iii. What are the views, opinions and perceptions of staff on the availability patterns for medicines used in treating NCDs pre and post-devolution?

1.5 Scope of the study

The study was conducted at the Makueni County Referral Hospital in Makueni County. The study relied on reviewing past records on medicines availability for NCDs,

questionnaire and interviews. The study period was four years, two years (2011 & 2012) before devolution and two years (2017 & 2018) after devolution.

Although the new constitution was promulgated in 2010, the legislation establishing counties was passed in 2012 (The County Governments Act 2012) and counties started running in 2013 after the first elections under the new constitution. The post devolution years chosen factor in the transition period in the early years of devolution where counties are believed to have had little or no capacity to manage their affairs.

1.6 Significance of the study

The study examined an essential component of the Big Four development priorities for Kenya: universal access to adequate healthcare services and commodities. Findings will inform policy on commodity and supply chain challenges in counties following devolution and changing of the KEMSA business model. This, in turn, will build evidence to feed into the process of formulating guidelines to help counties manage essential medicines and related commodities.

The study will also benefit the county governments across the country in managing medicines and other essential commodities, particularly those touching on NCDs. Management of medicines is vital in successful operations of public health centers, and thus recommendations from this study may play a part towards that.

The study findings will be of significance to departments of health in the various counties and other health stakeholders. This is because Kenya is steered towards universal health coverage and this study will help fill the gap on how commodities can be managed better by counties post-devolution.

Patients visiting Makueni County Referral Hospital may benefit from the findings of this study. The number of people suffering from NCDs has been increasing and therefore individuals looking for solutions may find this document relevant.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents a theoretical review detailing devolution of health services in Kenya and explores the devolution factors influencing the availability of medicines for NCDs. The chapter also covers an empirical review and conceptual framework related to the study topic.

2.2 Theoretical Review

2.2.1 Sequential Theory of Decentralization

The Sequential theory of decentralization was proposed by Falleti, (2004). The main pillars of this theory are to explain the state reform process, the transferability of resources and preferential considerations in the conduct of those in charge or administrators. Falleti, (2004) argues that decentralization is a model of reforms where there are a number of processes and activities involved to attain given deliverables. Initial operation of political and economic policy decentralization are in the ability to increase power and resource decentralization to majority local actors (Falleti, 2004).

Sequential theory of decentralization is based on three propositions: First, Institutional design of decentralization policies is highly dependent on when those policies take place within the sequence of reforms (Falleti, 2005). The theory indicates that political and fiscal decentralization policies that take place early in the sequence tend to increase the power of local government actors, whereas early administrative decentralization reforms tend to negatively affect their power. Secondly, a set of preferences of national and sub-national actors with regard to types of decentralization. National politicians and executives highly prefer administrative decentralization followed by political decentralization and least prefers fiscal decentralization. Lastly the origin or the state context in which the decentralization process takes place and the timing of each reform are crucial (Awortwi, 2011).

The state reforms and processes may occur both in democratic and authoritarian governed states(Akorsu, 2015). Reform processes are highly dependent on the sequence defined by particular policies by the government or administration in charge. Effectiveness is attained on the manner or sequence of operationalization (Awortwi, 2011). Formulation of sub-national policies enables in attaining the decentralization initiatives. This requires sub-national autonomy on the lower levels of government. Before devolution, health resources such as drugs movement were controlled by the central government (KEMSA) hence operations were fast. Under devolution, counties are left to manage their medicines plus other resources and this has in one way or another compromised the movement.

This theory relates well with this study in examining the effect of devolution of health services on the availability of medicines for non-communicable diseases in Makeni County Referral. County governments employ different strategies to ensuring there is sufficient and adequate resource allocation and decentralization to all citizens in the counties. This is undertaken specifically on plans and programmes aimed at ensuring all parties have access to services while getting a share of the resources. Public institutions operate on plans and systematic manner creating a sequence of activities and initiatives. Time lagging and deliverables require resources and proper administration in policy to ensuring all parties are equitably represented, gain or obtain government services. Devolved governance came with new set of leadership which plays a major role in dictating the state of hospitals and all that pertains to it. Financing in a devolved setup may differ hence affecting medicines' availability. This study looked at the effect of devolution of health services on availability of medicines for NCDs.

2.3 Devolution of Health Services in Kenya

The constitution of Kenya (2010) ushered in a devolved system of governance which enshrines the right to the highest attainable standard of health to all citizens. With the creation of county governments, the need to address the planning, administration and management of health care services including pharmaceutical supply chain in response to the changes became imminent (Thuku, 2014b).

Kenya runs a four-tiered healthcare system. These are community health service, primary healthcare services, county referral hospitals and national referral services.

The counties are responsible for three levels of care: community health services, primary care services and county referral services (Nzinga, Mbindyo, Mbaabu, Warira, & English, 2009). County and sub-county hospitals, rural health centers, dispensaries, rural health training and rehabilitation centers all fall under the county run facilities (Kipruto & Letting, 2017). The responsibility of running these facilities has been transferred to the counties significantly affecting their management.

Community health services are made up of community-led demand activities such as the use of community health units that act as referral systems in the villages. Primary care services comprise of clinics, dispensaries and health centres that act as the first point of contact for patients. County referral services are hospitals managed by the counties. These include level four and level five health facilities. National referral services comprise of facilities that provide highly specialized services and include all tertiary referral facilities.

Makueni county covers a land area of 8,034.7Km². It is located in the lower eastern region of Kenya surrounded by Kajiado, TaitaTaveta, Kitui and Machakos counties. The county is prone to drought as it is largely arid and semi-arid.

Makueni County has six constituencies that also double up as sub-counties. These are, Kaiti, Kibwezi East, Kibwezi West, Kilome, Makueni and Mbooni. County population stands at 922,183 as per 2012 census with 449,036 being male and 473,147 female. 14.3% of the population is below the age of five and 1.8% above the age of 80 (Makueni CIDP, 2013).

Makueni County Referral Hospital is the largest public hospital in Makueni and handles most of the NCD cases. Current average morbidity rate in Makueni County is 33.3% against a national average of 24.7%.

Challenges of devolution highlighted in media reports have included reports of poor management, inequitable resource distribution, ethnicity-driven staff recruitment, poor

working conditions and delayed salaries, among other factors(Kibui, Mugo, Nyaga, Ngesu, & Mwaniki, 2015).

2.4 Devolution Factors Affecting the Availability of Medicines for NCDs

2.4.1 Devolved Procurement

Bulk supply of essential medicines and medical supplies to public health facilities in Kenya is majorly done by Kenya Medical Supplies Authority (KEMSA) and Mission for Essential Drugs and Supplies (MEDS). KEMSA was established in 2001 through a legal notice for the procurement and sale of drugs and medical supplies. It, however, did not get autonomy from Ministry of Health until after 2008 when a ministerial task force set up to look at supply problems following post-election events and recommended de-linking from the Ministry for it to achieve its legal provisions (WHO, 2014a)

The county governments are under no obligation to procure from the Kenyan agency for drugs supply (KEMSA) which has been procuring in bulk and thus enhancing economies of scale while also monitoring the efficacy of the drugs for purposes of continuous improvement. This has opened an avenue for corruption, mismanagement and perennial scarcity of drugs at health facilities. This is because since procurement systems are still mostly young and sub-optimal, unscrupulous personnel within the county governments are procuring drugs from unknown sources at great expense. This compromises not just the list of essential medicines, as provided by the Ministry of Health, but also the quality of the medication procured. Currently, most county governments have no clear procurement plans in place for the purchase of medical supplies (Gimoi, 2017).

2.4.2 Devolved governance

Management decentralization involves the full or partial transfer of functional responsibilities from the central government to the local level institutions. This may be in the form of health care service, the operation of schools, the maintenance of roads or garbage collection (Yusoff, Sarjoon, Awang, & Efendi, 2016). Civil servants and public functions are also transferred or seconded to the lower level of government and the national government assigns local governments the authority to hire and lay off local staff without prior approval of the central government.

Administrative decentralization on the other hand is concerned with the functional tasks of decentralization. It relates to the assignment of service delivery powers and functions across levels of government and determining where responsibility is situated. An effective decentralization of government administration requires certain coordination between the two levels of governments. The two levels of government need to come up with harmonious laws and regulations which they consider to be appropriate within their jurisdiction (Yusoff et al., 2016).

Within the hospital setting, the senior management is made up of a hospital management team that holds administrative power (O'Neil, 2008). This comprises persons in charge of administration, nursing, pharmacy and allied health services and is typically led by the medical superintendent. Those in charge of different clinical service units or departments are invariably clinicians and nurses who operate without any specific departmental administrators. They are expected to plan and advocate for resources, although they are unlikely to have direct control over a specific departmental budget. Such individuals also supervise teams of front-line workers, either medical or nursing, and contribute directly to service delivery (Bennett, Corluka, Doherty, & Tangcharoensathien, 2012).

2.4.3 Devolved financing

Financial decentralization aims at increasing the revenues and fiscal autonomy of sub-national governments. Devolving financing encompasses the transfer of competencies, responsibilities and financial resources from the central (state) level to the lower levels of government (Oplotnik & Finžgar, 2013).

Fiscal decentralization is the most traceable type of decentralization as it is directly linked to budgetary practices (Williamson & Mulaki, 2015). It necessitates the transfer of powers to raise and retain financial resources to fulfill assigned responsibilities to local level political and administrative organizations. This entails the assignment of functions and responsibilities regarding revenue collections and spending to sub-national government institutions (Kimathi, 2017).

As a devolved function, the major health financing at the county level comes through the county government, and beyond that is provided by consumers through cost-share. In the

2014/15 budget, counties received about 25 percent of the total budget (Williamson et al., 2015). However, at the level of individual county allocation, most counties allocated less than 5% of the budget to health. The delay in funds disbursement is also experienced at the county level where allocations from the national Ministry of Finance are often delayed leading to lack of drugs (Kibui et al., 2015).

2.4.4 Devolved personnel

The delivery of public health interventions requires skilled and adequately supported health personnel. Human resources development is therefore an integral part of the health sector but has often been overlooked by stakeholders and donors (Tsofa, Goodman, Gilson, & Molyneux, 2017). Health personnel include caregivers (doctors, nurses, clinical officers, pharmacists, etc.), managerial personnel and other support staff (cleaners, medical records officers, health economists). Other than caregivers, the other personnel do not deliver any services to patients directly but are vital to health system functioning. The Kenya Health Sector Strategic & Investment Plan (2012-2018) estimates that current staff levels meet only 17% of the minimum requirements needed for effective operation of the health system (Kimathi, 2017).

There are noticeable discrepancies between the numbers of health personnel per county in Kenya. The human resource challenge becomes even more apparent when broken down by specialization (Barker, Mulaki, Mwai, & Dutta, 2014). The sector faces a critical brain drain which was exacerbated by devolution and the arising conditions at the county level. Most of the critical personnel are concentrated either in the national referral hospitals or in the counties' highest ranking level 5 hospitals, leaving the other health facilities without critical personnel; yet 68 percent of Kenyans using the public health system use these lesser facilities (Kimathi, 2017). This has generally resulted to challenges including, overworked health personnel, unrestricted availability of some medicines, lack of knowledge & skills, profit-motivated promotion of medicines and access to information about medicines from the internet (Nzinga et al., 2009).

2.5 Availability of Medicines for Non- communicable Diseases

Access to medicines is a core component of the right to health. Medicines for non-communicable diseases are used over a long period and as such are a critical component in the management of NCDs. A rights-based approach to health can promote universal access to essential medicines (Hogerzeil et al., 2013). In the 2011 UN political declaration on the prevention and control of NCDs, heads of government made several commitments related to access to essential medicines (Hogerzeil, Iyer, Urlings, Prasad, & Brewer, 2014).

Although access to medicines for NCDs has formally been part of the Millennium Development Goals (MDGs), in practice countries have not placed much consideration on it. Access to medicines to prevent and treat non-communicable diseases is unacceptably low worldwide (Abegunde, 2011). For example, the target is entirely missing from 2007, 2009, 2010, 2011, and 2012 official MDG reports (WHO, 2016).

In the Rio+20 Outcomes Document, officials committed to integrate affordable health care in their countries (International Diabetes Federation (IDF), 2013). The emphasis on this health care would be on access to treatment, prevention and support for NCDs. The state officials called for further national and international cooperation to improve distribution and access to safe, affordable, effective, and quality medicines, vaccines, and medical technologies. The UN Political Declaration on NCDs reaffirmed the right of everyone to the highest attainable standard of physical and mental health.

International law recognizes access to essential medicines as part of the right to the highest standard of health (Perehudoff, Laing, & Hogerzeil, 2010). World Health Assembly has vowed to reduce preventable NCDs deaths by 25% by the year 2025 (Hogerzeil et al., 2013). This is vital for the long-term management of non-communicable diseases.

There are significant disparities between high-income, middle-income, and low-income countries, in access to medicines for NCDs and infectious and acute diseases (Di Cesare et al., 2013). A study by Cameron, Roubos, Ewen, Mantel-teeuwisse, and Leufkens, (2011) revealed that the mean availability of essential medicines in 36 low-income and

middle-income countries was about 36% for NCDs versus 54% for acute diseases in the public sector, and 55% versus 66% (but at a much higher price) in the private sector. Another study by Yusoff, Sarjoon, Awang, and Efendi (2016) showed that the probability of patients receiving at least one medicine for secondary prevention of cardiovascular disease was 19.8% in low-income countries, 30.7% in low-income and middle-income countries, and 54.9% for upper-middle-income countries.

2.6 Empirical Review

2.6.1 Availability of drugs

In determining drug availability, a study in Latin America investigated stock-outs or episodes where there was a risk of stock-out affecting antiretroviral HIV supplies (Hogerzeil et al., 2013). Results from the study showed that most common causes for the stock-outs were delays in the bidding process (29%) or acquisition (13%), distribution problems (10%), or difficulties with drug production (9%). Response measures that were implemented included emergency purchases (46%), changing providers (15%), or changing regimens (11%). There were 89 episodes when risk-of-stock-out was imminent in the same period. Reasons included delays in delivery from the manufacturer (31%) or in acquisition (26%), forecasting problems (10%), and delays in the bidding process (10%). 51% of episodes needed emergency purchases, and in 14% of cases, loans were requested from other countries (Hogerzeil et al., 2013).

Shortages of essential drugs including vital anti-malarials or antibiotics pervade all levels of care including facilities close to urban centers (Muula, Rudatsikira, Siziya and Mataya 2007). This finding excluded anti-retroviral drugs, which followed, up until this study, a different and independent mode of procurement and delivery. The reasons for inadequacies in drug procurement, storage and delivery were manifold. Documented deficiencies were in the form of finances, physical infrastructure (warehousing), staffing and drug quantification (Muula et al., 2007).

Emerging governance aspects were identified in a study that explored the experiences of a district health management team in implementing Emergency Obstetric Care (EmOC) related policies (Mkoka, Kiwara, Goicolea, & Hurtig, 2014). The study employed the use

of a qualitative approach in which they obtained the data from thirteen individual interviews and one focus group discussion. Use of documentary reviews and observation were used to supplement the data. The achievements cited include increased institutional delivery, increased number of ambulances, training service providers in EmOC and building a new health centre that provides comprehensive EmOC. However, the findings also revealed that challenges experienced during implementation were associated with governance issues; they included delays in disbursement of funds from the central government, shortage of health workers, unclear mechanisms for accountability, lack of incentives to motivate overworked staff and lack of partnership for development (Mkoka, Kiwara, Goicolea, & Hurtig, 2014).

2.6.2 Effect of devolution

A major challenge in the supply chain management for devolved units is the embedment of procurement process in central government structures (Kutzin, Cashin, and Jakab 2010). This means that there is high dependence on direct funding from the Ministry of Finance and inadequate means of responsibility to perform duties independent of central government. Devolution of purchasing power to counties is providing more discretion to districts (Vaillancourt, 2009). Depending on central governments will remain unsuccessful until the procurement process has the means to manage drugs adequately at the devolved level, including quantification of need and keeping an adequate buffer stock. Many donors have therefore called for a change in procurement process into a (semi-) independent trust. Discussions regarding institutional changes are underway, with concerns about the long processes and whether they will ever be free from political interference (Tsofa et al., 2017).

The involvement of the majority of the staff in decision making makes health devolution workable (Kping, 2013). In Thailand, it was a requirement that at least half of the health centers' staff devolved were willing to transfer to Lead Amateur Operation (LAO) employment. LAO became responsible for primary health service delivery through health centers. The planning made it mandatory for day-to-day operational responsibility of the LAO, including financial and human resource management, The Ministry of Health continued to be responsible for technical policy, supervision, training and regulation of

health professionals. This staff involvement ensured a buy in which made the transition smooth.

Improvement in health services after devolution is not automatic as indicated with many health status indicators either stagnating or worsening (Bashaasha, Mangheni, & Nkonya, 2011). According to (Frumence, Nyamhanga, Mwangi and Hurtig, 2013) challenges experienced by health departments during the implementation of health sector decentralization in Tanzania included inadequate capacity to carry out supportive supervision at the health facilities and community levels. Others were challenges in monitoring and controlling the quality of health service delivery in the whole council. There was also lack of capacity in terms of transport, that is, insufficient and poor maintenance of vehicles (Frumence, Nyamhanga, Mwangi, and Hurtig 2013).

In general, decentralization of health services does not result in greater participation of the ordinary people and accountability of service providers to the community. Lack of community participation, inadequate financial and human resources, a narrow local tax base, a weak civil society, underscores the need to ameliorate them if devolution was to attain the anticipated results (Bashaasha et al., 2011). This cautions against the tendency to romanticize devolution as the newfound solution for past and current institutional and socio-economic distortions. Devolution itself can make state institutions more responsive to the needs of the communities, but only if it allows local people to hold public servants accountable and ensures their participation in the development process.

Decentralization has been a stated policy objective for Kenya since 1994 (Kibui et al., 2015). However, the allocation of health sector financial resources remains highly centralized and opaque, relying primarily on previous years' budget allocations rather than on health needs indicators. Equitable or fair resource allocation is achieved by considering variation in needs across geographic and economic groups. The Health policy initiative's research revealed that the allocation of health sector funds in Kenya has not accounted for differences in health achievement, access, and provision costs across the regions, provinces, and districts (Kibui et al., 2015).

A report by Kiambati, Kiio, & Toweett (2013) revealed that Kenya faces a crisis in human resource for health. The study highlights some of the major causes of the crisis as high staff turnover, inadequate and inequitable distribution of health workers, poor planning and management of the health staff; insufficient information systems, less satisfactory working conditions to attract and retain health practitioners. The report has considerably dealt with the general aspects of human resource for health but has not specifically looked at the effects of devolution on human resource capacity in the area of study. The scenario after devolution is different, and county governments now face the responsibility of recruiting and retaining the best staff (Kiambati et al., 2013).

2.7 Research Gaps

Most of the studies conducted have concentrated on other diseases such as HIV/AIDS (Hogerzeil et al., 2013), malaria (Muula et al., 2007). Quite a number of researches have been carried out in other developing countries such as Latin America (Hogerzeil et al., 2013), Malawi (Muula et al., 2007), Tanzania (Frumence, Nyamhanga, Mwangu, and Hurtig 2013) and Uganda (Bashaasha et al., 2011). Studies done in Kenya have not touched on availability of medicines for non-communicable diseases. This study aimed at filling the gaps by conducting a study on effect of devolution of health services on availability of medicines for non-communicable diseases in Makueni County Referral Hospital.

2.8 Conceptual framework

The conceptual framework is displayed in Figure 2.1. The potential factors that affect availability of medicines include devolved procurement, devolved governance, devolved personnel and devolved financing. These all affect the availability of medicines for NCDs.

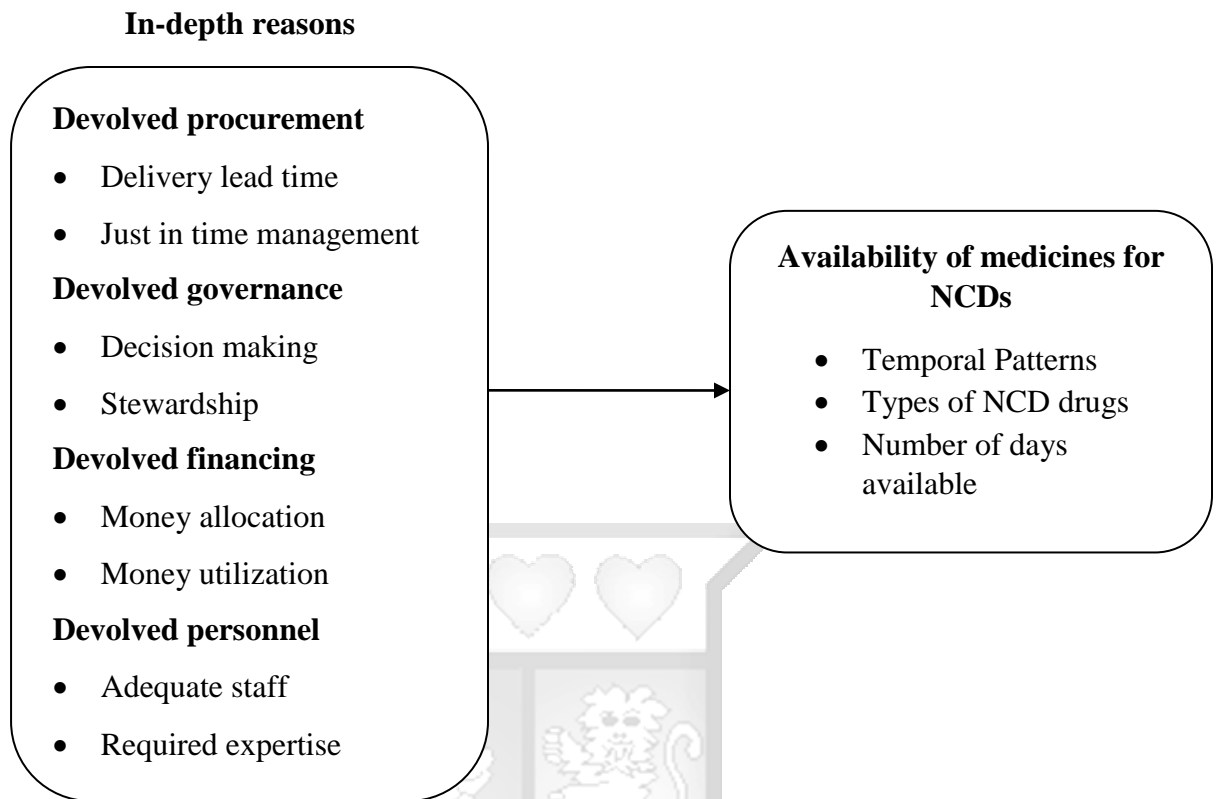


Figure 2.1: Conceptual Framework

2.9 Summary

The first section in this chapter covers the theoretical review by presenting sequential theory of decentralization. The second section is on devolution factors influencing the availability of medicines for NCDs. The following factors are discussed; devolved procurement, devolved governance, devolved financing and devolved personnel. An empirical review forms the third section in the chapter. In this section previous studies related to the study topic are presented. Research gaps are further proposed. Lastly within the chapter is the conceptual framework that diagrammatically shows the relationships between the variables.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research methodology detailing research design, study population and sampling, data collection methods and data analysis. The chapter also covers the ethical issues in research.

3.2 Research Design

The study used a descriptive cross-sectional approach. Records review using an observational checklist was done to assess availability and stock-outs over a period of four years(2011 & 2012 and 2017 & 2018, being two years pre and two years' post-devolution).The quantitative records review data was complemented by qualitative in-depth interview data aimed at understanding the reasons behind the temporal patterns in availability/stock-outs. Questionnaires were also used to collect data on the third question which sought to establish the perception of staff on the availability of medicines for NCDs.

3.3 Population and Sampling

3.3.1 Study Population

The study was conducted at the Makueni County Referral Hospital. The target population for the interviews was hospital staff involved in management and supply chain matters. Respondents included the pharmacists, pharmaceutical technologists, medical officers, clinical officers, procurement officers, health administrative officers, accountants and medical superintendent.

Table 3.1: Target Population

Category	Population
Health administrators officers	1
Procurement Officers	3
Pharmacists	3
Pharmaceutical technologists	9
Clinical officers	16
Medical officers	7
Accountants	1
Medical superintendent	1
Total	41

3.3.2 Sampling

The staffs were sampled through census sampling. Census sampling was applied due to the small number of target population. The sample size was therefore 41 respondents comprising of health administrative officers (1), procurement officers (3), pharmacists (3), pharmaceutical technologists (9), clinical officers (16), medical officers (7), accountant (1) and medical superintendent (1).

3.3.3 Selecting medicines

In selecting the drugs, nine essential drugs for NCDs were selected and categorized according to the type of ailments (three medicines per disease category). This is based on the broad classification of NCDs, which included cardiovascular diseases, respiratory diseases and diabetes (three most used products per disease category). The diseases covered and products selected were hypertension representing cardiovascular diseases (nifedipine, enalapril, and hydrochlorothiazide); diabetes (metformin, glibenclamide and insulin) and asthma representing chronic respiratory diseases (salbutamol inhaler, salbutamol nebulising solution and budesonide inhaler).

Table 3.2: Selected Medicines for NCDs

NCD Category	Disease	Selected medicines
Cardiovascular Diseases	Hypertension	Nifedipine, Enalapril, Hydrochlorthiazide
Diabetes	Diabetes	Metformin, Glibenclamide, Insulin
Chronic Respiratory Diseases	Asthma	Salbutamol inhaler, Salbutamol nebulizing solution, Budesonide inhaler

Control drugs were also introduced to check whether the effect of devolution of health services on availability of medicines is only specific to NCD medicines or also affect other medicines. Two classes of medicines were used for this, as shown below;

Table 3.3: Selected medicines for control

Disease	Selected medicines
Bacterial infections	Amoxicillin capsules, Ceftriaxone 1g
Pain	Paracetamol tablets, Ibuprofen tablets

The concept of Essential Medicines List was advanced by WHO as a list that contains medicines that are most effective and safe to meet the most important needs in a health system which includes treating the most common ailments. The list is frequently used by countries to help develop their own local list of essential medicines.

The Kenya Essential Medicines List (KEML), 2016, has informed the selection of the sampled medicines. KEMSA also uses the KEML to formulate a Kenya Essential Medicines Supplies List, KEMSL. The KEMSL then informs the stocks held at KEMSA warehouses, which then dictates what is available for procuring by the counties. The selection of the nine drugs was informed by this list.

3.4 Data Collection Methods

Data was collected using both primary and secondary data methods. Primary data is a method of collecting data directly from the source. Secondary data involves gathering data from already documented materials such as books, newspapers, magazines among others. Primary data in this study was collected by use of observational checklist, questionnaire and key informant interviews. Secondary data was from documents and records retrieval.

3.4.1 Observational Checklist

The checklist gathered information on availability of medicines for NCDs to answer the first question on temporal patterns of availability of medicines for NCDs pre and post-devolution. To determine the availability of drugs for NCDs the study was based on a modified service availability and readiness assessment (SARA) (WHO, 2014b). SARA surveys are done to measure a set of indicators which can show the quality and quantity of health system aspects. The modification done was that only one indicator was examined in the study namely availability of sampled medicines for NCDs and that the study does not include a readiness assessment. The researcher showed the availability of each medicine by indicating a yes or a no in each of the given years. The checklist further showed the number of days that the respective hospitals experienced stock-outs (Appendix II).

3.4.2 Questionnaire

Questionnaires were used to collect data on the third question which sought to establish the perception of staff on the availability of medicines for NCDs. The questionnaires targeted pharmacists, pharmaceutical technologists, medical officers, clinical officers, procurement officers, health administrative officers, accountants and medical superintendent.

The questionnaire was divided into two (2) sections. Section A required the respondents to indicate their personal information such as age, gender, occupation and duration they had been in their respective organization. Section B had question related to the study

objectives under the study independent variables. Quantitative data was collected by use of likert form questions with a scale of 1-5 (Appendix IV)

3.4.3 Documents and Records Retrieval

Past documents also helped answer the third research question on; how do staffs perceive the influence of devolved health functions on availability of medicines for NCDs? Documents and records used in the study included journals, hospital magazines, newspapers articles and AGM reports and newsletters.

3.4.4 Key Informant Interviews (KIIs)

Key informant interview were used to answer the second research question on; what are the reasons underlying the observed availability patterns of NCD medicines pre and post-devolution? The respondents were interviewed in order to have in-depth information on devolution and availability of drugs for NCDs. The KII targeted the hospital administrator, senior pharmaceutical staff and the medical superintendent at Makueni County Referral Hospital (Appendix V).

3.5 Data Analysis

Quantitative data analysis techniques were used for the availability of medicines data. Qualitative data from KIIs was organized as per arising themes and used to explain the trends.

3.5.1 Quantitative Data Analysis

Data from the observational checklist and questionnaires were analyzed using data analysis software. Descriptive statistics was generated to give an overview of availability of medicines for NCDs. Mean, median and standard deviations were calculated.

3.5.2 Qualitative Data Analysis

Qualitative data was analyzed using content analysis. It is a method used to examine artifacts of social communication. Responses from interviews were categorized as per arising themes based on the study objective. The outstanding theme was noted and explanation done. Some of the response was also directly quoted when doing analysis.

3.6 Research Quality

The study tested both validity and reliability of the research instruments. An instrument is considered valid if it measures what it was originally meant to measure. The supervisor helped improve the questionnaires by suggesting areas that needed to be improved. Reliability was measured by split half method where a sample of 5 respondents took part in the pilot study. The reliability of the study was found to be 0.86. since the value exceeded 0.7 as recommended by Cronbach, the researcher went ahead and undertook the actual data collection practice.

3.7 Ethical Considerations

Ethical approval was sought from the Strathmore University Institutional Review Board and National Commission for Science, Technology and Innovation to collect data. Ethical approval was also sought from the management of Makeni County Referral Hospital. Consent was also sought from the respondents using a participant's information sheet and consent form. No patient information was reviewed or reported during the study. Any identifiable data that may have been reported was removed before data analysis. All data forms were stored securely in a lockable cabinet accessible to the researcher only. The soft copies of the data were stored in a password-protected computer only accessible to the researcher.

CHAPTER FOUR

PRESENTATION OF RESEARCH FINDINGS

4.1 Introduction

The study aimed at finding out the effect of devolution of health services on availability of medicines for non-communicable diseases. To achieve this various objectives guided the study. They were as follows; to examine the temporal patterns in the availability of medicines for NCDs before and after devolution, to explore in-depth reasons underlying the observed availability patterns of NCD medicines pre and post-devolution and to establish the perception of staff on devolved health functions that influence availability of medicines for NCDs. The study used various means of collecting data such as data retrieval, questionnaires and key informant interview. In this chapter data is analyzed as per the study objectives.

4.2 Response rate

Instrument such as questionnaires were distributed amongst staff in Makueni County Referral Hospital. The sample size was 41 respondents. However a total of 38 respondents duly filled their questionnaires making a response rate of 92.7%. The response rate was considered effective for data analysis as Kothari (2012) recommends for a response rate of over 70%.

4.3 Background information

The respondents were required to indicate key information about them to help understand their responses. Such background data included gender, age category, duration in the organization and occupation.

4.3.1 Gender of the respondents

The respondents were asked to indicate their respective gender. Their response is summarized in Table 4.4

Table 4.4: Gender of the respondents

Gender	Frequency	Percent
Male	17	44.7
Female	21	55.3
Total	38	100.0

A total of 55.3% each of the respondents were female while 44.7% male. This shows that employees from both gender participated in answering the questions. This is to imply therefore that the data was not biased.

4.3.2 Age bracket of the respondents

The respondents were asked to indicate their age bracket. They responded as shown in Table 4.5.

Table 4.5: Age bracket

Age bracket	Frequency	Percent
18-28yrs	7	18.4
29-39yrs	19	50.0
40-50yrs	10	26.3
50>yrs	2	5.3
Total	38	100.0

Table 4.5 shows that the majority of the respondents (50%) were aged between 29-39 years, 26.3% between 40-50 years and 18.4% between 18-28 years. The remaining 5.3% were over 50 years. Majority of the respondents were therefore between 29-39 years.

4.3.3 Duration in the organization

The study required the respondents to indicate how long they have been in the organization (Makueni County Referral Hospital). Their response is as shown in Table 4.5.

Table 4.6: Duration in the organization

Duration	Frequency	Percent
Less than 1 year	6	15.8
1-5 yrs	9	23.7
6-10 yrs	12	31.6
11-20 yrs	7	18.4
21 > yrs	4	10.5
Total	38	100.0

Results show that many respondents (31.6%) were between 6-10 years, 23.7% between 1-5 years and 18.4% between 11-20 years. A total of 15.8% had been in the organization for less than 1 year and the remaining 10.5% for over 21 years. Majority of the respondents were in Makueni County Referral Hospital for between 6-10 years.

4.3.4 Occupation of the respondents

The respondents were to indicate their respective occupation at Makueni County Referral Hospital. Their answers are summarized in Figure 4.2.

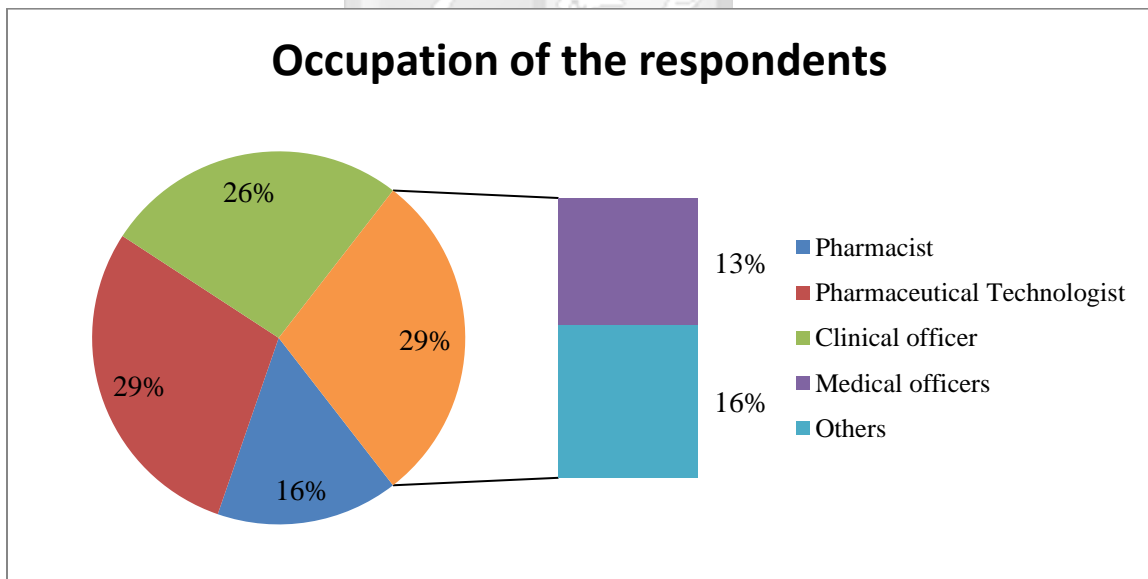


Figure 4.2: Occupation of the respondents

As shown in Figure 4.2, a total of 28.9% of the respondents were pharmaceutical technologist, 26.3% were clinical officer, 15.8% were pharmacists and 13.2% were medical officers. The others were 15.8% and included procurement officers, health administrative officers and accountants. A high number of the respondents were pharmaceutical technologists and clinical officers.

4.4 Availability of medicines for NCDs

As per the first objective, the study aimed at examining the temporal patterns in the availability of medicines for NCDs before and after devolution. Data was collected by use of observational checklist. The patterns are as shown in Figure 4.3.

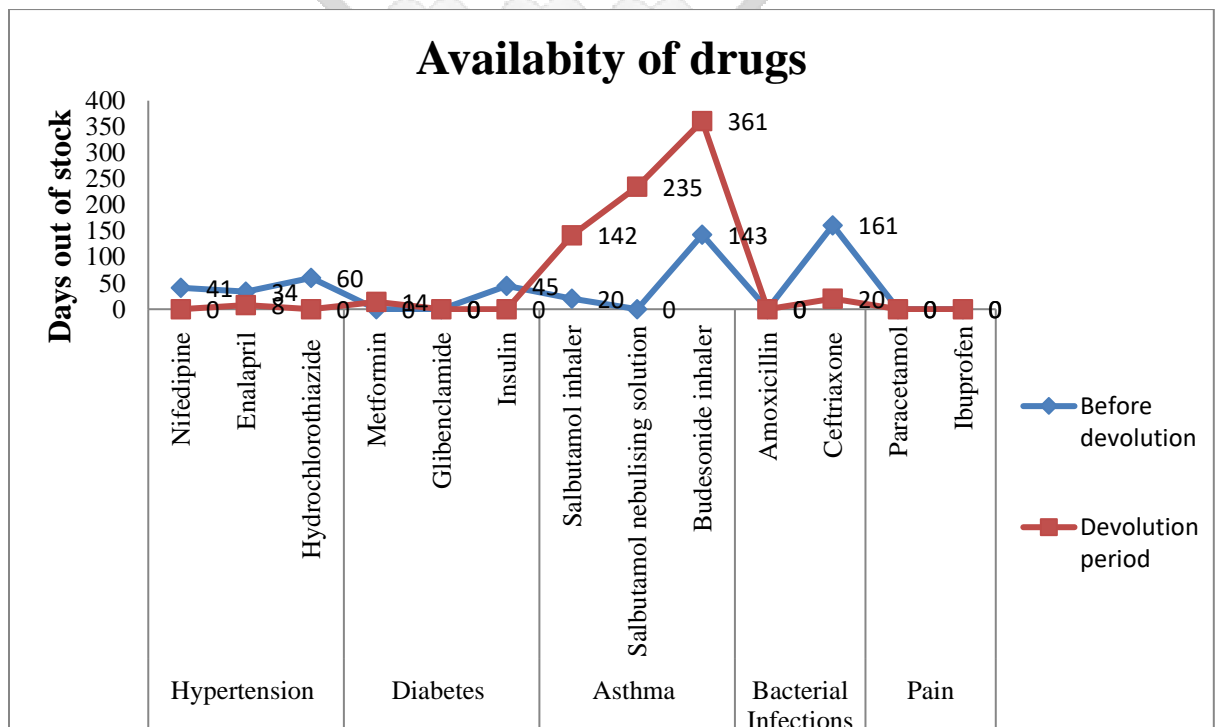


Figure 4.3: Availability of drugs

As shown in Figure 4.3, availability of drugs for NCDs varied significantly in the two periods (before devolution and during devolution). The stock outs for nifedipine, enalapril and hydrochlorothiazide was 41, 34 and 60 days respectively in the pre-devolution period. This changed to zero days for nifedipine and hydrochlorothiazide and

8 days for enalapril. The availability of hypertension drugs during pre-devolution period shows a higher number of stock outs compared to post-devolution period.

The stock outs for metformin, glibenclamide and insulin were zero days for the first two and 45 days for the latter. In the devolution period the number changed to 14 days for metformin and zero days each for glibenclamide and insulin. From the pattern we can see that the stock out days decreases in the post-devolution period.

Asthma drugs were represented by salbutamol inhaler, salbutamol nebulising solution and budesonide inhaler. The stock outs during pre-devolution period were 20 days, zero days and 143 days respectively. In the post-devolution period the stock-outs changed to 142, 235 and 361 days for salbutamol inhaler, salbutamol nebulising solution and budesonide inhaler. The pattern shows an increase in the numbers of days the drugs were out of stock.

The control drugs are represented by amoxicillin and ceftriaxone for bacterial infections and paracetamol and ibuprofen for pain diseases. The pattern shows that the three drugs amoxicillin, paracetamol and ibuprofen remained at zero stock-out for the two periods. However, ceftriaxone which had 161 days out of stock in the pre-devolution era, reduced to 20 days out stock in the post-devolution period. This is to show that the control drugs had been favoured by devolution as stock out days were significantly lower.

4.5 Reasons underlying the observed availability patterns

As per the second objective, the study explored in-depth reasons underlying the observed availability patterns of NCD medicines pre and post-devolution.

4.5.1 More funding

The respondents indicated that there had been more funding as a result of devolution. This has played a big role in the management of drugs especially drugs for NCDs. One respondent, a pharmaceutical staff said

“Financing has ensured that hospital has enough medicines meeting patients’ needs hence improved service delivery”.

A hospital manager was of a different opinion as he suggested that

“There has been an improvement in financing but it is still not enough since at least 15% of allocation for drugs should go to NCDs”

The continuing stock outs of medicines for NCDs such as hypertension (enalapril) and diabetes (metformin) could be attributed to factors such as rise in the number of patients, staff challenges and money delay. On the issue of patients a hospital manager indicated that

“More people are seeking health service as compared to before devolution which has led to straining of the available resources hence need for increasing the allocation”.

Another hospital manager said that

“Patient numbers are on the rise and resources are not enough”.

According to a county manager in the department of health, allocation for all the drugs/commodities was around 400 million per financial year. He went on to state that there was no specific allocation for medicines for NCDs. However, according to hospital manager approximated the amount for drugs for NCDs to be .6 million per year saying it was 6% of the total allocation of medicines. Another respondent stated that allocation of medicines for NCDs was dependent on the utilization of the medicines of the hospitals. Comparing the two periods, a pharmaceutical staff was of the opinion that most of the drugs were readily available at affordable prices and good quality as compared pre-devolution when the patients had to buy the medicines privately at higher costs.

4.5.2 Better structured quarterly orders

Another reason for the decrease in stock-outs was attributed to better structured quarterly orders by the hospitals. In the devolved procurement plan, pharmacists really assisted in having the medicines due to quarterly orders being done on time. In the pre-devolution period, distribution of medicines was mainly done on a yearly basis by KEMSA. The respondents went ahead to indicate that the quarterly supplies that the hospitals receive were adequate. A hospital manager indicated that in the financial year 2018/2019 the

county has had to rely on supplementary budgets. This according to him may have affected provision of some drugs in Makueni County Referral Hospital.

The respondents indicated that the county budgets helped ease the burden from KEMSA as they ordered what was needed. Budgets are also individualized by the hospitals. One pharmaceutical staff said that with the new budget, more funds had been availed for procurement of medicines for NCDs.

“The budgets have helped cut the costs of unneeded drugs and cater for the drugs which are in high demand” said a pharmaceutical staff.

Makueni County being a hot region does not report high cases of asthma and therefore the medicines are not needed in Makueni County Referral Hospital. This could help explain why the stock-outs for asthma had increased in the post devolution period.

4.5.3 Better collaboration across key stakeholders

Under devolution, the county governments have had assistance from different organizations which was not possible in the pre-devolution period. One respondent indicated that post-devolution the hospital was able to make direct procurement. Hospitals also had more procurement officers to assist in procurement of drugs.

Another reason for availability of medicines for NCDs was attributed to presence of universal health care. One hospital manager said that

“Most medicines for NCDs are available using the FIF funds and Makueni Care (UHC) funds”.

The respondents also reported that in the devolution period procurement process was more transparent. This as a hospital manager indicated helped lessen order time and the lead time.

4.5.4 Better Public participation

Findings showed that public participation which is emphasized under devolved government influenced availability of drugs for NCDs. Community strategy was also said to have assisted in sensitizations of the NCDs. A hospital manger said

“A lot of health issues are community focused under devolution. Locals in the community have a say under devolution which sometimes affects the management of hospitals as politics in the community can interfere”.

Another county manager said that

“Counties are community oriented and understand the needs of the people. NCDs are a burden in the communities and with such an understanding the county procures the medicines for NCDs”.

The devolved governance in Makueni County was seen as a facilitator of better decision making. According to one respondent better management influenced rational use of the available medicines hence availability of medicines for NCDs. According to a hospital manager

“Health is devolved and therefore all aspects of health are under the devolved government including availability of medicines for NCDs”

4.5.5 Increase in number of staff

One notable change of devolved personnel was increase in the number of employees working in counties. Transfers were also said to have increased. One pharmaceutical staff said

“During the early years of devolution due to uncertainty there were a lot of transfers since employees wanted to work in their home counties. At the moment the attrition rate has reduced and more people are seeking to work in the counties”

Training plays a great role in ensuring that the staff understand and get to know how to undertake their responsibilities. According to the respondents, with devolution, staffs are trained on how to manage drugs. One pharmaceutical staff said

“Staffs are better trained on selection and quantification of medicines for NCDs”.

Another pharmaceutical staff added that

“Better management and rational use of the available medicines”.

A hospital manager noted that

“Drugs are quantified and managed by the pharmacy staff. More staff equals better management and eventually availability of drugs”.

On the subject of staff challenges it was noted that the county employed on need basis. Their employment was however marred by tribalism as the county opted for the Kambas. One pharmaceutical staff also noted that

“Money is not availed in good time and therefore affecting availability of medicines for NCDs”

4.6 Perception of staff on availability of medicines for NCDs

Following the third objective, the study aimed at establishing the perception of staff on devolved health functions that influence availability of medicines for NCDs. Data from the respondents was collected by the use of a questionnaire. The questionnaire was subdivided into four parts; devolved procurement, devolved governance, devolved financing and devolved personnel.

4.6.1 Devolved Procurement

The respondents were asked to indicate their level of agreement on the following indicators of devolved procurement as influencers of availability of drugs for non-communicable diseases. Their response is summarized in Table 4.7.

Table 4.7: Devolved Procurement

Devolved procurement	Mean	Std. Dev
The hospital has a procurement plan in place.	4.05	1.161
Goals in the procurement plan are well aligned with the hospital vision and mission.	3.71	1.183
The hospital top management supports the implementation of the strategic procurement plan.	4.11	.727

The strategies and tactics are based on the hospital strengths and opportunities available.	3.89	.831
The hospital has put in place a precise measurement to help assess the progress of procurement performance.	3.55	1.032

The respondents agreed that the hospital top management supported the implementation of the strategic procurement plan (mean=4.11, SD=0.727). They agreed that the hospital had a procurement plan in place (mean=4.05, SD=1.161) and that the strategies and tactics are based on the hospital strengths and opportunities available (mean=3.89, SD=0.831). They further agreed that goals in the procurement plan were well aligned with the hospital vision and mission (mean=3.71, 1 SD=0.183) and the hospital had put in place a precise measurement to help assess the progress of procurement performance (mean=3.55, SD=1.032).

4.6.2 Devolved Governance

The respondents were asked to indicate their level of agreement on the following indicators of devolved governance as influencers of availability of drugs for non-communicable diseases. They responded as indicated in Table 4.8.

Table 4.8: Devolved governance

Devolved governance	Mean	Std. Dev
The new management under devolution has enabled quicker decision making by the hospital	3.95	1.161
There is public accessibility to management under devolution in organization	3.71	.768
Our supervisor has provided us with powers to do what we are able to do and report back on our progress	3.61	1.152
We are required to wait on our manager to decide every step and move that we make	2.61	1.264
All of us are responsible of our work place	3.97	1.026

Table 4.8 shows that the respondents agreed that all of them were responsible of their work place (mean=3.97, SD=1.026), the new management under devolution had enabled quicker decision making by the hospital (mean=3.95, SD=1.161) and there was public accessibility to management under devolution in organization (mean=3.71, SD=0.768). They agreed that their supervisor had provided them with powers to do what they were able to do and report back on their progress (mean=3.61, SD=1.152). They were undecided whether they were required to wait on their manager to decide every step and move that we make (mean=2.61, SD=1.264).

4.6.3 Devolved financing

The respondents were asked to indicate their level of agreement on the following indicators of devolved financing as influencers of availability of drugs for non-communicable diseases. They responded as shown in Table 4.9.

Table 4.9: Devolved Financing

Devolved financing	Mean	Std. Dev
Devolution of finances has enhanced allocation of adequate resources for acquisition of essential medicine for non-communicable diseases	3.47	1.179
The hospital is able to source funds from nongovernmental organizations and other donors	2.842	1.2198
The finances received have enhanced easier access of medicines for non-communicable diseases	3.63	.786
With finances, the administration is able to plan on time the drugs that needs replenishing	3.68	1.141

As shown in Table 4.9, the respondents agreed that with finances, the administration was able to plan on time the drugs that needed replenishing (mean=3.68, SD=1.141) and that the finances received had enhanced easier access of medicines for non-communicable diseases (mean=3.63, SD=0.786). They were undecided whether devolution of finances

had enhanced allocation of adequate resources for acquisition of essential medicine for non-communicable diseases (mean=3.47, SD=1.179) and that the hospital was able to source funds from nongovernmental organizations and other donors (mean=2.842, SD=1.2198).

4.6.4 Devolved personnel

The respondents were asked to indicate their level of agreement on the following indicators of devolved personnel as influencers of availability of drugs for non-communicable diseases. Table 4.10 shows their responses.

Table 4.10: Devolved personnel

Devolved personnel	Mean	Std. Dev
The hospital has enough supervisors	3.89	1.085
The hospital has been able to recruit more employees	3.21	1.510
The hospital department have enough personnel to oversee good management of essential drugs	3.29	1.206
The human resource is efficient and effective in-service delivery	3.63	1.076
Employees are now more interested in the management of essential drugs for non-communicable diseases	3.55	1.005

The respondents agreed that the hospital had enough supervisors (mean=3.89, SD=1.085) and that the human resource was efficient and effective in-service delivery (mean=3.63 SD=1.076). They agreed that employees were then more interested in the management of essential drugs for non-communicable diseases (mean=3.55 SD=1.005). They were undecided whether the hospital department had enough personnel to oversee good management of essential drugs (mean=3.29 SD=1.206) and whether the hospital was able to recruit more employees (mean=3.21 SD=1.51).

CHAPTER FIVE

DISCUSSION

5.1 Introduction

This chapter presents a discussion of the study findings. The chapter is divided into three sections. Section one looks at discussion on temporal patterns in the availability of medicines for NCDs before and after devolution. Section two discusses the in-depth reasons underlying the observed availability patterns of NCD medicines in pre and post-devolution. The final section is on perception of staff on devolved health functions that influence availability of medicines for NCDs.

5.2 Availability of medicines

According to Hogerzeil et al., (2013) access to medicines is a core component of the right to health. International law identifies access to essential medicines as part of the right to the highest standard of health (Perehudoff et al., 2010). In Makueni County Referral Hospital availability of drugs for NCDs varied significantly in the two periods (before devolution and after devolution). The aim of devolution in Kenya was to ensure equitable resources to all Kenyans and more so to ones in interior areas who have been forsaken for long (Thuku, 2014a). Nifedipine, enalapril and hydrochlorothiazide were mostly unavailable in the pre-devolution period. However, during the post-devolution period nifedipine and hydrochlorothiazide were available throughout the year while enalapril had few missing days. Hypertension drugs were therefore more available post-devolution as opposed to pre-devolution period. The results show an improvement to availability of medicines for non-communicable diseases in Makueni County.

Similar pattern was observed for diabetes drugs which recorded high out of stock days in pre-devolution period and few stock-out days in the post-devolution period. Metformin and glibenclamide were readily available in the pre-devolution period. Glibenclamide and Insulin were available throughout the post-devolution period under study. The pattern shifts for the chronic respiratory diseases medicines which were represented salbutamol

inhaler, salbutamol nebulising solution and budesonide inhaler that are used in the management of asthma. The stock out days for all the drugs was higher post-devolution. Pre-devolution period experienced lower stock-outs of these medicines indicating an increase in unavailability of medicines for asthma management. Unavailability of asthma drugs in Makueni County Referral Hospital can be seen as an improvement in management of drugs during the post devolution period. Since Makueni is a hot region, cases of asthmatic attacks are rarely reported (Wamuswa, 2015). The medicines are therefore not needed thus replaced with more urgent ones.

The control drugs (Amoxicillin and Ceftriaxone for bacterial infections and Paracetamol and Ibuprofen for pain management) also changed in the two periods. Amoxicillin, paracetamol and Ibuprofen were available in pre-devolution period and post-devolution. Ceftriaxone which was highly unavailable in the pre-devolution period improved its status in the post-devolution period. An overall improvement of all the medicines is noted post-devolution and though the period is also faced with several challenges ranging from managerial, procurement, financial among others (Muchomba, 2015) the availability of medicines in Makueni County Referral Hospital has increased.

5.3 Reasons for observed availability patterns

The observed availability pattern may be due to more funding as a result of devolution. According to Oplotnik & Finžgar, (2013) financial decentralization aims at increasing the revenues and fiscal autonomy of sub-national governments. The amount for medicines for NCDs is approximated to be 0.6 million per year i.e. 6% of the total allocation of medicines. Funding has played a big role in the management of commodities especially medicines for NCDs. Williamson & Mulaki, (2015) indicated that fiscal decentralization is the most traceable type of decentralization as it is directly linked to budgetary practices. Through financing hospitals get enough medicines meeting patient needs hence improved service delivery. Allocation for all the drugs/commodities is around 400 million per financial year.

The allocation of medicines for NCDs is dependent on the utilization of the medicines of the hospitals. Most of the medicines are readily available at affordable prices and good

quality compared to pre-devolution. Quarterly orders by the hospitals help decrease in stock-outs. In the pre-devolution period, distribution of medicines was mainly done on a yearly basis by KEMSA. Allocations by the ministry of finance often led to delays hence lack of medicines (Kibui et al., 2015). The quarterly supplies ensure that the hospitals received adequate drugs while county budgets help ease the burden from KEMSA as they ordered what is needed. Budgets are also individualized by the hospitals. With the new budgeting process at the counties, more funds are availed for procurement of medicines for NCDs. The budgets help cut the costs of unneeded drugs and cater for the drugs which are in high demand. Hospitals are able to identify the drugs they want and those needed in low quantity or not needed at all. This could help explain why the stock-outs for asthma had increased in the post-devolution period.

The county government collaborates with different organizations which were not considered in the pre-devolution period. Makueni government is currently working with the World Health Organization, Amref and Phillips to improve the health status in the county (Makueni CIPD, 2018). Pharmacists also play a major role in assisting with quarterly orders. During devolution the hospital also make direct procurement and has more procurement officers to assist in this. There is more transparency of procurement process in the devolution period. Another reason for availability of medicines for NCDs is attributed to presence of universal health care. Most medicines for NCDs are available using the FIF funds and Makueni care (UHC) funds. Makueni County is one of two counties that benefits from universal health care in Kenya.

Public participation also helps influence availability of drugs for NCDs in devolution period. Community strategy assists in sensitizations of the NCDs. Bashaasha et al., (2011)disagrees with the findings as he indicated that decentralization of health services does not result in greater participation of the ordinary people and accountability of service providers to the community. A lot of health issues were found to be community focused under devolution. Locals in the community have a say under devolution which sometimes affects the management of hospitals as politics in the community can interfere. Counties are community oriented and understand the needs of the people. Yusoff et al., (2016) indicates that county government and central government need to

come up with harmonious laws and regulations which they consider to be appropriate within their jurisdiction. The devolved governance in Makueni County is also seen as a facilitator of better decision making. Better management influence rational use of the available medicines hence availability of medicines for NCDs.

Tsofa, Goodman, Gilson and Molyneux (2017) argue that human resource development is an integral part of the health sector. Increase in the number of employees working in counties also influence availability of drugs for NCDs in the devolution period. Transfers also increase. During the early years of devolution due to uncertainty there were a lot of transfers since employees wanted to work in their home counties. At the moment the attrition rate has reduced and more people are seeking to work in the counties. Findings agree with (Kimathi, 2017) that critical personnel are concentrated either in the national referral hospitals or in the counties' highest ranking level 5 hospitals. Training plays a great role in ensuring that the staff understand and get to know how to undertake their responsibilities. In the devolution period, staffs are trained on how to manage drugs. Staffs are better trained on selection and quantification of medicines for NCDs. Drugs are quantified and managed by the pharmacy staff. More staff equals better management and eventually availability of drugs.

The devolution period is nonetheless marred by various challenges such as increase in number of patients, staff challenges and money delay. Since devolution more people now seek health service in Makueni County owing to its service improvement. This strains the available resources. The employment is faced by tribalism cases as the county mainly employees people hailing from the county. Money is not availed in good time and this affects availability of medicines for NCDs. This agrees with Nzinga et al., (2009) that the challenges facing public health system are overworked health personnel, unrestricted availability of some medicines, lack of knowledge & skills, profit-motivated promotion of medicines and access to information about medicines from the internet. Hogerzeil et al. (2013) attributed unavailability to delays in delivery from the manufacturer or in acquisition, forecasting problems and delays in the bidding process.

5.4 Staff perception

Mkoka et al., (2014) identified emerging governance aspects for district health management teams in implementing EmOC related policies. This study finding indicates that hospital top management supports the implementation of the strategic procurement plan. The hospital has a procurement plan in place and that the strategies and tactics are based on the hospital strengths and opportunities available. Goals in the procurement plan were well aligned with the hospital vision and mission. The hospital has put in place a precise measurement to help assess the progress of procurement performance.

The involvement of the majority of the staff in decision making makes health devolution workable (Kping, 2013). Employees were found to be responsible of their work place. The new management under devolution has enabled quicker decision making by the hospital. There is public accessibility to management under devolution in organization. Supervisor provides employees with powers to do what they are able to do and report back on their progress. Employees are not required to wait on our manager to decide every step and move that we make. The involvement of the majority of the staff in decision making makes health devolution workable (Kping, 2013).

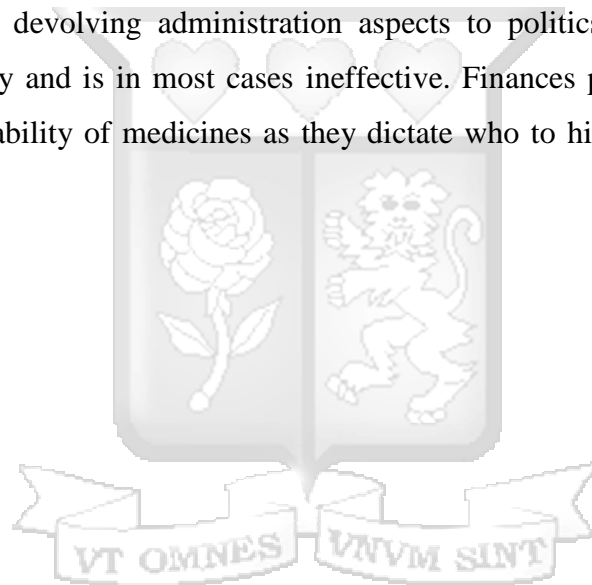
Muula et al., (2007) cites finances as a determiner of procurement and delivery of drugs. Study findings show that with finances, the administration is able to plan on time the drugs that need replenishing. The finances received have enhanced easier access of medicines for non-communicable diseases. It is unclear whether devolution of finances has enhanced allocation of adequate resources for acquisition of essential medicine for non-communicable diseases. The hospital is able to source funds from nongovernmental organizations and other donors.

According to Kiambati, Kiio, & Toweett (2013) Kenya faces a crisis in human resource for health. However, study findings indicate that Makueni County Referral Hospital had enough supervisors and that the human resource is efficient and effective in-service delivery. It is unclear whether employees are more interested in the management of essential drugs for non-communicable diseases. It is unclear whether the hospital department has enough personnel to oversee good management of essential drugs. It is

also unclear whether the hospital is able to recruit more employees. County governments face the responsibility of recruiting and retaining the best staff (Kiambati et al., 2013).

Findings indicate that employees have an overall positive perception towards availability of drugs for NCDs in the devolution period. Devolved procurement and governance was seen to have aligned well during devolution period. There were also positive reactions to devolved financing and personnel though some were of the contrary opinion. Devolved financing and personnel is seen not to be in line with the staff expectations.

It is clear from the findings that some aspects of decentralization such as financing have not fully taken place. According to sequential theory of decentralization, national politicians prefer devolving administration aspects to politics. Fiscal decentralization takes place slowly and is in most cases ineffective. Finances play a noteworthy role in influencing availability of medicines as they dictate who to hire and ways of accessing products.



CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter focuses on conclusions and recommendations of the study. The two are made based on the study's findings and discussions.

6.2 Conclusions

6.2.1 Availability of medicines

The study concludes the availability of cardiovascular and diabetes medicines were better during post-devolution period. Nifedipine, enalapril and hydrochlorothiazide were mostly unavailable in the pre-devolution period. Post-devolution, nifedipine and hydrochlorothiazide were available throughout the year while enalapril had few missing days. Cardiovascular medicines were therefore more available post-devolution. Metformin and glibenclamide were readily available in the pre-devolution period. Glibenclamide and Insulin were available throughout the post-devolution for the period under study. The study concludes that Asthma drugs are not needed in Makeni County. The study also concludes that there was availability of medicines for other diseases in the hospital. Amoxicillin, paracetamol and ibuprofen were available both pre and post-devolution. Ceftriaxone which was highly unavailable in the pre-devolution period improved its availability status post-devolution.

6.2.2 Reasons for observed availability patterns

The study concludes that one of the reasons for increase in availability of medicines for non-communicable diseases is more funding as a result of devolution. The amount for medicines for NCDs is approximated to be 0.6 million per year. Funding has played a big role in the management of drugs especially drugs for NCDs. Through financing hospital get enough medicines meeting patient needs hence improved service delivery. Allocation for all the drugs/commodities is around 400 million per financial year. Allocation of medicines for NCDs is dependent on the utilization of the medicines of the hospitals.

Most of the medicines are readily available at affordable prices and good quality compared to pre-devolution.

The study establishes structured quarterly orders as another reason for availability of drugs for NCDs. Quarterly orders by the hospitals help decrease in stock-outs. The quarterly supplies ensure that the hospitals received adequate drugs. County budgets are also another reason as they help ease the burden from KEMSA as they ordered what is needed. Budgets are also individualized by the hospitals. With the new budget, more funds are availed for procurement of medicines for NCDs. The individualized budgets help cut the costs of unneeded drugs and cater for the drugs which are in high demand.

The study concludes that collaboration with other parties as another reason for availability of NCDs medicines. The county government collaborates with different organizations which were not considered in the pre-devolution period. Pharmacists also play a major role in assisting with quarterly orders. Post-devolution, the hospital also makes direct procurement, have more procurement officers dealing with procurement and there is more transparency of procurement process. Another reason for availability of medicines for NCDs is attributed to presence of a form universal health care dubbed Makueni Care.

Public participation is also another reason for availability of drugs for NCDs post-devolution. Community strategy assists in sensitizations of the NCDs with a lot of health issues found to be community focused post-devolution. Locals in the community have a say under devolution which sometimes affects the management of hospitals as politics in the community can interfere. Counties are community oriented and understand the needs of the people. The devolved governance in Makueni County is also seen as a facilitator of better decision making and better management influences rational use of the available medicines hence availability of medicines for NCDs.

The study further establishes that another reason for availability of drugs of NCDs is increase in the number of employees working in counties. During the early years of devolution due to uncertainty there were a lot of transfers since employees wanted to work in their home counties. At the moment the attrition rate has reduced and more

people are seeking to work in the counties. Training plays a great role in ensuring that the staff understand and get to know how to undertake their responsibilities. Post- devolution, staffs are trained on how to manage drugs.

The study also concludes that devolution period is faced by various challenges that could have resulted to unavailability of some of the medicines. Increase in number of patients seeking health care services may be one of the challenges. Their employment is faced by tribalism cases as the county mainly employees people hailing from the county. Money is not availed in good time and this affects availability of medicines for NCDs.

6.3.3 Staff perception

The study concludes that that hospitals top management supports the implementation of the strategic procurement plan. The hospitals have a procurement plan in place and that the strategies and tactics are based on the hospital strengths and opportunities available. Goals in the procurement plan are well aligned with the hospital vision and mission. Hospitals have put in place a precise measurement to help assess the progress of procurement performance.

The study also concludes that employees are responsible of their work place. The new management under devolution enables quicker decision making by the hospital. There is public accessibility to management under devolution in organization. Supervisor provides employees with powers to do what they are able to do and report back on their progress. Employees are not required to wait on our manager to decide every step and move that we make.

The study establishes that with finances, the administration is able to plan on time the drugs that need replenishing. The finances received have enhanced easier access of medicines for non-communicable diseases. It is unclear whether devolution of finances has enhanced allocation of adequate resources for acquisition of essential medicine for non-communicable diseases. Hospitals are able to source funds from nongovernmental organizations and other donors.

The study finally concludes that hospitals have enough supervisors. Human resource is efficient and effective in-service delivery. Employees are partially interested in the

management of essential drugs for non-communicable diseases. The hospital departments do not have enough personnel to oversee good management of essential drugs. Hospitals are unable to recruit more employees.

6.3 Recommendations

Based on the study findings, the following recommendations are made:

- i. The county government of Makueni should ensure that budgets made on drugs procurement are reviewed from time to time. As the quarterly budgets were indicated to have helped improve availability of drugs for NCDs, an adjustment should be made. A monthly or a two month budget would significantly help.
- ii. The amount of money allocated to county government is still not enough. Since the national government is also limited on the amount it allocated the county governments, other avenues should be sought. Such sources include getting donor funds, grants or private sponsors.
- iii. Good governance should be advocated. The county government should therefore encourage public participation so as to know areas that need improvement. Public participation would also help ensure that the common good of the Kenyan citizen is upheld.
- iv. The number of health workers in county hospitals is still not enough. The central government should assist the county government by encouraging all health workers to freely work anywhere in Kenya without fear.

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APPENDICES

Appendix I: Letter of Introduction

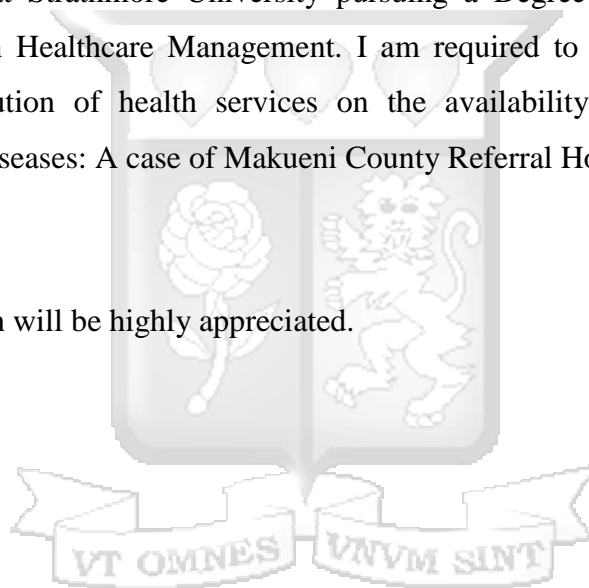
EricWanjohi

Dear Sir/Madam,

RE: REQUEST FOR YOUR PARTICIPATION

I am a student at Strathmore University pursuing a Degree of Master's in Business Administration in Healthcare Management. I am required to carry out a study on the Effect of Devolution of health services on the availability of medicines for Non-communicable Diseases: A case of Makueni County Referral Hospital.

Your participation will be highly appreciated.



Yours faithfully,

EricWanjohi

Appendix II: Availability of medicines for NCDs

Disease	Type	Before devolution (2011-2012)			Devolution period (2017-2018)				
		Availability	Days out of stock			Availability	Days out of stock		
		(Yes/No)	Y1	Y2	Total days	(Yes/No)	Y1	Y2	Total days
Hypertension	Nifedipine								
	Enalapril								
	Hydrochlorothiazide								
Diabetes	Metformin								
	Glibenclamide								
	Insulin								
Asthma	Salbutamol inhaler								
	Salbutamol nebulising solution								
	Budesonide inhaler								

Analysis plan outline

- i. What is the availability of medicines in the pre-devolution and post-devolution period?
- ii. Does availability vary significantly between medicines?
- iii. What is the difference in availability in the pre-devolution and post-devolution period?
- iv. How does average per cent % availability vary across the period?



Appendix III: Availability of other medicines

Disease	Type	Before devolution (2011-2012)			Devolution period (2017-2018)				
		Availability	Days out of stock			Availability	Days out of stock		
		(Yes/No)	Y1	Y2	Total days	(Yes/No)	Y1	Y2	Total days
Bacterial Infections	Amoxicillin								
	Ceftriaxone								
Pain	Paracetamol								
	Ibuprofen								

Analysis plan outline

- i. What is the availability of medicines in the pre-devolution and post-devolution period?
- ii. Does availability vary significantly between medicines?
- iii. What is the difference in availability in the pre-devolution and post-devolution period?
- iv. How does average per cent % availability vary across the period?

Appendix IV: Participants Information sheet and consent form

PARTICIPANT INFORMATION AND CONSENT FORM

Effect of Devolution of Health Services on Availability of Medicines for Non-Communicable Diseases: A Case study of the Makueni County Referral Hospital

SECTION 1: INFORMATION SHEET

Investigator: Eric Wanjohi

Institutional affiliation: Strathmore Business School (SBS)

SECTION 2: INFORMATION SHEET–THE STUDY

2.1: Why is this study being carried out?

This study seeks to establish the effect of devolution of health services on the availability of medicines for non-communicable diseases in Makueni County Referral Hospital, explore the county response to shortages, and suggest possible solutions for policy.

With the creation of county governments, there is a need to strengthen the management of health commodities, which requires rigorous research and analyses to understand how counties are performing. This includes understanding how post-devolution changes across factors such as governance, financing and human resource for health intersect to affect availability and usage of health commodities.

2.2: Do I have to take part?

No. Taking part in this study is entirely optional and the decision rests only with you. If you decide to take part, you will be asked to complete a questionnaire to get information on Effect of Devolution of health services on the availability of medicines for Non-

communicable Diseases: A case of Makueni County Referral Hospital. If you are not able to answer all the questions successfully the first time, you may be asked to sit through another informational session after which you may be asked to answer the questions a second time. You are free to decline to take part in the study from this study at any time without giving any reasons.

2.3: Who is eligible to take part in this study?

- Hospital administrative officer, procurement officers, pharmacists, pharmaceutical technologists, clinical officers, medical officers, accountants and the medical superintendent.

2.4: Who is not eligible to take part in this study?

- Makueni county staff not working at Makueni county referral hospital.

2.5: What will taking part in this study involve for me?

You will be approached and requested to take part in the study. If you are satisfied that you fully understand the goals behind this study, you will be asked to sign the informed consent form (this form) and then taken through a questionnaire to complete.

2.6: Are there any risks or dangers in taking part in this study?

There are no risks in taking part in this study. All the information you provide will be treated as confidential and will not be used in any way without your express permission.

2.7: Are there any benefits of taking part in this study?

The information will be used to inform policy on commodity and supply chain challenges in counties following devolution and changing of the KEMSA business model. This, in turn, will build evidence to feed into the process of formulating guidelines to help counties manage essential medicines and related commodities.

2.8: What will happen to me if I refuse to take part in this study?

Participation in this study is entirely voluntary. Even if you decide to take part at first but later change your mind, you are free to withdraw at any time without explanation.

2.9: Who will have access to my information during this research?

All research records will be stored in securely locked cabinets. That information may be transcribed into our database but this will be sufficiently encrypted and password protected. Only the people who are closely concerned with this study will have access to your information. All your information will be kept confidential.

2.10: Who can I contact in case I have further questions?

You can contact me, Eric Wanjohi, at SBS, or by e-mail erchomba@gmail.com, or by phone 0724249560. You can also contact my supervisor, Dr. Frank Wafula, at the Strathmore Business School, Nairobi, or by e-mail fwafula@strathmore.edu or by phone 0722679467

If you want to ask someone independent anything about this research please contact:

The Secretary–Strathmore University Institutional Ethics Review Board, P. O. BOX 59857, 00200, Nairobi, email ethicsreview@strathmore.edu Tel number: +254 703 034 375

I, _____, have had the study explained to me. I have understood all that I have read and have had explained to me and had my questions answered satisfactorily. I understand that I can change my mind at any stage.

Please tick the boxes that apply to you;

Participation in the research study

I AGREE to take part in this research

I DON'T AGREE to take part in this research

Storage of information on the completed questionnaire

I AGREE to have my completed questionnaire stored for future data analysis

I DON'T AGREE to have my completed questionnaire stored for future data analysis

Participant's Signature:

Date: ____/____/____

DD / MM / YEAR

Participant's Name:

Time: _____ / _____

(Please print name)

HR / MN

I, _____ (Name of person taking consent) certify that I have followed the SOP for this study and have explained the study information to the study participant named above, and that s/he has understood the nature and the purpose of the study and consents to the participation in the study. S/he has been given opportunity to ask questions which have been answered satisfactorily.

Investigator's Signature:

Date: _____ / _____ / _____

DD / MM / YEAR

Investigator's Name:

Time: _____ / _____

(Please print name)

HR / MN



Appendix V: Questionnaire

Instruction

Provide the following information by *ticking/ writing the applicable number in the blocks or space provided.*

Section A: General Information

1. Indicate your gender
Male []
Female []
2. Indicate your age bracket
18-28yrs []
29-39yrs []
40-50yrs []
50>yrs []
3. How long have you been working in your organization?
Less than 1 year []
1-5yrs []
6-10yrs []
11-20yrs []
21>yrs []
4. What is your current occupation?
Pharmacist []
Pharmaceutical Technologist []
Medical Officer []
Clinical Officer []
Others (specify).....



SECTION B: Effect of Devolution of Health Services on Availability of medicines for NCDs

Part I: Devolved Procurement

1. Indicate the extent to which you agree with the following statements on effect of devolved procurement on availability of medicines for NCD in Makueni County referral hospital. Use a scale 1-5, 1=strongly disagree, 2=disagree, 3=undecided, 4=agree, strongly agree.

Devolved Procurement	1	2	3	4	5
The hospital has a procurement plan in place.					
Goals in the procurement plan are well aligned with the hospital vision and mission.					
The hospital top management supports the implementation of the strategic procurement plan.					
The strategies and tactics are based on the hospital strengths and opportunities available.					
The hospital has put in place a precise measurement to help assess the progress of procurement performance.					

PART II: Devolved Governance

2. Indicate the extent to which you agree with the following statements on effect of devolved governance on availability of medicines for NCD in Makueni County referral hospital. Use a scale 1-5, 1=strongly disagree, 2=disagree, 3=undecided, 4=agree, strongly agree.

Devolved Governance	1	2	3	4	5
The new management under devolution has enabled quicker decision making by the hospital					
There is public accessibility to management under devolution in organization					

Our supervisor has provided us with powers to do what we are able to do and report back on our progress					
We are required to wait on our manager to decide every step and move that we make					
All of us are responsible of our work place					

Part III: Devolved Financing

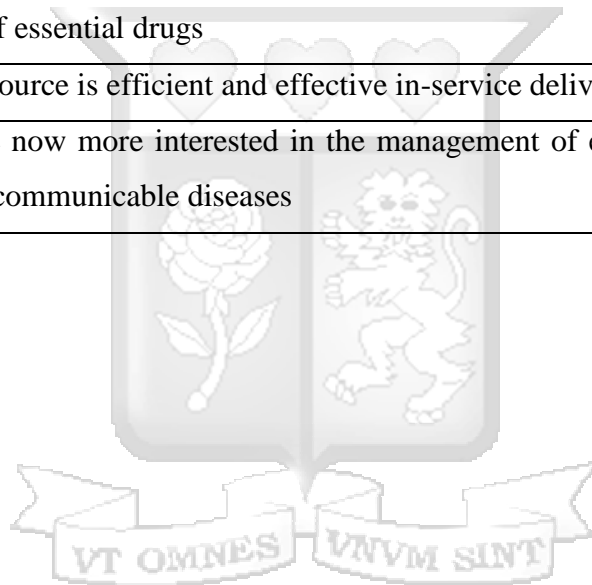
3. Kindly indicate the extent to which you agree with the following statements on effect of devolved financing on availability of medicines for NCD in MakueniCounty referral hospital. Use a scale 1-5, 1=strongly disagree, 2=disagree, 3=undecided, 4=agree, strongly agree.

Devolved Financing	1	2	3	4	5
Devolution of finances has enhanced allocation of adequate resources for acquisition of essential medicine for non-communicable diseases					
The hospital is able to source funds from nongovernmental organizations and other donors					
The finances received have enhanced easier access of medicines for non-communicable diseases					
With finances, the administration is able to plan on time the drugs that needs replenishing					

PART IV: Devolved Personnel

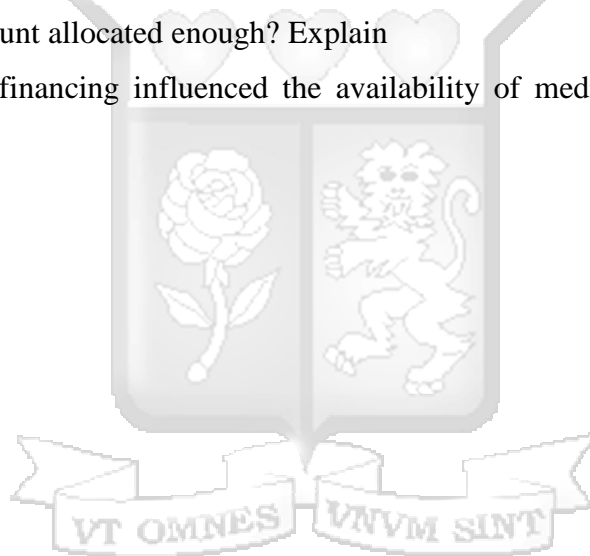
4. To what extent do you agree with the following statements on effect of devolved personnel on availability of medicines for NCD in Makueni County referral hospital? Use a scale 1-5, 1=strongly disagree, 2=disagree, 3=undecided, 4=agree, strongly agree.

Devolved Personnel	1	2	3	4	5
The hospital has enough supervisors					
The hospital has been able to recruit more employees					
The hospital department have enough personnel to oversee good management of essential drugs					
The human resource is efficient and effective in-service delivery					
Employees are now more interested in the management of essential drugs for non-communicable diseases					



Appendix VI: Key Informant Interview

1. How has the management of your hospitals been affected by devolution?
2. How has the change in management affected the availability of medicines for non-communicable diseases?
3. Explain the migration of employees to and from the hospital after devolution
4. In which ways have human resource contributed to the availability of medicines for non-communicable diseases?
5. How is the procurement of drugs under the devolved government?
6. Would you attribute the availability of medicines for NCD to devolution? Explain
7. How much money is allocated to medicines for NCD?
8. Is the amount allocated enough? Explain
9. How has financing influenced the availability of medicines for NCDs in your hospital?



Appendix VII: Strathmore University Ethical Review Board Approval



1st April 2019

DR. ERIC CHOMBA WANJOHI
PO Box 60083 – 00200,
Nairobi.
erchomba@gmail.com

Dear Dr. Eric,

REF Protocol ID: SU-IERC0368/19 Student Number: 87967

Effect of Devolution of Health Services on Availability of Medicines for Non-Communicable Diseases: A Case of Makeni County Referral Hospital

We acknowledge receipt of your application documents to the Strathmore University Institutional Ethics Review Committee (SU-IERC) which includes:

1. Study Protocol submitted 25 March 2019
2. Cover letter listing all submitted documents 25 March 2019
3. Proposal declaration page signed by supervisors 25 March 2019

The committee has reviewed your application, and your study "Effect of Devolution of Health Services on Availability of Medicines for Non-Communicable Diseases: A Case of Makeni County Referral Hospital." has been granted approval.

This approval is valid for one year beginning **1st April 2019** until **1st April 2020**

In case the study extends beyond one year, you are required to seek an extension of the Ethics approval prior to its expiry. You are required to submit any proposed changes to this proposal to SU-IERC for review and approval prior to implementation of any change.

SU-IERC should be notified when your study is completed.

Thank you.

Sincerely,

Prof. Florence Oloo
Secretary



Strathmore University Institutional Ethics Review Committee



Appendix VIII: NACOSTI Approval

THIS IS TO CERTIFY THAT: **Permit No. : NACOSTI/P/19/59101/29362**
DR. ERIC CHOMBA WANJOHI **Date Of Issue : 6th May,2019**
of STRATHMORE UNIVERSITY, **Fee Received :Ksh 1000**
60083-200 Nairobi, has been permitted
to conduct research in Makueni County

on the topic: EFFECT OF DEVOLUTION
OF HEALTH SERVICES ON AVAILABILITY
OF MEDICINES FOR
NON-COMMUNICABLE DISEASES: A CASE
OF MAKUENI COUNTY REFERRAL
HOSPITAL
for the period ending:
3rd May,2020



Applicant's Signature **Director General**
National Commission for Science, Technology & Innovation

Appendix IX: Makueni County Referral Hospital Approval

REPUBLIC OF KENYA

GOVERNMENT OF MAKUENI COUNTY



DEPARTMENT OF HEALTH
THE MEDICAL SUPERINTENDENT
MAKUENI COUNTY REFERRAL HOSPITAL
P.O. BOX 95-90300 MAKUENI



Telephone 044 - 33175/55
Mobile - 0773979457

Email.makuhosp@gmail.com
Email.makuhosp@yahoo.com

REF: MED/MKN/C37/51

6TH MAY, 2019

DR. ERIC CHOMBA WANJOHI
P.O BOX 60083 – 00200
NAIROBI

Dear Sir


RE: MAKUENI COUNTY REFERRAL HOSPITAL STUDY APPROVAL
- DR. ERIC CHOMBA

We are in receipt of your request to conduct a study "*Effects of Devolution of Health Services on Availability of medicines for NCDs: A case study of Makueni County Referral Hospital*" at the hospital.

After review, the management has granted approval for your study at Makueni County Referral Hospital. This approval is limited to the objectives of the study and should be applied within the ethical guidelines of scientific research.

Should you require further assistance to carry out the study kindly liaise with the office of the medical superintendent located at the hospital administration block.

Regards,


Mr. Bernard Momenyi,
Health Administrative Officer
Makueni County Referral Hospital

