

**RESOURCE TRACKING ON A HEALTH VOUCHER PROGRAM IN KENYA: A
NEED-BASED RESOURCE ALLOCATION PERSPECTIVE**

BY

SHADRACK W. GIKONYO

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DECLARATION

This project is my original work and has never been presented for a degree in any other university.

Signature:..... Date:.....

Shadrack W. Gikonyo

X53/73328/2014

This project has been submitted for examination with my approval as the University Supervisor.

Signature:..... Date.....

Dr. Moses Muriithi,

Senior Lecturer,

School of Economics

DEDICATION

I wish to dedicate this work to my daughter Nicole Wanjiku for her love and inspiration as

I undertook this work.

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TABLE OF CONTENTS

DECLARATION.....	ii
DEDICATION.....	iii
ACKNOWLEDGEMENTS	iv
LIST OF FIGURES	viii
ABSTRACT.....	ix
CHAPTER ONE: INTRODUCTION.....	1
1.1 Resource Tracking	1
1.1.1 Healthcare Financing.....	6
1.1.2 The Voucher Programme	9
1.2 Statement of the Problem.....	12
1.3 Study objectives	13
1.4 Justification of the Study	13
CHAPTER TWO: LITERATURE REVIEW.....	14
2.1 Theoretical Literature.....	14
2.2 Empirical Literature	17
2.3 Overview of Literature Review	19
CHAPTER THREE: RESEARCH METHODOLOGY	20
3.1 Introduction.....	20
3.2 Conceptual Framework.....	20
3.3 Evaluation and Estimation	21
3.4 Data Source.....	26

CHAPTER FOUR: RESULTS AND DISCUSSION	27
4.1 Analysis by OBA Beneficiary County	27
4.2 Discussion of Results	46
CHAPTER 5: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS	49
5.1 Summary of Findings.....	49
5.2 Conclusion	51
5.3 Recommendations.....	51
5.4 Areas of Further Study.....	52
REFERENCES	53

LIST OF TABLES

Table 4.1: Expenditure Analysis for Kiambu County (Kenya Shillings)	27
Table 4.2: Per capita allocation per woman of reproductive age, and for women living below poverty line in Kiambu County	28
Table 4.3 Population and Allocation Statistics for Kiambu County.....	29
Table 4.4: Expenditure Analysis for Kilifi County.....	31
Table 4.5: Per capita allocation per woman of reproductive age, and for women living below poverty line in Kilifi County	32
Table 4.6 Population and Allocation Statistics for Kilifi County	33
Table 4.7: Expenditure Analysis for Kisumu County.....	35
Table 4.8: Per capita allocation per woman of reproductive age, and for women living below poverty line in Kisumu County	36
Table 4.9 Population and Allocation Statistics for Kisumu County	37
Table 4.10: Expenditure Analysis for Kitui County	39
Table 4.11: Per capita allocation per woman of reproductive age, and for women living below poverty line in Kitui County	40
Table 4.12: Population and Allocation Statistics for Kitui County	41
Table 4.13: Expenditure Analysis for Nairobi County	43
Table 4.14: Per capita allocation per woman of reproductive age, and for women living below poverty line in Nairobi County	44
Table 4.15: Population and Allocation Statistics for Nairobi County	45

LIST OF FIGURES

Figure 2.1 the Social Ecological Model	15
Figure 3.1 Relationship between health inputs, process and outputs.....	20
Figure 3.2 Graphical representation of the Gini coefficient.	24
Figure 4.1: Lorenz Curve for Kiambu County.....	30
Figure 4.2: Lorenz Curve for Kilifi County.	34
Figure 4.3: Lorenz Curve for Kisumu County.....	38
Figure 4.4: Lorenz Curve for Kitui County.....	42
Figure 4.5: Lorenz Curve for Nairobi County.	46

ABSTRACT

Briscombe, Brian et al (2010) noted that there are issues of lack of fairness in financing health in Kenya, Ministry of Health resource allocation being based on an incremental basis without due consideration to varied health needs of districts, a practice tended to benefit the relatively well endowed regions at the expense of the poor ones.

This study was undertaken to track resources in the reproductive health voucher programme to establish if the resources were utilised based on the needs of the counties based on number of women of reproductive age and the poverty levels. The importance of this study is that this was an off-budget funding thus the need to establish if it is following considering needs of population in allocating resources.

The study used the need-based resource allocation model by comparing the allocation per woman of reproductive age, and then per poor woman of reproductive age. The study also used the Lorenz curves and Gini coefficient to establish the level of inequity in resource utilisation.

The Gini coefficient for the Voucher programme target counties of Kiambu, Kisumu, Kitui, Kilifi and Nairobi are all the below 25% compared to the national figure of 47.7% Human Development Report (UNDP, 2014) meaning there is low inequality in resource allocation from the programme. This was an expected outcome since the programme was targeting only the poor.

In terms of average per capita allocation for women of reproductive age we find that there was a wide range attributable to the varying poverty levels in each of the county. For the average per capita for poor women of reproductive age Kilifi had the least at Sh. 1,064.65 followed by Kitui at Sh. 3,245.73. Kiambu was at Sh. 5,130.34 followed by Kisumu at Sh. 5,328.30 while Nairobi had a figure of Sh. 32,922.48. This shows that the resources allocation and absorption was demand-based as opposed to being need-based.

The approach is recommendable for targeting the poor, however, more needs to be done to ensure that resource allocation is based on the needs of the population.

CHAPTER ONE: INTRODUCTION

1.1 Resource Tracking

Resource tracking is quantitative exercises that follows the flow of financial resources from origin to point of utilisation and determine the location and possible anomaly. According to Public Expenditure Tracking and Facility Surveys: A General Note On Methodology (World Bank, 2016)the exercise looks at the amount that moves to various regions, and can also look at the amount that flows to different levels of service delivery. The exercise may demonstrate the use and abuse of public money, and it can also provide some understanding in the capture, cost efficiency, decentralization, and accountability. In instanced of lack of a reliable institutional systems to manage information flow, resource tracking surveys gives a realistic picture of the levels of demand and supply of health services, potentially providing a justification on a need for creating of cost effective mechanisms of public financial management and accountability through, for example, information dissemination on resource allocation and use.

It is important to point out that according to the Abuja declaration, 15% of a country's budget should be geared towards health. However, it is a realistic argument that budget allocation alone cannot be a satisfactory indicator of the quality, quantity and equity of public service delivered in many set ups. This may be as a result of several factors. First, there is an issue of technical and allocative efficiency.

Secondly, some set ups lack effective mechanisms of accountability and financial monitoring of public resource use on health characterized by low absorption capacity, constraints in accessing funds from the development partners and, low MOH spending on approved development budget.

According to the World Health Organisation (2007), it is generally agreed that countries “cannot manage what they cannot measure”. Thus, policy makers and stakeholders are increasingly more aware of the value of tracking resources for health. To facilitate this, the WHO has provided countries with the framework, tools and technical support to set up an integrated and harmonized platform for annual and timely collection of health expenditure data, as well as making resource tracking part of planning and decision making. This in essence sets global standard for the exercise. In their report, Universal Health Coverage – At the Centre of the Health Goal (2016), ensuring that all people who need health services receive them is a must to achieve Universal Health Coverage (UHC). This makes tracking inequalities in health resources and service coverage an important UHC monitoring goal. The report further adds that to make the exercise more meaningful, the UHC index described above would be computed for both the national population as well as for disadvantaged groups. When these are combined they are able to reflect the degree of inequity in coverage indicators across key dimensions of inequality such as socioeconomic status and gender/age.

Timothy Powell T, Mills Anne (2007) observed that getting of financial information that is timely, reliable and complete is important for informed policy making and planning. This is especially critical in developing countries where resources are scarce and also unpredictable. He further points out that at country level, there have been increasing advances in improving of the National Health Accounts (NHA) methodology, and it is now regarded as the international standard. Significant advances have also been made in the development of tracking expenditures in some disease-specific programmes. This implies that it is not only important to conduct resource tracking at macro level but also in some specific interventions.

According to the Kenya National Health Accounts (Ministry of Health 2013), resource tracking is an important exercise in assisting policymakers to implement a country's health system goals. The process provides a comprehensive and accurate analysis of health spending from the various available sources of financing including public, private, and development partners, tracing resources spent from their source to their point of use in the health sector. While the National Health Accounts provide a complete picture at the macro level, it is not sufficient to guide programmes that are operating semi-autonomously at the micro level.

The report further points out that the data on expenditures for the healthcare sector has found increasing importance to track the flows and contributions of resources to the healthcare system by different stakeholders. Information on health resource uptake is a key tool in assisting policymakers, decision makers, programme managers, and other stakeholders in making crucial decisions that influence the way the health sector promotes service delivery. The report emphasises that the decisions arising from the exercise have a great influence on the overall health and health related quality of life of the population. Further, health resource tracking findings are important in examining health spending over time and establish the outcome and impact of health policies and initiatives.

Resource tracking is not without challenges. Levine R; Blumer K et al; (2007) in their publication ;The global health resource tracking working group produced a report with the title *Following the Money: Toward Better Tracking of Global Health Resources*, pointed out that there had been encouraging advances toward increased availability of data and analyses on public sector health budgets and expenditures. However, it also pointed out that the information about health-sector resource flows resembles a poorly sewn patchwork

quilt, in which many important pieces are still missing. Critical weaknesses were seen to be still prevalent at the country levels including that National health accounting (NHA) exercises, many of which are still supported by donors, are still far from realizing the method's full potential. Notably, many countries still face the difficulty of integrating the collection and use of data on public and private expenditures as a way of doing business for policymaking as well as for day to day program implementation. Such mainstreaming of resource tracking is in part made difficult by lack of resources, limited human resource capacity, as well as weak coordination among donor agencies. In addition, decision makers are yet to fully appreciate the importance of NHA for policymaking, or are not aware of the resource tracking exercises altogether.

The report further points out that the source data for resource-tracking exercises faces the challenge of being untimely, incomplete, and inaccurate. Few low and middle income countries currently have established and implemented sound public financial management practices. In addition, in spite of the fact that private spending including out-of-pocket expenditure may contribute more than half of all health expenditures, the information on individuals' as well as private institutions spending is not easily obtained. Surveys that seek to obtain information on household spending are not only time consuming, but are also be expensive. This means they cannot be done frequently and they become prone to significant measurement error as subjects are likely to have forgotten their spending over a long time.

Inadequacy of information about spending on services and programs also affect donors and this regularly leads to shifting of health sector and general budget support. In the absence of such data, establishing whether a health sector's spending patterns are consistent with

national commitments which may include poverty reduction strategies and having greater, more equitable, and more effective social-sector investments becomes a challenge. This study is especially focused on establishing whether the spending patterns are consistent with this criteria, which was the primary objective of the programme.

It is important to note that although there could be challenges to resource tracking especially in instances where health management information system is not robust and has gaps, the challenges themselves provide the stakeholders with opportunities to explore areas of improvement in information systems, the attendant reporting mechanisms, and data collection, which are critical aspects for providing evidence.

The Kenya National Health Accountsreport (Ministry of Health, 2013)points out that the true value of health resource tracking is in its regular production and use, and that the mainstreaming of the exercise as a standard practice to enable the government and other stakeholders to access relevant, complete and timely health expenditure data for decision-making purposes. This has not been the practice in donor funded projects, hence the need for this study.

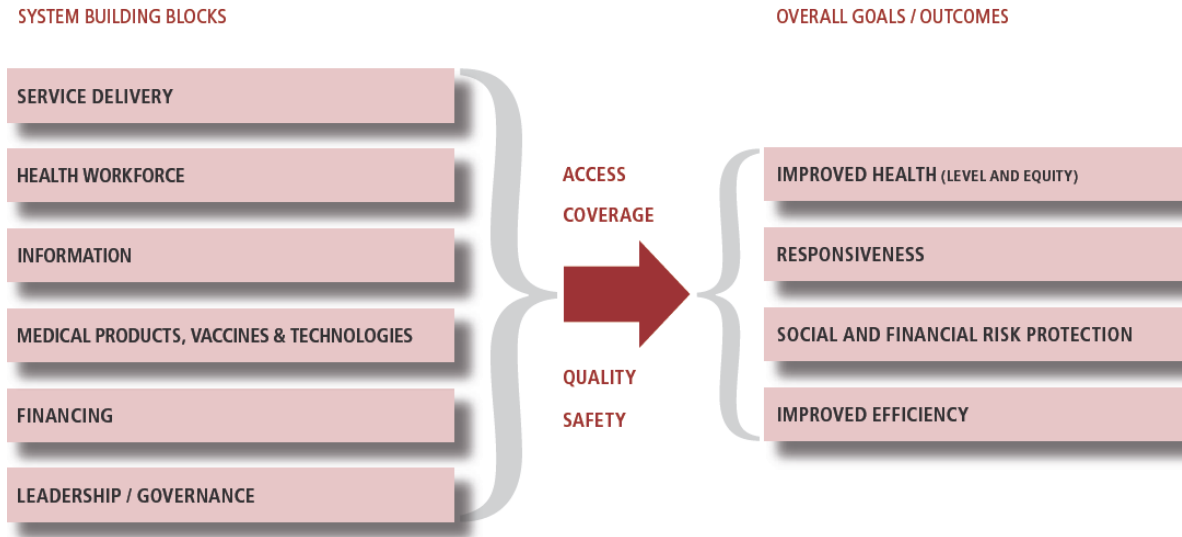
It is hoped that this resource tracking exercise will provide critical information to promote better, targeted and equitable investments for the improvement of health outcomes in the voucher programme. More so, where there is under utilisation, it is hoped that further studies will be carried out to establish the other factors, save for financial access, that are limiting utilisation.

1.1.1 Healthcare Financing

Annually, over 150 million people face financial catastrophe as a direct result of paying for health services (Xu K, Evans D et al, 2005). This translates to in 44 million households worldwide. The World Health organization (2005) defined health expenditure as catastrophic whenever it is equal to or in excess of 40% of a household's non-subsistence income, which is income available after a house hold has met the basic needs. Millions of people are prevented from seeking much needed care each because they lack the ability to pay for the services (Preker A, Langenbrunner J et al 2002). This means that the figure of those impoverished could go even higher if these people also decided to seek healthcare.

Cognisant of these challenges, the International Conference on Primary Health Care held in Alma Ata in 1978 declared primary healthcare a fundamental human right. The Alma Ata conference further made a declaration that giving Governments the responsibility for ensuring optimal health of their people. One of the main social targets for governments, international organizations as well as the world community, according to the declaration, is attaining a level of health that will permit the population to lead a socially and economically productive life. Many countries now have health enshrined in their constitution as a human right (Fainisi F, 2008).

The World Health organization in line with its role of providing stewardship on matters important to health and engaging in partnerships where needed has come up with a frame work for action with one of the objectives being to address the question of financiers to healthcare, with an aim of preventing catastrophic health expenditure, and promote access. It came up with six building blocks to a health system.



Adopted from world Health organisation's Framework for action (2007)

According to this framework, healthcare financing involve collecting finances, pooling of the funds and purchasing of the services. Many countries have put sustainable healthcare is a key objective of their governments and they endeavour to provide these services to the population. This objective is however more often than not frustrated by the high cost of health care. Governments strive to ensure that the high cost involved in provision of universal healthcare does not compromise provision of other services to the population or even cripple the economy.

According to the World Health Organization, a healthcare financing system should be able to raise adequate funds for health, in a way that enables people to use needed health services, and are protected from potential impoverishment that could arise from having to pay for the services. In a publication by the WHO in 2007 titled, *Everybody's business, strengthening Health Systems to Improve Health Outcomes*, Healthcare financing systems should facilitate the achievement of universal health coverage in a way that encourages provision and use of an effective mix of personal and non-personal services.

According to the World Health Report concerning the path to universal coverage, reliance on out-of-pocket payments, is the greatest challenge to progress. This includes charging user fees in the health system. The report points to evidence prepayment mode of raising funds is the most efficient base for increasing population coverage. In such a system, the rich subsidize for the poor, and the healthy subsidize for the sick. The report further points out that such an approach would be most appropriate when prepayment comes from a large number of people, a concept referred to a pooling, with the funds to cover everyone's health-care costs.

Kenya's initial action to increase resources to finance health care and have a pre-paid mechanism came in 1966 when the Government of Kenya (GOK) created the National Hospital Insurance Fund (NHIF). NHIF is financed through contributions through the payroll system from formal sector workers who earn Kshs. 1,000 and above per month. An attempt to extend to the informal sector through multiple marketing approaches including the cooperative movement and Jua Kali artisans has not been very successful. The 1966 Act was subsequently replaced with the NHIF Act of 1998. The act provides for the extension of the package from just inpatient services to include outpatient health costs, doctor's fees and laboratory investigations and for the extension of health insurance to health centres and other lower level facilities yielding enhanced access.

Recent development include the increase in the monthly charges that have seen protracted court battles with labour unions. In the absence of universal health coverage, attempts have been made to protect the poor and vulnerable. One such programme is the voucher programme funded by donors. A health voucher provides the recipient the right to access a defined package of services in pre-agreed facilities for free. The facilities undergo quality

assurance through regular accreditation and clients exit interviews. That very same voucher subsequently enables the health provider to claim a pre-agreed amount for the services provided to the client. Sochas L, Grainger C et al (2013) note that vouchers are the only health financing mechanism that subsidises demand while also directing investment to the supply side. The programme is designed to promote equity by targeting the indigent population in the counties where it is operating.

1.1.2 The Voucher Programme

The Government of Kenya (GOK) and the Federal Republic of Germany (FRG) entered into an agreement in 2005 to finance a high impact intervention so as to achieve the millennium development goals - specifically MDG 4 and 5 on maternal, neonatal and child health (MNCH), through implementation of the health care financing programme known as the Output-Based Approach (OBA), a voucher programme. OBA is a flagship programme under Vision 2030. The aim of the programme is to increase access for poor women to reproductive health services including Safe Motherhood (SMH), Long and Permanent Methods (LAPM) for Family Planning (FP) and Gender Based Violence Recovery (GBVR) services. The programme directly finances the indigent with highly subsidized vouchers and embraces a public-private partnership. The public, private for profit and not for profit facilities are reimbursed directly based on the services provided. The programme is currently being implemented in five counties of Kiambu, Kilifi, Kitui, Kisumu and in two settlement areas of Nairobi county i.e. Korogocho and Viwandani.

The OBA programme is a flagship project of the Vision 2030. One of the strategic goals of the programme is to assist in designing and implementing a social health insurance by having a poverty oriented approach concerning the scope of services, quality and demand driven.

Obare, et al (2013) studied the relationship that exists between provision of the reproductive health vouchers in Kenya and utilization of services by the community. One of his key findings was that after the voucher programme began, women who had exposure as well as access to vouchers under the programme were increasingly delivering at a health facility, compared with those from communities that had not been provided with or exposed to the voucher programme. He points out that the difference was statistically significant and not by chance. He further pointed out that poor women had a lower likelihood of using safe motherhood services (health facility delivery, skilled delivery care and postnatal care) when compared to their non-poor counterparts. This he adds is that it happens whether or not they are exposed to the voucher programme. This points to the possible presence of other factors that make the poor not utilize the services even when provided at highly subsidized prices. It is therefore important to identify these barriers, and overcome them, when rolling out a voucher programme. This fact is important since it shows more needs to be done with the poor category of women to accelerate towards the MDG 4 and 5.

Overall, voucher programme has been demonstrated to increase incidences of women delivering under skilled delivery care even among the poor women. More needs to be done, however, to improve the usage of pre-natal services. It has been noted even voucher

programmes have had limited impact in the communities as far as seeking antenatal care in the first trimester is concerned, with a majority of women making at least one antenatal care visit during pregnancy in Kenya. Advocacy and civic education is very important to educate both women and men on the need to have four visits to MCH during pregnancy.

The voucher programmes is based on the premise that their use will increase demand for services. There is however a need to come up with innovative approaches to counter the challenges that face the programmes both on the demand side such as catering for incidental costs. On the supply side, one way employed is recruiting several health care providers to generate competition resulting in better patients experience. In situations where consumers are informed, the voucher system has the ability to improve quality of services all other things assumed constant.

While these areas are largely taken as being occupied by populations that are underprivileged, it is clear that for equity to be achieved in these counties also should benefit based on their population size which is classified as poor.

	Kiambu	Kilifi	Kitui	Kisumu	Nairobi
Target population* (Women 15 – 49 yrs)	863,775	1,109,735	1,012,709	968,909	72,000
Poverty Index (%)	27.2	71.4	63.5	52.4	22.5

Adopted from;

1. *Kenya County Fact Sheet, Commission for Revenue Allocation, 2011*
2. *Korogocho social Economic Survey, 2010. (Nairobi target population is Korogocho and Viwandani slums.)*
3. *Kiambu County Website*

From the statistics above, it is clear that even under the counties where the voucher programme is operating, the number of target beneficiaries vary. Question is whether the absorption of funds by each of the counties reflect these variations with the eradication of the financial barriers to access health services. In the event that the absorption is not reflective of these figures, it may reflect to other factors that hinder uptake of the services. This could include socio-cultural issues and other factors that affect the health seeking behaviour of the population.

1.2 Statement of the Problem

Briscombe, Brian et al (2010) noted that there are issues of lack of fairness in financing health in Kenya, MoH resource allocation was previously based on an incremental basis without due consideration to varied health needs of districts, a practice tended to benefit the relatively well endowed regions at the expense of the poor ones. They further observed that health financing and allocation in Kenya was not only highly centralized, but it was also not transparent, and relied heavily on previous years' financial allocations as opposed to being based on the health needs. Many programmes, including the voucher programme, are yet to allocate funds to counties based on need.

Levine R; et al (2007) observed that inspite of developments toward higher availability of heath financing data and analyses on public sector, information on resource flows has major gaps and is incomplete.

Without resource tracking in the voucher programme, it is not possible to establish if the spending patterns are in line with national commitments to reduce poverty and to have an increasingly more equitable health-sector investments. Without resource tracking for the voucher programme, the following issues are not clear; firstly have the resources been

allocated equitably based on the population of the counties? Secondly, being a programme aimed at women of reproductive age, has the allocation of resources been reflective on the needs of the counties adjusted for age and gender? Lastly, since the programme was aimed at the poor, has there been equitable allocation for the poverty adjusted population in the counties?

Hence, the aim of this study is to do a resource tracking to identify key areas that need to be addressed to achieve considerable results.

1.3 Study Objectives

The major objective of this study is to track resources in the voucher programme. The specific objectives of the study are;

1. To determine whether the allocation has been equitable among woman of reproductive age across the counties.
2. To establish whether the allocation to the counties has been equitable based on poverty adjusted population.
3. To make recommendations based on the findings.

1.4 Justification of the Study

While other programmes such as PEPFAR in Kenya regularly undertake resource tracking, the voucher program is yet to undertake any study that can inform how its funds flow. This study will be important to decision makers for a number of reasons. First, it will establish the extent of equitable allocation of resources among and between the various counties. Secondly, it will assist the policy makers in establishing the trends in demand for various services. The results of this study will also be important in assisting policy makers make evidence based decisions. Lastly, the findings from this study can be used in resource mobilization.

CHAPTER TWO: LITERATURE REVIEW

This chapter consists of three sections. The first section is the theoretical literature which focuses on health production. It looks at the various variables that have a bearing on production of health. Importantly, it shows that people use financial resources, goods, services and time in the production of health status thus the importance of sharing resources equitably. The second section is the empirical literature that focuses on other studies conducted in the area of resource tracking and their major findings. The last section is the overview of the literature review that summarises the findings in the two sections and provides point of convergence between the two.

2.1 Theoretical Literature

Health Production Model

Health production is a dependent of many variables. The literature on the production has shed light into the various variables that influence or affect production of health services. The Socio-Ecological model illustrates inter-relationships between closely related and distant related determinants of health. The model has provided valuable insights in understanding access as well as continued use of health services. It illustrates the way individual's behaviours and health outcomes are related within different levels of social organization. It provides a visual depiction of the relationship as overlapping concentric circles, through which influence can take multiple routes as shown in Fig 2.1. It focuses on the way gathering of information at specific levels ranging from an individual, interpersonal, organizational, community and policy levels that may be subject to change by specific interventions (Newes-Adeyiet *al.*, 2000; McLeroyet *al.*, 1988). The socio-ecological model puts focuses on individual and social environmental factors as likely

targets points for health promotion and interventions. The model suggests that necessary changes in the social environment will produce changes at a personal or individuals level, and that the support of individuals in the community is essential for implementing environmental changes.



Figure 2.1 the Social Ecological Model

Source: Adapted from the Centers for Disease Control and Prevention (CDC), The Social Ecological Model: A Framework for Prevention, <http://www.cdc.gov/violenceprevention/overview/social-ecologicalmodel.html> (Retrieved October 4, 2016).

The social ecological model provides a basis for conceptualising the factors that produce and maintain health, allowing identification of possible points of interventions impact and providing insight into how social problems come about and are sustained within and across the various subsystems in the model. It has also lead to increased appreciation of the

complexity of these sub-systems. It this provides a highlight of the need for more innovative intervention and research methodologies. Social ecological concepts are now increasingly used within the field of public health. This socio-ecological model has lead to a deeper understanding as well as the better use and/or commencement of interventions directed at changing personal, interpersonal, organizational, community and public policy, factors which support and maintain the use of health services.

Grossman separated the biological relationship between behaviour and health status from the process by which the behaviour are determined (Nocera S, Zweifel P, 1998). This relationship, called the health production model converts the use of goods, services and time in the production of health status. This is referred to as the household production function for health, this is because it implies that members of a family use their time, knowledge and financial resources to buy goods and services in order to produce health.

Most of the studies used variables that are congruent with economic theory, and have been influential in determining the variables that are utilised in these studies. In the theory of production, varying inputs have been used in the production functions. Nevertheless, due to the challenges that exist in measuring or reliably estimating the physical amount of inputs, more so where capital inputs are involved, other studies used cost value in place of the amount of inputs. For instance (Schmidt and Lovell, 1979) utilised the actual cost of plant to measure capital input. On the other hand Zere (2000) utilised recurrent costs as a indicator for volumes of inputs in hospitals.

2.2 Empirical Literature

Many studies have been carried out to examine resource tracking either at national level or at programme level, informing policy decisions. In 2004 resource tracing was carried out in Kenya (Ministry of Health, 2004). The study noted that there was a general increase in the funding from the year 2000/2001 to 2003/2004, however, Ministry of Health expenditure was not translating to desired outcomes due to failure of resources to reach the targeted people as funds were being diverted to other uses, there was also poor accountability mechanisms, inadequate incentives to healthcare delivery and deficiency in demand creation for health services.

The survey further noted that resources were being allocated based on existing facilities which neither represents the neither actual resource requirements nor allocative efficiency. It pointed out that the government had developed an objective criteria for allocating resources in future based on the population of the districts, the poverty status in the districts and the health indicators. This means that there was no equitable flow of resources. Further, the survey also revealed that 15.8 and 44.5% of resources was being utilised at dispensary and health centre level. This, the report states, is consistent with the governments objective of funding core poverty programmes such as primary healthcare.

Similar studies have been carried out over the years. A comparative resource tracking was conducted in Kenya (Ministry of Health, 2008) at funding at various levels of care amongst other criteria. One of the findings was that actual resources had been on the rise, and his was the position both in absolute terms and as a ratio of GDP. However, against the ministry's policy and commitment to increase budget allocation to dispensaries and health centres, the study revealed that the health budget is was in favour of secondary and tertiary

care facilities which were taking up the larger proportion of the public health resources. Rural health facilities (health centres and dispensaries) absorbed only limited funding thus limiting access to health services. For instance, in the financial year 2003/04 rural health facilities utilised only 10.9% of the total health actual spending as opposed to 50.3% allocated and utilised by tertiary and secondary facilities during the same financial year. This is in contrast to the fact that rural health facilities provide slightly over two-thirds of the health care services because they are accessible to majority of the population. In addition, the study observed that when optimally functioning, the rural health facilities are more cost-effective in dealing with most of the disease conditions that occur more commonly at the community level. However, due to the imbalance in resource allocation in favour of hospitals which translates to sub-optimal operation of rural facilities, the services in a large number of the rural health facilities remain underutilized.

Other studies have focused on programme level resource tracking for instance the Kenya National Aids Spending Assessment (Ministry of Health, 2012). The tracking exercise was conducted to assess resource flow from financial year 2009/2010 to 2011/2012. The exercise looked at resources used by the various services offered in HIV/AIDS programme in the country.

The results showed that generally the high impact interventions which included Behaviour Change Communication (BCC) activities, antiretroviral therapy, Prevention of Mother to Child Transmission, and male circumcision received the largest proportion of funding in the period. However, there were some interventions which also have high impact that received less attention, and subsequently were underfunded. This included interventions such as prevention activities on Most at Risk Populations such as commercial sex workers and long distance track drivers. In addition, other high impact interventions such as

prevention through treatment for discordant couples also received less attention in terms of the resources. However, some interventions that are considered to have low impact such as Voluntary Counselling and Testing received significant funding. With these findings the resource tracking report recommended a policy change that the country should target resources towards high impact interventions not only to maximize benefits but also to reduce the burden of disease associated with HIV/AIDS.

2.3 Overview of Literature Review

Health production is dependent on many variables and several models have been developed to explain this concept. For instance, the socio-ecological looks at the various factors involved in health production, and their relationship. It demonstrates how individual behaviour, social environment and health production are interrelated. The model has created an in-depth understanding as well as the initiation and enhancement of health interventions aimed at altering interpersonal, organizational, community and public policy, factors which promote and sustain positive health seeking behaviour.

The Grossman model on the other hand demonstrated the relationship between behaviour and health production. This health production model converts the use of physical goods, services and personal time to positively, or even negatively, affect health status. The economic model on the other hand implies that health production takes inputs to achieve good health. It shows that there will be physical inputs such as capital expenditure and recurrent expenditure to achieve this goal. The models converge at the argument that health is an investment that calls for inputs to achieve.

This study differs from other studies done in that it is for a specific project aimed at promoting equity. The study therefore seeks to establish whether the resources were allocated based on existing health needs of the population.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the overall methodology will be used in carrying out the study. It explains the design adopted for the study. It also explains the study population and the justification for using the same. It also lays out the data to be used in the study, data analysis and interpretation. It also outlines the ethical issues in the study.

3.2 Conceptual Framework

During the production process, the health facilities would receive money from the claims made to the programme. The facilities would use the financial resources to acquire multiple inputs that would be used to produce outputs towards the programme goals. This relationship is shown in the figure below.

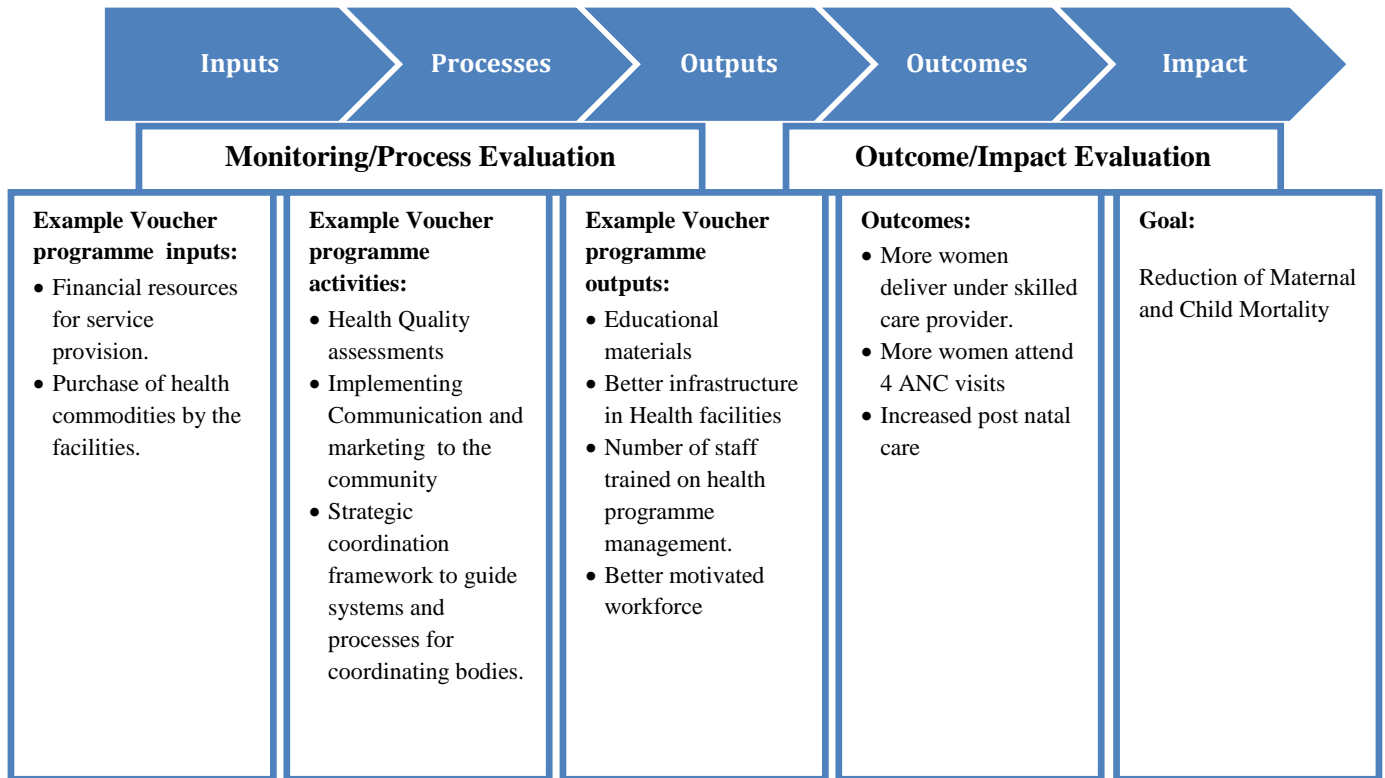


Figure 3.1 Relationship between health inputs, process and outputs.

This study thus seeks to establish whether the resources were utilised by the participating counties based on their needs. This will be established by examining the utilisation by each county compared by the county's population. Further, the population will be adjusted for age/gender to see the utilisation per woman of reproductive age. Finally, the utilisation will be examined based on the population living in poverty to establish if resources were utilised based on needs of the county.

3.3 Evaluation and Estimation

Need-Based Resource Allocation

The concept of needs based resource allocation across the different public services provides scope for the intensive debate. In most cases, resource allocation relies on selection and weighting of various indicators that are often politically influenced (Midwinter 2002). However, from the 1970s, needs-based capitation systems of health care resource allocation have increasingly become an accepted approach for financing healthcare needs within many countries. One key challenge has been designing of reliable methodology and tools that would aid in correctly estimating population needs. In such a model, resource allocation and distribution is based on the principle of horizontal and vertical equity which recommends a policy of "equal treatment of equals", and those who different demographics in relevant respects are treated proportionally differently (Rice & Smith 2001).

Nevertheless, resource allocation is a complicated procedure in most health systems. The procedure consists of direct needs-based resource allocation, alongside more recent developed market mechanisms of health care resource allocation (Talbot-Smith 2006). This project will be able to demonstrate the dynamics of resource allocation in modern health systems.

The most basic need-based resource allocation model is per capita funding. Under such a scheme, each county simply receives a share of the total resources that is directly proportional to its relative population size. Region r 's ($r = 1; \dots; R$) budget (B_r^{pc}) would then be given by;

$$B_r^{pc} = \frac{Pop(r)}{Pop} B$$

where B is the funds utilized per county. Since the shares sum to one, the funding scheme preserves a balanced budget.

An alternative capitation scheme would allocate funds based on age/gender adjusted population. This is especially because differences in age and gender have a bearing on consumption of health services. For instance, children under five years, women of reproductive age and the elderly need health services more than the youth. Under an age and gender capitation funding model, a county's budget is determined by the number of individuals it has in each group. More specifically, an age/gender adjustment weighs the distribution of funds by the relative expenditures on health care programs for each age/gender group.

The age/gender adjusted budget is allocated across counties as follows. Denote the provincial average annual expenditures for a person of gender g ($g = 1; 2$) and in age group i ($i = 1; \dots, I$) on program p ($p = 1; \dots, P$) by e_{gi}^p . Average publicly provided health care expenditures for a specified age/gender group member are then given by;

$$e_{gi} = \sum_p e_{gi}^p$$

The age/gender adjusted allocation for region r (B_r^{AG}) is then given by;

$$B_r^{AG} = \sum_g \sum_i e_{gi} Pop_{rgi}$$

where $Pop_{r gi}$ refers to the number of individuals in region r with gender g in age group i . The age/gender adjusted budget also balances since by construction;

$$B = \sum_r B_r^{AG}$$

One advantage of this approach is that it takes the distribution of different population groups across counties into account. An age/gender adjustment is more so important if the age/gender profiles differ substantially across counties. The distribution of these age/gender groups across counties will therefore be particularly important this being a programme targeting women of reproductive age.

Thirdly, the study shall use the poverty adjusted population needs. The impact of adjustment on poverty is partly dependent on how we define poverty. There is much debate on how to define the ‘poverty line’ and how to measure the numbers who live below it. Firstly, poverty can be defined by assets owned by the individual. This can be household goods, housing and other belongings such as animals. Poverty arises when either primary or secondary incomes are inadequate to meet what are considered minimum needs. Poverty has also been defined based on income. This can be private income poverty (PIP) or social income poverty (SIP). To a certain extent private income can substitute for social income, this is because with enough private income people can buy the services the state fails to provide.

$$\text{Poverty adjusted per capita} = \frac{\text{Total number of people living in poverty in the region}}{\text{Total resource allocation to the region}}$$

Due to the different dimensions of poverty, a range of measures have been developed to capture the multidimensionality of poverty. This incorporates income the household assets

as well as the monetary/income and consumption expenditure. This is the approach adopted in this study. The poverty adjusted population will be critical in this study as the project was specifically targeting the poor.

Lorenz Curve and Gini Coefficient

We used Lorenz Curve to get *Gini coefficient* which we used to measure inequality. The coefficient is applied to assess or measure resource inequality, but can be used to measure any form of uneven distribution. The Gini coefficient is a number in the range between zero and one. Zero represents perfect equality and one corresponds with perfect inequality where one person has all the resources, and everyone else has zero. The Gini index is the Gini coefficient expressed as a percentage percentage form, and is is thus equal to the Gini coefficient multiplied by 100.

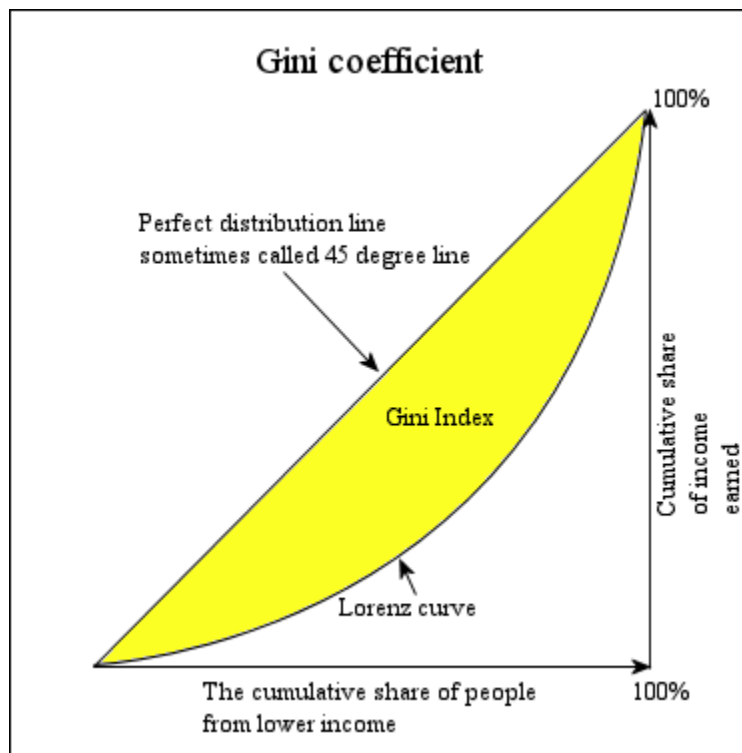


Figure 3.2: Graphical representation of the Gini coefficient. *Adopted from http://en.wikipedia.org/wiki/Gini_coefficient.*

The Gini coefficient is calculated as a ratio of the areas on the Lorenz curve diagram. If the area between the line of perfect equality and Lorenz curve is A, and the area underneath the Lorenz curve is B, then the Gini coefficient is $A/(A+B)$. This ratio is always expressed in percentage form or as the numerical equivalent of that percentage.

The Gini coefficient often calculated from the more practical Brown Formula which is shown below:

$$G = \left| 1 - \sum_{k=1}^n (X_k - X_{k-1})(Y_k + Y_{k-1}) \right|$$

G: Gini coefficient

X_k : cumulated proportion of the population variable, for $k = 0, \dots, n$, with $X_0 = 0$, $X_n = 1$

Y_k : cumulated proportion of the income variable, for $k = 0, \dots, n$, with $Y_0 = 0$, $Y_n = 1$

4.

Gini coefficients can be used to measure the concentration of any distribution, not just the distributions of income. Higher concentrations translate into higher inequality. Lower concentrations mean lower inequality.

In calculating the *Gini coefficient* our target population was *poor women of reproductive age (15-49 years)* for the years 2009 to 2015 for the respective target counties. Gini coefficient was calculated for each county for the years the programme has been running, these different coefficients for these counties were compared to see if they differed.

3.4 Data Source

During the implementation of the programme, health facilities from Kiambu, Kilifi, Kisumu, Kitui and Korogocho and Viwandani slums in Nairobi would offer services and then invoice the voucher management agency on a monthly basis. These claims would then be put in a database and submitted to Ministry of Health. The information include the name of the health facility, the county in which the facility is, the service offered and the amount they are claiming.

The data will be collected from the Ministry of Health to establish how much money is released to each of the regions year by year. The data will be analysed using excel.

CHAPTER FOUR: RESULTS AND DISCUSSION

4.1 Analysis by OBA Beneficiary County

In the section below, we analyse the population, allocation, draw the Lorenz curve and calculate the Gini coefficient for each of the region.

Table 4.1: Expenditure Analysis for Kiambu County (Kenya Shillings)

Year	Antenatal	Delivery	Complications	BTL	Vasectomy	Contraception	Gender Violence	Totals
2009	694,945	8,931,616	556,857	471,000	-	2,571,500	-	13,225,918
2010	5,555,931	41,417,490	3,732,309	415,000	3,000	7,263,300	48,150	58,435,179
2011	6,617,338	54,953,035	9,566,848	360,250	-	10,728,300	200,480	82,426,250
2012	7,018,074	60,172,754	9,410,566	194,500	-	7,662,000	147,560	84,605,455
2013	8,372,943	73,282,803	13,521,117	255,600	-	8,328,900	130,680	103,892,044
2014	7,121,365	60,167,266	9,271,306	427,483	-	9,211,658	132,772	86,331,849
2015	7,846,285	66,286,381	10,213,548	470,958	-	10,148,500	146,275	95,111,946
Totals	43,226,881	365,211,345	56,272,551	2,594,791	3,000	55,914,158	805,917	524,028,641

From the table above, deliveries absorbed the highest amount of funding at Sh. 365,211,345. This is influenced by both the high number of deliveries and the higher cost per unit compared with other services. Complications associated with child birth absorbed Sh. 56,272,551. This is important in designing other maternal health programmes in that birth complications need also be factored in, not just delivery. Long term family planning for women absorbed Sh. 55,914,158 Surgical contraception through bilateral tuboligation absorbed Sh. 2,594,791 as compared to male counterparts which only absorbed Sh. 3,000 for the whole period. This can be associated to the fact that female contraception is more accepted than male contraception. More advocacy needs to be done to promote long term male contraception. There was also high absorption associated with gender-based violence due to cases of sexual as well as physical violence between genders.

In terms of trend, the expenditure by year was on the rise since 2009. However, with the introduction of the free maternity in 2013, the expenditure decreased in 2014. In 2015, service uptake again increased, this may be associated with the services being covered under the programme, and which were not under the free maternity package.

Table 4.2: Per capita allocation per woman of reproductive age, and for women living below poverty line in Kiambu County

Year	Total Expenditure	Women of Reproductive age	Per Capita per woman of reproductive age	Women of reproductive age below poverty line	Per capita per woman of reproductive age below poverty line
2009	13,225,918	437,297	30.24	347,831	38.02
2010	58,435,179	448,650	130.25	356,862	163.75
2011	82,426,250	460,003	179.19	365,892	225.27
2012	84,605,455	471,356	179.49	374,922	225.66
2013	103,892,044	483,593	214.83	384,656	270.09
2014	86,331,849	495,830	174.12	394,389	218.90
2015	95,111,946	508,067	187.20	404,123	235.35
Total	524,028,641	3,304,796	1,095	2,628,675	1,377
Average		472,113.7	156.47	375,525	196.72

In Kiambu, every woman of reproductive age was allocated Sh. 156.47 per year. It is important to note that not every woman utilized the services. The per capita for every woman of reproductive age rose from a low of Sh. 30.24 in 2009 to a high of Sh. 214.83 in 2013. The figure however started to get lower with the introduction of free maternity services and as the programme was coming to closure in 2015. This is slightly lower than the per capita allocation for every woman living below the poverty line who was on average allocated Sh. 196.72. However, the per capita per poor woman of reproductive age was as high as 270.09 in 2013.

Table 4.3 Population and Allocation Statistics for Kiambu County

Year	Target Population	OBA Allocation	PCI	% of Pop	% of Allocation	Cumm % of Pop	Cumm % of Allocation	Bar Width	Bar Height	Bar Area
						0	0			
Year 2009	94,610	13,225,918	139,794	13.2	2.5	13.2	2.5	13.2	1	16.698315
Year 2010	97,066	58,435,179	602,013	13.6	11.2	26.8	13.7	13.6	8	109.95608
Year 2011	99,523	82,426,250	828,217	13.9	15.7	40.7	29.4	13.9	22	299.81666
Year 2012	101,979	84,605,455	829,637	14.3	16.1	55.0	45.5	14.3	37	534.52607
Year 2013	104,626	103,892,044	992,982	14.6	19.8	69.6	65.4	14.6	55	811.58489
Year 2014	107,274	86,331,849	804,780	15.0	16.5	84.6	81.8	15.0	74	1104.4344
Year 2015	109,921	95,111,946	865,273	15.4	18.2	100.0	100.0	15.4	91	1397.8459
	714,999	524,028,642	NA	100	100	NA	NA	NA	NA	4274.862

The information resultant from statistics above have been used to plot the Lorenz curve below.

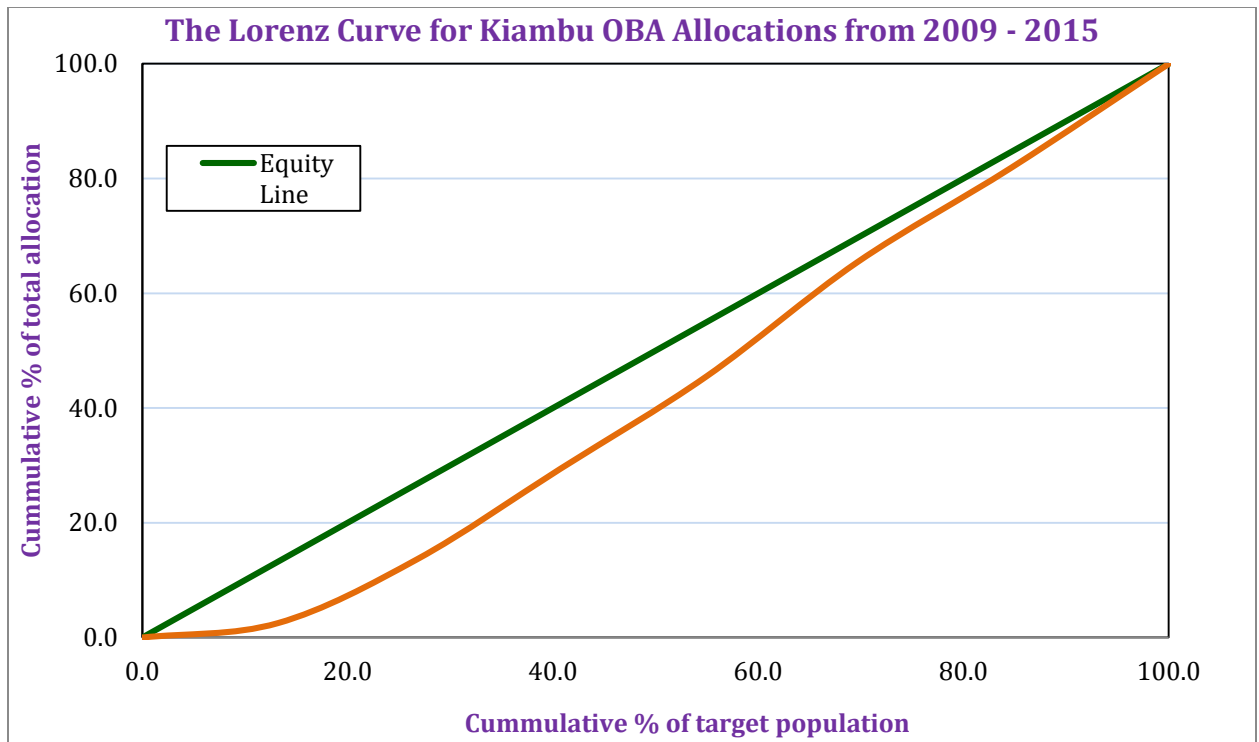


Figure 4.1: Lorenz Curve for Kiambu County.

The graph above depicts the level of inequity in Kiambu County under the programme.

The total area under the Lorenz Curve is 4,274.9. The area between the Lorenz Curve and

Equity is 725.14. The Gini Coefficient is 0.145 which depicts low levels of inequity.

Table 4.4: Expenditure Analysis for Kilifi County

Time	Antenatal	Delivery	Complications	BTL	Vasectomy	Contraception	Gender Violence	Totals
Year 2012	6,308,803	24,665,905	1,095,655	12,000	-	511,500	14,504	32,608,367
Year 2013	10,279,969	41,227,458	1,980,998	40,500	-	3,447,300	6,210	56,982,435
Year 2014	13,235,806	52,574,824	2,454,792	41,889	-	3,158,637	16,527	71,482,474
Year 2015	11,893,381	47,242,489	2,205,818	37,640	-	2,838,276	14,851	64,232,455

The programme started in Kilifi in the year 2012. Delivery took the largest share of funding at Sh. 47,242,489. Unlike in Kiambu, the proportion of managing complications associated with deliveries was much lower. This could be due to better management of deliveries. Antenatal care took the second largest proportion of resources at Sh. 11,893,381. It is notable that in the four years not a single vasectomy was conducted and this may require civic education to be accepted. Bilateral tuboligation also took very little resources at Sh.37,640 for the whole four years and this may require women of reproductive age to be educated on the service.

Unlike in Kiambu County, the absorption rose consistently from 2012 through to 2014 and then decreased marginally in 2015. The introduction of free maternity services in did not lead to decline in uptake of services under the programme. The slight decline in uptake in 2015 could be associated to the fact that the programme was closing down thus decreasing distribution of vouchers.

Table 4.5: Per capita allocation per woman of reproductive age, and for women living below poverty line in Kilifi County

Year	Total Expenditure	Women of Reproductive age	Per Capita per woman of reproductive age	Women of reproductive age below poverty line	Per capita per woman of reproductive age below poverty line
2012	32,608,367	282,619	115.38	201,790	161.60
2013	56,982,435	291,801	195.28	208,346	273.50
2014	71,482,474	300,982	237.50	214,901	332.63
2015	64,232,455	310,164	207.09	221,457	290.04
Total	225,305,731	1,185,566	755	846,494	1,058
Average	56,326,432.75	296,391.50	188.81	211,623.50	264.44

The average per capita for every woman of reproductive age is Sh. 188.81 while the per capita for every woman living below poverty line is Sh. 264.44. This is higher than in Kiambu where every woman of reproductive age was allocated an average of Sh. 156.47 per year. The per capita allocation for every woman living below the poverty line was on average allocated Sh. 196.72, which is still higher than Kiambu

Table 4.6 Population and Allocation Statistics for Kilifi County

Year	Target Population	OBA Allocation	PCI	% of Pop	% of Allocation	Cumm % of Pop	Cumm % of Allocation	Bar Width	Bar Height	Bar Area
						0	0			
Year 2012	201,790	32,608,367	161,596	23.8	14.5	23.8	14.5	23.8	7.2	172.5053
Year 2013	208,346	56,982,435	273,499	24.6	25.3	48.5	39.8	24.6	27.1	667.46202
Year 2014	214,901	71,482,474	332,629	25.4	31.7	73.8	71.5	25.4	55.6	1412.229
Year 2015	221,457	64,232,455	290,045	26.2	28.5	100.0	100.0	26.2	85.7	2243.2462
	846,494	225,305,730	NA	100	100	NA	NA	NA	NA	4495.443

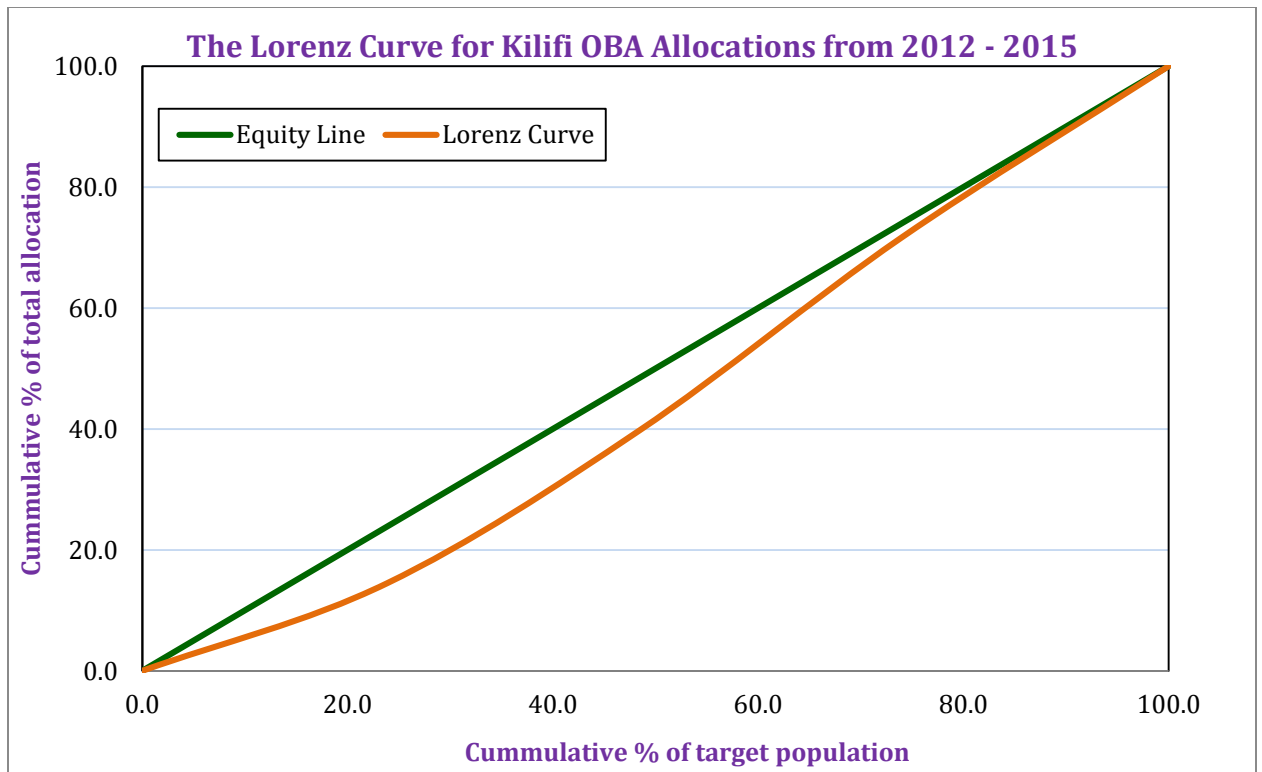


Figure 4.1: Lorenz Curve for Kilifi County.

In this graph which depicts the level of inequity under the programme in Kilifi County.

The total area under the Lorenz Curve is 4495.4. The area between the Lorenz Curve and

Equity is 504.56. The GiniCoefficient is 0.1009. This shows a very low level of inequity

Table 4.7: Expenditure Analysis for Kisumu County

Year	Antenatal	Delivery	Complications	BTL	Vasectomy	Contraception	Gender Violence	Totals
Year 2009	326,895	14,173,523	1,639,022	419,320	-	695,000	48,025	17,301,785
Year 2010	5,160,880	53,650,869	3,112,619	266,000	2,000	6,430,000	207,646	68,830,014
Year 2011	8,686,595	67,819,931	7,812,594	697,759	6,000	11,789,940	918,763	97,731,582
Year 2012	9,541,829	72,603,996	7,401,582	185,000	-	15,897,500	512,805	106,142,712
Year 2013	11,067,932	102,402,528	11,542,562	118,000	-	22,310,500	517,509	147,959,031
Year 2014	10,597,498	94,644,355	9,599,492	513,689	3,000	17,402,782	671,709	133,432,524
Year 2015	10,262,088	91,626,663	9,293,416	497,310	-	16,848,320	650,292	129,178,089
Total	55,643,717	496,921,865	50,401,287	2,697,078	11,000	91,374,042	3,526,749	700,575,737

In total, Kisumu absorbed Sh. 700,575,737. Vasectomy services were more utilized than in Kiambu and Kilifi although the uptake is still low. Unlike in the other earlier counties, contraception comes second in terms of resources utilized, only after delivery. Antenatal care also absorbed more resources than complications. This shows that more was being done to prevent complications and may be an indicator of better quality of services. However, the county has utilised a large sum in gender based violence.

The programme started with low absorption of funds in 2013 rising consistently to peak in 2013 at Sh. 147,959,031 before decreasing marginally in 2014. This could be due to introduction of the free maternity.

Table 4.8: Per capita allocation per woman of reproductive age, and for women living below poverty line in Kisumu County

Year	Total Expenditure	Women of Reproductive age	Per Capita per woman of reproductive age	Women of reproductive age below poverty line	Per capita per woman of reproductive age below poverty line
2009	17,301,785	235,322	73.52	123,309	140.312
2010	68,830,014	240,428	286.28	125,984	546.339
2011	97,731,582.00	245,533	398.04	128,659	759.62
2012	106,142,712.00	250,639	423.49	131,335	808.18
2013	147,959,031.00	256,072	577.80	134,182	1,102.67
2014	133,432,524.00	261,504	510.25	137,028	973.76
2015	129,178,089.00	266,937	483.93	139,875	923.53
Total	700,575,737.00	1,756,435	2,753.31	920,372.00	5,254.41
Average	100,082,248.14	250,919.29	393.33	131,481.71	750.63

Kisumu County had a high average per capita for every woman of reproductive age at Sh. 393.33. and the per capita for every woman living below poverty line at Sh.730.63. This is expected to contribute significantly to reduction of inequity in the access to maternal health in the county.

The per capita per woman of reproductive age was lowest in 2009 at 73.52 and increased consistently to year 2013 at 577.80 before decreasing to 483.93 in 2014. This is consistent with the introduction of free maternity services which could have led to some women utilizing the free maternity services.

Table 4.9 Population and Allocation Statistics for Kisumu County

Year	Target Population	OBA Allocation	PCI	% of Pop	% of Allocation	Cumm % of Pop	Cumm % of Allocation	Bar Width	Bar Height	Bar Area
						0	0			
Year 2009	123,309	17,301,785	140,313	13.4	2.5	13.4	2.5	13.4	1.2	16.543838
Year 2010	125,984	68,830,014	546,339	13.7	9.8	27.1	12.3	13.7	7.4	101.04826
Year 2011	128,659	97,731,582	759,614	14.0	14.0	41.1	26.2	14.0	19.3	269.37005
Year 2012	131,335	106,142,712	808,184	14.3	15.2	55.3	41.4	14.3	33.8	482.60322
Year 2013	134,182	147,959,031	1,102,678	14.6	21.1	69.9	62.5	14.6	52.0	757.45802
Year 2014	137,028	133,432,524	973,759	14.9	19.0	84.8	81.6	14.9	72.0	1072.5289
Year 2015	139,875	129,178,089	923,525	15.2	18.4	100.0	100.0	15.2	90.8	1379.6522
	920,372	700,575,737	NA	100	100	NA	NA	NA	NA	4079.205

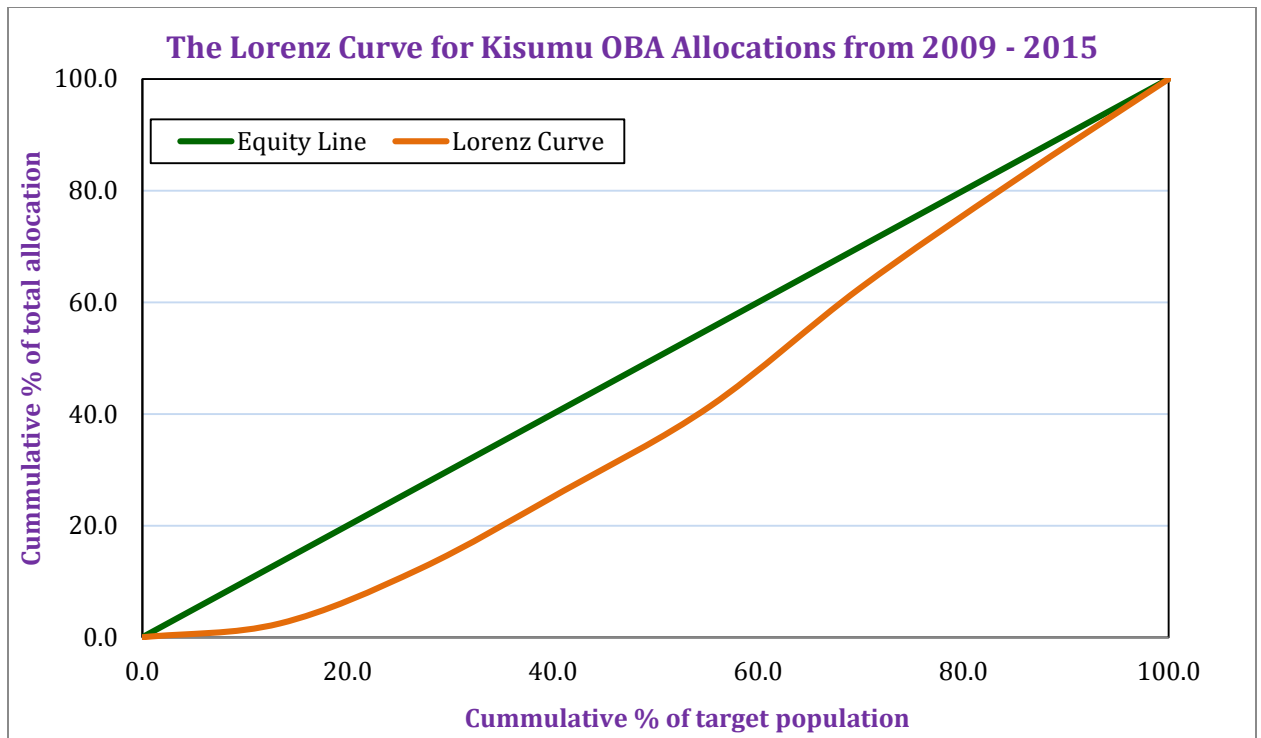


Figure 4.3: Lorenz Curve for Kisumu County.

In Kisumu, the Total area under Lorenz Curve 4,079.2. Area between Lorenz and equity 920.8 Gini Coefficient is 0.1842. With the possible range being zero to one, this is a low level of inequality.

Table 4.10: Expenditure Analysis for Kitui County

Year	Antenatal	Delivery	Complications	BTL	Vasectomy	Contraception	Gender Violence	Totals
Year 2009	420,900	12,767,050	817,170	531,000	-	456,000	11,000	15,003,120
Year 2010	6,594,875	33,464,300	1,085,182	123,000	-	851,000	11,500	42,129,857
Year 2011	11,509,880	52,360,740	2,817,789	159,000	-	3,538,400	19,485	70,405,294
Year 2012	9,381,900	49,987,423	4,356,642	690,650	-	5,374,000	19,870	69,810,485
Year 2013	10,726,330	72,334,102	8,235,247	441,000	3,000	7,429,500	91,963	99,261,142
Year 2014	13,200,389	75,482,576	5,915,158	664,446	-	6,030,259	52,556	101,345,384
Year 2015	12,402,696	70,921,202	5,557,708	624,294	-	5,665,854	49,380	95,221,133
Total	64,236,970	367,317,393	28,784,896	3,233,390	3,000	29,345,013	255,754	493,176,415

In Kitui County, delivery and ante-natal care absorbed most of the resources which is likely to contribute positively to the programme goal of reducing maternal mortality. With a total resource envelop near that of Kiambu, it is notable that the county used approximately half of the budget line for complications associated with child birth. This further raises queries on quality of service in Kiambu. However, the demand for contraception is seen to be higher in Kiambu which took up Sh. 55,914,158 compared to Sh. 29,345,013 in Kitui. This could explain the higher fertility rate in Kitui which is at 3.9 children per woman compared to 2.7 children per woman in Kiambu (KDHS, 2014).

Gender based violence is however seen to be more prevalent in Kisumu with over Sh. 3.5million used in gender based violence and in Kiambu with Sh. 805,917 as compared to Kitui at only Sh. 255,754. There is thus need to have interventions to reduce the burden of disease associated with injuries in the two counties.

Table 4.11: Per capita allocation per woman of reproductive age, and for women living below poverty line in Kitui County

Year	Total Expenditure	Women of Reproductive age	Per Capita per woman of reproductive age	Women of reproductive age below poverty line	Per capita per woman of reproductive age below poverty line
2009	15,003,120	231,344	64.85	146,903	102.13
2010	42,129,857	234,107	179.96	148,658	283.40
2011	70,405,294	236,870	297.23	150,412	468.08
2012	69,810,485	239,632	291.32	152,166	458.78
2013	99,261,142	242,395	409.50	153,921	644.88
2014	101,345,384	244,348	414.76	155,161	653.16
2015	95,221,133	246,300	386.61	156,401	608.83
Total	493,176,415.00	1,674,996.00	2,044.23	1,063,622.00	3,219.26
Average	70,453,773.57	239,285.14	292.03	151,946.00	459.89

Kitui County has an average per capita per woman of reproductive age at 292.03. The average per capita for women living below poverty line is 459.89. Large difference between the two can be explained by the fact that the poverty index in Kitui is high at 64%. The highest per capita was in 2014, this in spite of the introduction of free maternity services. It thus appears that those eligible were still keen on utilizing services from the programme. The little decrease in 2015 can be associated with slowing of activities in the programme in the final year.

Table 4.12: Population and Allocation Statistics for Kitui County

Year	Target Population	OBA Allocation	PCI	% of Pop	% of Allocation	Cumm % of Pop	Cumm % of Allocation	Bar Width	Bar Height	Bar Area
						0	0			
Year 2009	146,903	15,003,120	102,129	13.8	3.0	13.8	3.0	13.8	1.5	21.00845
Year 2010	148,658	42,129,857	283,402	14.0	8.5	27.8	11.6	14.0	7.3	102.21644
Year 2011	150,412	70,405,294	468,083	14.1	14.3	41.9	25.9	14.1	18.7	264.76625
Year 2012	152,166	69,810,485	458,777	14.3	14.2	56.2	40.0	14.3	32.9	471.2288
Year 2013	153,921	99,261,142	644,884	14.5	20.1	70.7	60.1	14.5	50.1	724.717
Year 2014	155,161	101,345,384	653,164	14.6	20.5	85.3	80.7	14.6	70.4	1027.2475
Year 2015	156,401	95,221,133	608,829	14.7	19.3	100.0	100.0	14.7	90.3	1328.4967
	1,063,622	493,176,414	NA	100	100	NA	NA	NA	NA	3939.681

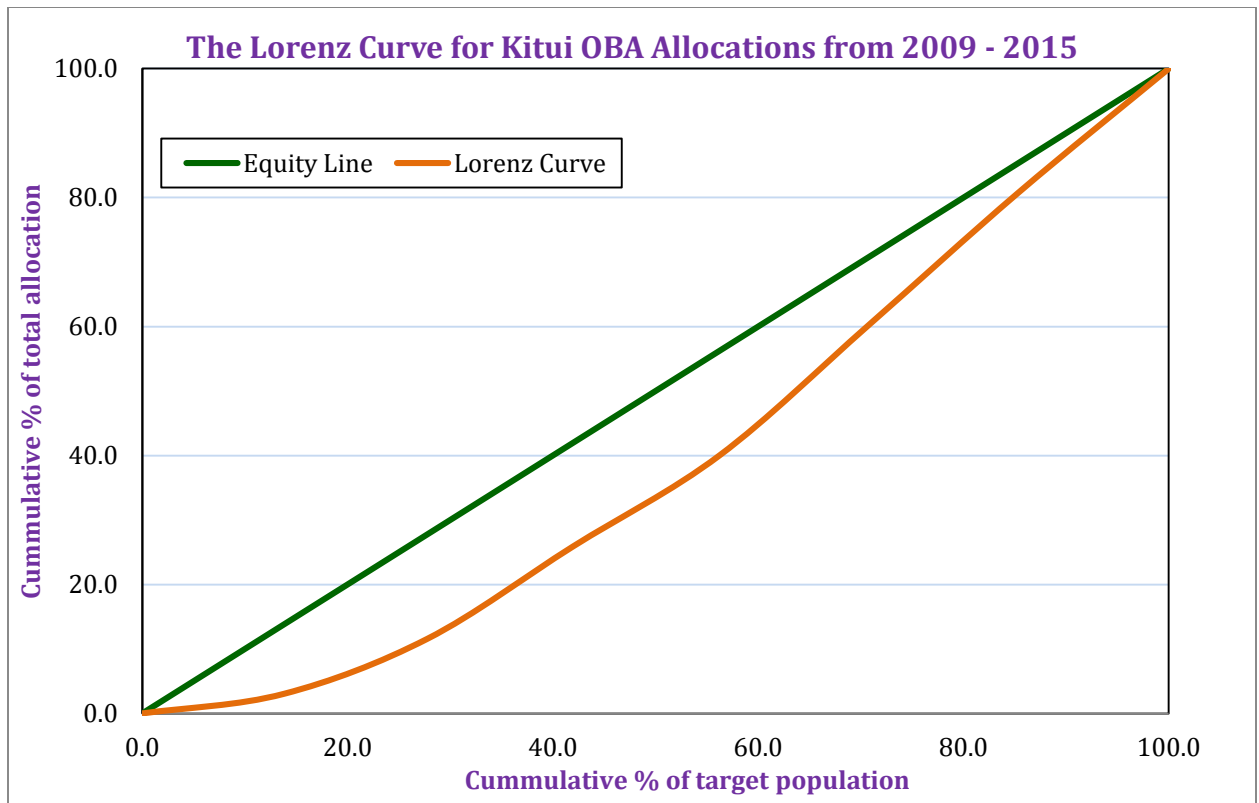


Figure 4.4: Lorenz Curve for Kitui County.

In Kitui County, the Total area under Lorenz Curve=3939.7. Area between Lorenz and equity of 1060.3 and the County has a Gini Coefficient of 0.2121

Table 4.13: Expenditure Analysis for Nairobi County

Year	Antenatal	Delivery	Complications	BTL	Vasectomy	Contraception	Gender Violence	Totals
2009	194,056	2,821,778	217,788	-	-	120,400	125,521	3,479,543
2010	1,472,815	18,565,921	3,271,677	2,180,000	-	5,164,000	588,383	31,242,796
2011	2,367,039	16,579,568	4,048,967	1,858,000	-	4,849,800	945,397	30,648,771
2012	2,533,401	20,366,975	2,862,305	715,000	6,000	10,645,100	215,910	37,344,691
2013	2,491,375	27,113,072	3,268,581	605,000	195,000	9,268,750	1,481,171	44,422,949
2014	2,374,290	22,408,502	3,582,741	1,404,337	40,000	7,875,622	879,711	38,565,202
2015	2,554,608	24,103,377	3,854,836	1,510,991	50,000	8,473,744	946,521	41,494,076
Total	13,987,584	131,959,193	21,106,895	8,273,328	291,000	46,397,416	5,182,614	227,198,028.00
Average	1,998,226.29	18,851,313.29	3,015,270.71	1,181,904.00	41,571.43	6,628,202.29	740,373.43	32,456,861.14

Nairobi County, despite having a small target population, is having a very high absorption of resources as a result of gender based violence. Being an urban setting, this could be as a result of higher crime rate than the rural areas. It is also notable that there is more acceptance to vasectomy for men compared to other counties. Indeed, from 2012 to 2015, there are resources utilized in provision of the service. This is likely to be associated with increased awareness. Normal delivery constitutes 58.08% of the resources absorbed by the county followed by contraception at 20.42%. This could explain the low fertility rate of 2.7 children per woman.

Table 4.14: Per capita allocation per woman of reproductive age, and for women living below poverty line in Nairobi County

Year	Total Expenditure	Women of Reproductive age	Per Capita per woman of reproductive age	Women of reproductive age below poverty line	Per capita per woman of reproductive age below poverty line
2009	3,479,543	27,264	127.62	6,134	567.26
2010	31,242,796	28,361	1101.61	6,381	4896.22
2011	30,648,771	29,459	1040.39	6,628	4624.14
2012	37,344,691	30,556	1222.17	6,875	5431.96
2013	44,422,949	31,786	1397.56	7,152	6211.26
2014	38,565,202	33,016	1168.08	7,429	5191.17
2015	41,494,076	34,246	1211.65	7,705	5385.34
Total	227,198,028	214,688	7,269	48,304	32,307
Average	32,456,861.14	30,669.71	1,038.44	6,900.57	4,615.34

In Nairobi County, while there are no regional specific poverty levels, it is expected that poverty is higher in the slums than the average. For this reason, the average per capita allocation per woman is higher, and appears as an outlier being Sh. 1,038.44. Similarly, the per capita for women living below the poverty line is at Sh. 4,615.34.. Overall, it is expected that with such high per capita, the programme greatly contributed to the reduction of inequity.

Table 4.15: Population and Allocation Statistics for Nairobi County

Year	Target Population	OBA Allocation	PCI	% of Pop	% of Allocation	Cumm % of Pop	Cumm % of Allocation	Bar Width	Bar Height	Bar Area
						0	0			
Year 2009	6,134	3,479,543	567,225	12.7	1.5	12.7	1.5	12.7	0.8	9.7244525
Year 2010	6,381	31,242,796	4,896,021	13.2	13.8	25.9	15.3	13.2	8.4	111.06249
Year 2011	6,628	30,648,771	4,623,997	13.7	13.5	39.6	28.8	13.7	22.0	302.25756
Year 2012	6,875	37,344,691	5,431,849	14.2	16.4	53.9	45.2	14.2	37.0	526.49117
Year 2013	7,152	44,422,949	6,211,380	14.8	19.6	68.7	64.8	14.8	55.0	814.10895
Year 2014	7,429	38,565,202	5,191,454	15.4	17.0	84.0	81.7	15.4	73.2	1126.4753
Year 2015	7,705	41,494,076	5,385,117	16.0	18.3	100.0	100.0	16.0	90.9	1449.4855
	48,305	227,198,029	NA	100	100	NA	NA	NA	NA	4339.605

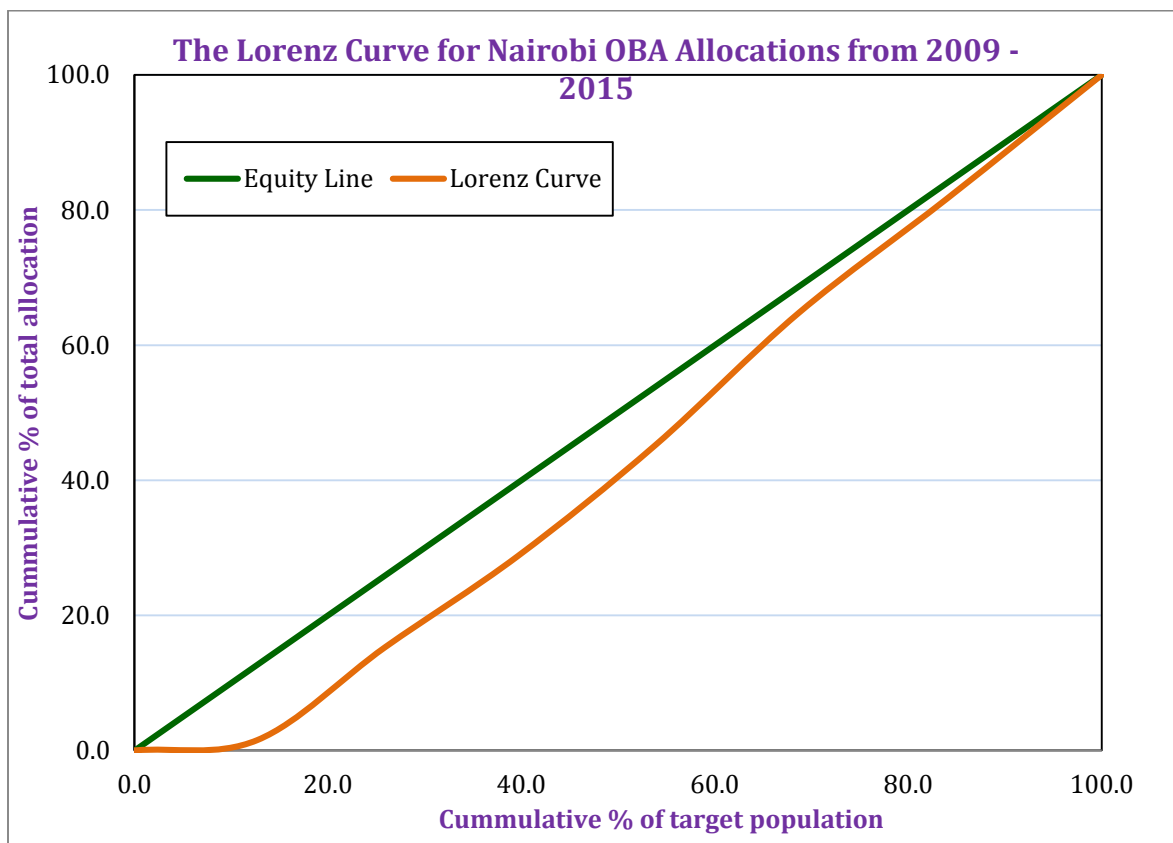


Figure 4.5: Lorenz Curve for Nairobi County.

In Nairobi, the total area under Lorenz Curve is 4339.6. Area between Lorenz and equity=660.39 and the Gini Coefficient is 0.1321. In this case, the level of inequity is equally very low.

4.2 Discussion of Results

This study reveals that the programme has reduced inequity in line with the programme objective. This is an expected outcome since the programme was purely targeting the poor. However, the study also the allocation was more demand based as opposed to being need based which is reflected by the variances in allocations. There is a wide variance in the allocation per woman of reproductive age when it is not adjusted for poverty. This is largely due to the large difference in poverty levels.

To adjust for this the population was adjusted for poverty level to capture only those living below the poverty level. The results show that Nairobi has a high average per capita for every poor woman of reproductive age at 32,922.48, this could however be due to lack of a poverty index for slums, which is expected to be higher than the average for Nairobi. There is no specific poverty level for slums. However, even for counties where results are more comparable, the study reveals large variance for the per capita allocation. Among the poor women of reproductive age, Kisumu has a large per capita allocation of Sh. 5,130.31. It is followed by Kiambu at Sh. 5,130.34. In Kitui there is a much lower per capita among the poor women at Sh. 3,245.73. Kilifi has the lowest per capita for every poor woman of reproductive age at and Sh. 1,064.65. Resource Tracking Report (Ministry of Health, 2004) pointed out that the government had developed objective criteria for allocating resources based on the population of the regions, the poverty status in the districts and the health indicators. The results thus reveal that there was a gap in implementation of this policy.

Kenya National Aids Spending Assessment (Ministry of Health, 2012) examined resources used by the various services offered in HIV/AIDS programme in the country. The study revealed that in general, high impact interventions such as anti-retroviral therapy and behavior change communication received large share of funding. However, some other high impact interventions such as prevention through treatment for discordant couples also received less attention in terms of the resources, at the expense of low impact interventions such as voluntary counseling and testing. Consistent with this, we note that vasectomy received very low attention, yet it is high impact intervention being a permanent method and the only way that was bringing male involvement in the programme. For instance, in Kilifi, not even one case of vasectomy was performed. In Kiambu and Kitui, only Sh. 3,000

was used in this intervention out of a budget of Sh. 524,028,641 and Sh. 493,176,415. In Nairobi and Kisumu, very little was also used for this intervention at Sh, 291,000 and Sh. 11,000 only. This could be due to demand side factors such as socio-cultural factors. It could as well be due to supply side factors such as the fact that these services were not availed at facilities near the clients making it hard to access.

There also appears to be differences in the quality of services, or technical efficiency in the facilities. This is reflected by the major difference in the amounts being used in catering for complications of labour. For instance, Nairobi used Sh. 21,106,895 out of its budget to cater for complications while Kisumu used Sh. 50,401,287. This could be due to differences in management of delivery leading to complications.

CHAPTER 5: SUMMARY OF FINDINGS, CONCLUSIONS

ANDRECOMMENDATIONS

5.1 Summary of Findings

According to Human Development Report (UNDP, 2014) the level of inequality in Kenya is 47.7%. We thus conclude that the programme has contributed significantly to reduction of inequity. It would thus be recommended for other health programmes aimed at reducing inequity. The Gini coefficient for the Voucher programme target counties of Kiambu, Kisumu, Kitui, Kilifi and Nairobi, we notice that all the below 25% (0.25), meaning in all the counties there is low inequality in resource allocation from the programme. This was an expected outcome since the programme was targeting only the poor.

In terms of average per capita allocation for women of reproductive age we find that Kilifi was lowest with Sh. 760.16. This can be associated to the fact that there was low utilization of services in the county. Kiambu follows at Sh. 1,109.96 and this is largely due to the fact that it captures all women of reproductive age, but only a smaller portion of 27.2% is targeted, those living in poverty. Kitui and Kisumu have an average per capita of Sh. 2,061.04 and Sh. 2,792.04 per woman of reproductive age respectively. This is associated with the fact that with poverty indices of 63.5% and 52.4 respectively and thus most of the women could qualify to seek services under the programme. Nairobi has an outlier average per capita of Sh. 7,407.83. This can be associated to the fact that despite the programme being implemented in two slums, where poverty levels are expected to be higher than the average for Nairobi, there exist no statistics on the level of poverty in the slums.

While it is evident that the programme reduced inequality by focusing on the poor, there are major differences on allocation per woman of reproductive age by the project. This can be attributed to the varying poverty levels in each of the county and thus analysis per poor woman of reproductive age may provide a more accurate of the allocation.

In terms of average per capita for poor women of reproductive age Kilifi had the least at Sh. 1,064.65 followed by Kitui at Sh. 3,245.73. Kiambu was at Sh. 5,130.34 followed by Kisumu at Sh. 5,328.30 while Nairobi had a figure of Sh. 32,922.48. This shows that the resources allocation and absorption was demand-based as opposed to being need-based. Kiambu and Kisumu absorbed more since more women deliver in hospitals with Kiambu at 92.6% of women delivering in hospitals but having less fertility rate of 2.7 children per woman (KDHS, 2014). Kisumu on the other hand has 69.2% of women delivering in hospitals but higher fertility rate of 3.6 children per woman.

The absorption for Kitui and Kilifi was low because more women choose to deliver at home. In Kitui, only 46.2% of women deliver under a skilled health worker while in Kilifi, only 52.3% of women deliver in a health facility. Kilifi and Kitui also have the highest poverty levels at 71.4% in Kilifi and 63.5% for Kitui. Their utilization of services including contraception is low and thus they have higher fertility rates with Kilifi a woman bearing 5.1 children on average while Kitui the average is 3.9 children. The higher figure for Nairobi could be due to the fact that the poverty level for the Korogocho and Viwandani slums may be significantly higher than for the rest of Nairobi County.

5.2 Conclusion

Based on the findings of this research the conclusion is that the programme is effective in reducing inequity with all the counties having a Gini coefficient of less than 25%. Being a programme that was being implemented to inform the country's healthcare financing strategy in terms of reaching the poor and the vulnerable, it can be concluded that it is a viable option to achieve this goal.

However, the programme allocation of resources was based more on demand for the services as opposed to needs. Counties with higher poverty absorbed fewer funds than their counterparts where poverty levels are lower. It is thus concluded that there are other factors, besides financial access to health services that hindered service utilization.

5.3 Recommendations

One of the recommendations from this study is that the voucher programme can be very effective in targeting the poor thus reducing inequity. Thus, and in line with the aim of the programme of reaching the poor, the programme should be extended to cover other areas of service delivery and not just maternal health. Another recommendation is that it is important to establish the poverty levels at sub-county levels especially in informal settlements so that the impact of interventions targeting those specific areas as opposed to the whole county may be measurable.

5.4 Areas of Further Study

Further studies need to be done to establish why Kilifi and Kitui County, despite having the highest poverty level and the presence of the programme targeting the poor, most of the women still deliver at home and generally uptake for reproductive health services is below other counties. These could be associated with other social determinants for health that affect the communities' health seeking behavior.

It is also important that a study be conducted to establish why there is very low uptake of vasectomy services in all the counties, this inspite of the fact that the service was being offered at no cost to potential clients. Kilifi County would particularly be of interest since the number of children per woman is way higher than the other counties.

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