

**PROGRESSIVITY OF THE OUTPUT BASED AID VOUCHER PROGRAMME AND
ITS EFFECTS ON FAMILY PLANNING AND MATERNAL HEALTH IN
NAIROBI AND KIAMBU COUNTIES, KENYA**

BY

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DECLARATION

This study is original research work and to the best of my knowledge, has not been submitted for a Degree award in any other University.

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Date

The research is submitted for examination by the candidate and approved by me, the candidate University Supervisor for this research work

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May God in His infinite mercy bless you all.

DEDICATION

I dedicate this project to Almighty God and to my late parents, *Chief Victor Onovbakporma Adueye Ogo* and *Mrs Victory Oritseweyinmi Iyoli* for giving me life to accomplish my education desires. To my *maternal grandmother, mama Mary Eyitemi Iyoli* who was always there when I need someone to lean on.

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ABBREVIATIONS

ANC	Ante-Natal Care
AME	Average Marginal Effects
AMHI	Access to Maternal Health Information.
BIA	Benefit Incidence Analysis
BTL	Bilateral Tubal Ligation
DiD	Difference in Difference
DSF	Demand Side Financing
FP&MH	Family Planning and Maternal Health
GLSS	Ghana Living Standards Survey
IUCDs	Intrauterine Contraceptive Devices
KDHS	Kenya Demographic Health Survey
KHHES	Kenya Household Health Utilization and Expenditure Survey
LAFP	Long Acting Family Planning
LTFP	Long-Term Family Planning
MH	Maternal Health
MDGs	Millennium Development Goals
MOH	Ministry of Health
NHI	National Health Insurance
NHIF	National Hospital Insurance Fund
OBA	Output-Based Aid
OOP	Out-Of-Pocket
OOPE	Out-Of-Pocket Expenditure
PCA	Principle Component Analysis
RH-OBA	Reproductive Health- Output Based Aid
RHV	Reproductive Health Vouchers
SDH	Social Determinants of Health
UHC	Universal Health Coverage
UNFPA	United Nations Population Fund
VSPs	Voucher Service Providers

ABSTRACT

Developing countries are yet to attain the status of developed country in providing healthcare to the population. Low income countries have high unmet need for family planning because of the barriers to accessing contraceptives. Despite increase in utilisation of contraceptive among women in Sub-Sahara Africa, use of Long-Term Family Planning (LTFP) contraceptive methods remain low partly because of high cost of these methods. In developing countries, the poor and vulnerable households are unable to access basic healthcare due to health financing related constraints. To improve equity in health care in Kenya, the Output-Based Aid (OBA) voucher programme was implemented in 2006. However, despite the implementation of the OBA, there is no study to determine progressivity of the programme. The specific objectives of this study were to analyse progressivity of the OBA voucher programme and, to investigate the effect of the OBA voucher programme on LTFP and maternal health in Nairobi and Kiambu Counties of Kenya. This study adopts a case study research design. Secondary data was obtained from the database of the Kenya Ministry of Health (MOH). The Benefit Incidence Analysis (BIA) was used to analyse progressivity of the OBA voucher programme while the binary probit regression model was used to analyse the effect of OBA on Family Planning (FP) and Maternal Health (MH). The results showed that the OBA voucher programme was not progressive because it did not benefit neither poor women nor those classified as the poorest of the poor. On Family Planning (FP) and Maternal Health (MH), the finding established that OBA voucher programme had a positive effect on the utilization of FP and MH. The study recommends that similar programmes should pay attention to design and stepwise implementation in order to achieve equity. The results also provide useful lessons to planners responsible for the implementation of Universal Health Coverage (UHC) in Kenya, in particular ensuring demand side factors that will hinder utilization of FP & MH service are adequately addressed in the financing of the UHC.

CHAPTER ONE

INTRODUCTION

1.0 Background of the Study

Fertility and maternal health outcomes are some of the indices and determinants of measurement of societal wellbeing critical in determining growth and sustained economy (Bhargava, 2007). At the micro level, low fertility is associated with welfare improvement of women and children. The quantity-quality theory argument of children, postulates that, lower fertility allows mothers to accord more time and resources to their children (Wu, 2009) which affects Reproductive Health (RH) of women. Reproductive Health as defined from a wider health perspective is not the absence of sickness or physical and mental weakness but encompasses the whole being of man (World Health Organization, 2000). This perspectives places high premium on choice and freedom in respect of women's reproduction health. Thus, reproductive health rights equip woman with power to regulate fertility as well as improve access to healthcare and health equity (Richard et. al, 2016). This project focuses on two of the five components of RH according to UNFPA (2016), family planning, maternal and child health.

Globally, 221 million women desire to prevent unintended pregnancies, but are unable to do so (UNFPA, 2016). Most women, especially those in low income countries are unable to prevent pregnancy because of cost of accessing contraceptives. The high cost of maternal healthcare and the catastrophic expenditure thereof on the household, increases poverty; thus, making at least, 37% of women to deliver at home (KDHS, 2014) or fail to seek care in time, (Abuya, Njuki, *et al.*, 2012). Furthermore, Out-Of-Pocket (OOP) expenditure increase delays seeking care and complicate childbirth as well as promote inequity in health. Njuki, Obare, *et al.*, (2013); Richard, Furler, *et al.*, (2016). Oyugi, Kioko, *et al.*, (2017) in their study, established that, worldwide, 30% of maternal death averted annually were attributed to family planning services. However, developing countries are yet to attain adequate reproductive health services for the population like their counterparts in developed countries.

Several reasons have been put forward as to why developing countries are yet to attain the status of developed countries in providing healthcare to the populace. One of such reasons, is that the use of the traditional input-based approaches in healthcare provision which has not achieved the objective of healthcare inequity (Grainger, Gorter, *et al.*, 2017). The new development agenda in Kenya is an integrated approach focusing on development, designed to

address the concerns of family planning as a development agenda to achieve vision 2030 goals. The focus of the new approach is the achievement of universal access coverage for health by integrating reproductive health with national health strategies.

1.1 Access and Utilization of Family Planning and Maternal Health in Kenya

Eva *et al.*, (2015) and Oyugi *et al.*, (2017) are of the view that fertility regulation plays a key role in pregnancy outcomes. They argue that access to contraceptives, impacts positively on the wellbeing of women and enhances their income. By contrast, low income countries have high unmet need for contraceptive because of the barriers to accessing contraceptives (Population Reference Bureau, 2012). According to Oyugi *et al.*, (2017), 57% of women who do not want to give birth but lack access to contraceptives (unmet need) globally, are in Africa. Consequently, mortality among women of reproductive age in Africa is high and their income(s) low. Although utilisation of contraceptives remains low, the uptake of Long-Term Family Planning (LTFP) contraceptives methods is much lower.

The low utilization of LTFP is because of the high cost of accessing these methods. Thus, high cost becomes a barrier to accessing family planning services. This fact is supported by Janowitz, Gmach, & Otterness, (2006); Thompson, (2007); and Wendo (2013) who concurred with the fact that LTFP methods usage have declined in sub-Saharan Africa. Oyugi *et al.*, (2017) also alluded to the fact that the use of LTFP in Sub-Saharan has declined by 5% in the last two decades even though LTFP cost are cheaper both in short and long run as compared to short term Family Planning (FP) methods. However, they recognise the fact that the initial cost of LTFP is more expensive and thus a hindrance to its uptake.

In Kenya, FP use has improved in the last five decades (KDHS, 2014). The increase has been attributed to the commitment of the Government of Kenyan and her development partners. According to the KDHS (2014), 6 in 10 currently married women (58%%) are on contraceptive method. Among the women using any form of contraceptive, 26% use injectables, while implants, 10%% and pills 8% are on implants and pills respectively. The other methods combined account for only 3% of the contraceptive use in the country.

The increased trend in FP use among women (15-49 years), also had a corresponding reduction in unmet need for contraceptives in Kenya. For example, in 2008, unmet need for contraceptive was 26% (KDHS, 2008) compared to 18% of women of the same age in 2014 (KDHS, 2014). This decrease clearly shows increase in contraceptive use in Kenya. Comparatively, trends in maternal health also showed improvement. Maternal health indicators in Kenya show that for

every ten live birth deliveries, six took place in a clinic (46% in public facilities and 15% in private health). However, a significant number (37%) live birth took place at home (KDHS, 2014). Between 2003 and 2014, facility-based deliveries increased from 43% to 61%.

The improvement of contraceptive use and maternal health in Kenya has been attributed to the government commitment as well as implementing partners across the country. Despite the progress made in contraceptive use and maternal health, it is believed that more still need to be done. For example, Kenya fertility rate is 3.9 births per woman compared to the average world fertility rate of 2.4 (World Bank, 2018). According to Bellows (2012), Kenya was ranked as one of the countries with the risk of not meeting the set targets.

1.2 The Progressivity of Output Based AID Voucher Programme in Kenya

Health financing remains a challenge in developing countries. Bhutta, Chopra, *et al.*, (2010) argued that the poor who needs healthcare most in developing countries are unable to access basic healthcare needs because of health financing related constraints. O'Donnell *et al.*, (2008) also posited that the constraints of funding facing women, limit their access to family planning and maternal services. Some other studies such as Ensor, (2004); McNamee, *et al.*, (2009) and Eva *et al.*, (2015) revealed that routine health financing is not all that women require to access quality of health among the poor. Education and public awareness campaign are so other factors for poor women to access quality healthcare. In view of the constraints identified in the two studies, the Government of Kenya in collaboration with development partners introduced an innovative integrated approach to reduce financial barriers for family planning and maternal healthcare services (Eva *et al.*, (2015).

Since society is stratified, healthcare payment is not proportional. Thus, progressivity examines the degree of the extent of unequal ability to pay and, differentially payment for healthcare. It further explains the degree or magnitude to which payments for healthcare are proportional to ability to pay and how payments are an increasing proportion of ability to pay (O'Donnell Dam *et al.*, 2008). To address health equity in Kenya, the Output-Based Aid (OBA) voucher programme was initiated and implemented between 2006 and 2014.

The OBA voucher programme was geared towards reducing the catastrophic household healthcare expenditure especially in accessing and utilizing reproductive health (Njuki, *et al.*, 2013). It was a demand side health financing programme that used redeemable vouchers to subsidize beneficiaries of reproductive health who met the eligibility criteria.

The OBA voucher programme in Kenya began in July 2006 and ended in 2014. The programme provided subsidized reproductive health services for the needy. The voucher programme used the principle of eligibility criteria where eligible beneficiaries were recruited for family planning and maternal healthcare services (Njuki, *et al.*, 2015, Ensor & Yamamoto, 2004). The OBA voucher programme, covered Ante-natal Care (ANC), labour and birth deliveries, caesarean birth deliveries, post-natal care for a period of six weeks, or pregnancy complications and clinical FP methods at subsidized price among the poor women (Abuya, *et al.*, 2012). According to the National Coordinating Agency for Population & Development (NCAPD, 2008) the output of the OBA voucher programme between 2006 and 2008, led to 44,590 facility-based deliveries (*normal and caesarean section*) and the use of 27,000 LTFP methods by client.

1.3 An Overview of OBA in Kiambu and Nairobi Counties

Kenyan government together with the international development partners introduced the voucher program in selected counties (Kisumu, Nairobi, Kitui and Kiambu (2006-2014). Through the program, poor and underserved clients were provided with subsidized services through selected health facilities in the counties. National Hospital Insurance Fund (NHIF) worked with the Technical Working Group (TWG) on Accreditation and Quality Assurance to select the Voucher Service Providers (VSPs) to accredit the service providers (Abuya *et al.*, 2012). In Nairobi and Kiambu counties, the accredited facilities provided reproductive health services for the OBA programme in 58 health facilities as indicated in appendix 1.

Beneficiary clients, chose from the approved accredited health facilities, either from public, private, non-government or faith-based management facilities. A review of the programme as indicated in figure 1.1, show that 77%, 16% and 7% of clients who benefited from the voucher scheme during the 2006-2008 OBA voucher implementation period had normal, caesarean and complicated deliveries respectively in Nairobi and Kiambu counties. On the other hand, about 75%, 18% and 7% of clients who benefited from the voucher scheme during 2009-2014 implantation period had normal, caesarean and complicated deliveries respectively in Nairobi and Kiambu counties. The total deliveries in these two counties was 50,300. Birth deliveries during 2006-2008 period was more by 1,012 as compared to 2009-2014 period.

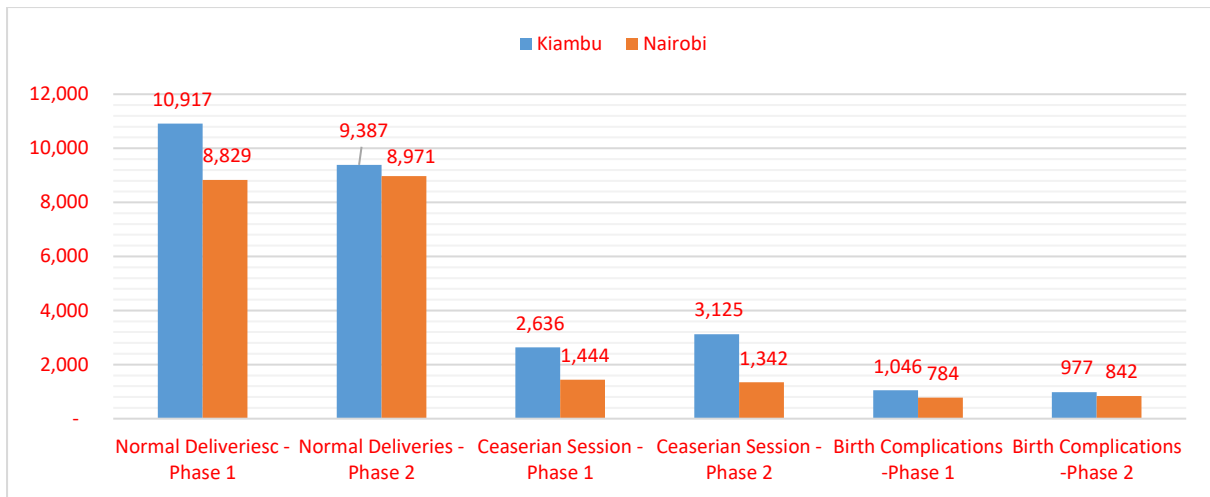


Figure 1.1. Deliveries (Normal, Caesarean and Birth complications) under OBA Programme (2006-2014)

Source: MOH (2010, 2015)

In addition, a total of 10,492 OBA beneficiaries mainly poor women of reproductive age, were provided with FP services through the respective accredited clinics in Nairobi and Kiambu counties for the period between 2006 and 2014. From figure 1.2, it is evident that fewer women accessed family planning services in Nairobi for all methods in the entire period. The most preferred family planning methods among the voucher client for all sites were implants followed by Bilateral Tubal Ligation (BTL). Intrauterine Contraceptive Devices (IUCDs) are least preferred by the voucher clients. Unlike in figure 1.1, where decline of birth deliveries was evident during 2006-2008 period, family planning uptake was more during 2009-2014 period.

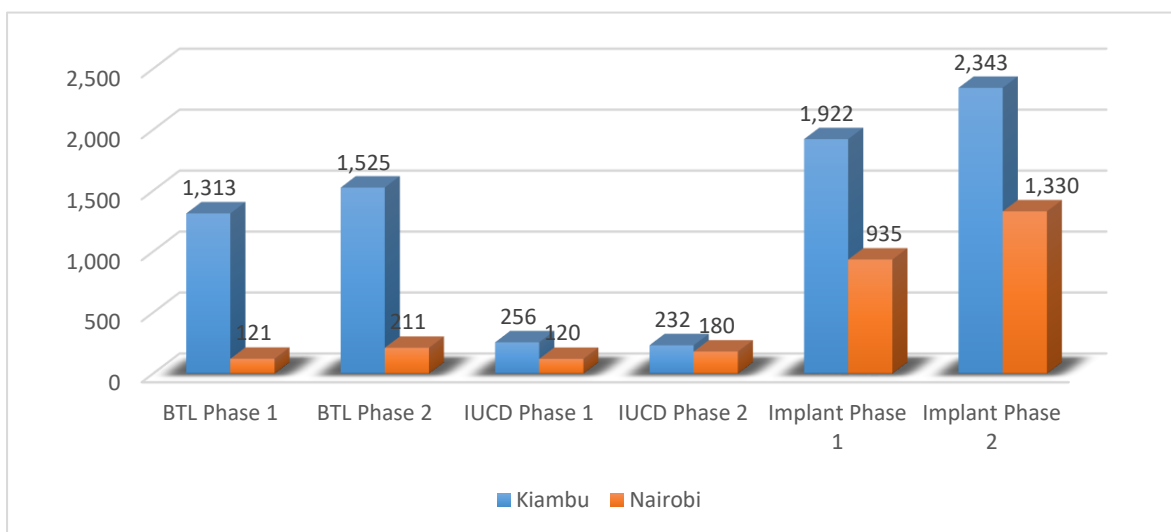


Figure 1.2: Clinical Family Planning Methods for Phase one and two of OBA Programme

Source: MOH (2010 and 2015)

1.4 Statement of the Problem

Improved health care is a topical issue globally and especially among developing countries because of its associated challenges of health financing (Schellenberg, Victoria, *et al.*, 2003; Meuwissen, Gorter, *et al.*, 2006; Ir, Horemans, *et al.*, 2010; Ologunde *et al.*, 2014). According to Tulchinsky, (2014) and Atanasova *et al.*, (2016), adequate and affordable healthcare system is required to attain Universal Health Coverage (UHC). However, health financing systems in Africa and indeed Kenya is far from adequate to address equity and catastrophic expenditure (Munge and Briggs, 2014).

To achieve health care needs in line with the goal of UHC, the Kenya government in partnership with the German Development partners (BMZ and KfW) employed a Demand Side Financing (DSF) OBA voucher programme in 2006, to subsidize reproductive health services to poor women through voucher programme. The programme was a performance-based reproductive health voucher scheme to reduce Out-of-Pocket Expenditure (OOPE) by improving the healthcare necessities of women as well as improve access to safe motherhood. Reviewing the outcome of the programme, Obare, *et al.*, (2013) and Murray *et al.*, (2014) are of the view that the voucher health financing programmes improved healthcare needs of women through increased deliveries by skilled birth midwife, increased uptake of LTFP methods, improve quality of care and access to healthcare.

Other assessment of the programme after it ended indicates that the programme increased utilisation of reproductive health services in Kenya (KfW, 2012; Mwangangi, 2017; Oyugi, *et al.*, 2018). Some other studies explored progressivity of health financing systems for non-reproductive healthcare services (Akazili *et al.*, 2012; Munge & Briggs, 2014). However very few studies, if any, have been done to determine progressivity of the Output Based Aid voucher and the impact of the programmes on FP and maternal healthcare services in Kenya. This study therefore addresses this knowledge gap by determining progressivity of OBA voucher programme on family planning and maternal healthcare services in Kenya.

1.5 Research Questions

- i. What is the progressivity of the OBA voucher programme in Nairobi and Kiambu counties of Kenya?
- ii. How does OBA voucher programme impact family planning and maternal healthcare in Nairobi and Kiambu Counties of Kenya?

1.6 Aim and Objectives of the Study

1.6.1 Aim of the Study

The purpose of this study is to determine progressivity of the OBA Voucher Programme in Nairobi and Kiambu Counties, Kenya.

1.6.2 Specific Objectives

The specific objectives of this study are:

- i. To analyse the progressivity of the OBA voucher programme in Nairobi and Kiambu counties of Kenya.
- ii. To assess the impact of the OBA voucher programme on reproductive health and family planning services in Nairobi and Kiambu Counties of Kenya.
- iii. To provide policy suggestions based on the study findings

1.7 Justification of the Study

The constitution of the Republic of Kenya provides for right to Health for all Kenyans (Republic of Kenya, 2010). The government under the constitution is mandated to initiate health policies and programmes to meet the health challenges of Kenyans. The OBA programme was one of such policy geared towards increased access to reproductive health among poor women in selected counties in Kenya. The study explores the progressivity of the OBA programme as envisioned by the government.

The findings will serve as reference point to government when developing policies in health financing as well, the findings will enhance implementation of similar programmes across the counties. The findings will also enable policy makers in the health sector to design appropriate programmes on health financing to ensure poor women have access to RH services. The study may also contribute to the current debate on UHC currently being piloted in some selected counties in Kenya (such as, Isiolo, Nyeri, Machakos and Kisumu) in an effort of enhancing provision of equitable healthcare services. It further contributes to existing knowledge on progressivity of the healthcare financing. It may thus serve as a reference material in and out of academia.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter reviews relevant theories and empirical studies on the subject matter. In particular, it explores previous studies conducted on OBA and RH services. A summary of the reviewed literature with gaps to be filled is presented herein.

2.1 Theoretical Literature Review

2.1.1 Andersen Model of Healthcare Service Utilization

The Andersen model considers healthcare service use to be linked to socio-cultural and economic needs. As suggested by Andersen (1968) the predisposing; enabling and the need factors are the main components in utilization of healthcare services. The model is grounded on major issue that influences decision making which includes, economic, distance travelled or coverage areas, education levels, distinct achievement centered on past services used as well as perception on quality of care to clients. To expand the model, Maina (2006) also suggested consideration of other administrative, social, topographical, environmental and financial facets that appear to relate to the health of individuals.

Further, it is claimed that contemplations need to be given to household(s) or healthcare systems (Pokhrel & Sauerborn, 2004). Hence, the stimulus for healthcare service use are also affected by aspects such as socio-economic as well as political and cultural factors as alleged and explained by the community or individual(s). From Andersen's model, it is important to consider Social determinants of Health (SDH) that is both demographics as well as socioeconomic characteristics in evaluating the use of RH and maternal healthcare services.

2.1.2 Theories of Reasoned Action and Social Cognitive (or Learning)

The theory of Reasoned Action (RA) was put forward by Fishbein and Ajzen (1988) premising it on the fact that individuals are coherent, and their behaviours are apparent due to objectivity of exploring the concerns of their actions. Following the theory, the purpose of a human being(s) to act in a way is as a result of a one's attitude with consideration of the behaviour as well as the idiosyncratic customs (opinions and anticipation of others). Also, the behavioural intention is a function of both one's attitude towards an issue or acting the behaviour and

subjective norm of an individual regarding the performance behaviour (Hale, Householder, & Greene, 2002). The restriction however of the theory is the fact that it disregards structural as well as environmental determinants that affects the behaviour of an individual. According to Bentler & Speckart (1979) there is an exclusion of a variety of actions including those that are extemporaneous, impetuous, routine, the aspects of yearnings or just monotonous.

On the other hand, Social Learning or Social Cognitive Theory (SCT) advances on the previous theory. The theory emerged from the exertion of Albert Bandura in 1960s and 70s. It suggests that new behaviours may be learnt from observations whereas some may be as a result of experience (Bandura, 1969; 78). Social learning theory focuses on the imperative duties performed by mediated, figurative, and self-regulatory procedures in emotional operative and considers human act or behaviour as unceasing collaboration between cognitive, behavioural as well as environmental influences (Bandura, 1977). Central building blocks of the SCTs include; the belief in the capability to undertake the necessary act commonly referred to as self-efficacy, based on the permissive outcomes of certain recurring behaviour also known as the outcome expectancies.

2.1.3 Systems and Social Interaction Theories

These theories assimilate the structural functionalism. They underscore the core of interdependence of components (Turner, 1991). Considering the systems theory, the concepts originate from the general thinking of Bertalanffy (1971) about system functionality. The use of this theory could be applicable in describing groups, families, or welfare service unit/organizations. OBA voucher beneficiaries fall under both groups, families as well as welfare units as a result of co-existence of religious, sociocultural and modern way of life in different communities. This therefore makes the theory highly applicable in this study. The main principle of systems theory is that individuals are influenced by systems in their immediate social setting for adequate life and therefore OBA voucher programme depends on such systems. The use of this theory in policy formulation may help in understanding where the elements of interaction between reproductive health service uses as well as their environment converge with concern of acquiring and using the OBA vouchers. Policy makers however can fail to attain their anticipated goals of better health outcomes due to problematic interactions.

Similarly, the theory of social interaction despite being close to systems theory asserts that people come up with decisions in interaction with others but not on social seclusion. According to this theory, association exist closely between choice of health services and dynamics in individual(s) behaviour (Christakis & Fowler, 2013). These links are hard to reunite with cohesive subs-systems. In this trait, social connections are likely to function through social learning. Ncece (2017) described social influence as an alignment of social systems strengthened and alters norms of individuals. Examples of these influences are behaviours that may be reflected and adapted by others. Social learning may lower doubt related with connections such as FP through social support networks that offer new information as well as facilitating assessment of those facts (Bongaarts & Watkins, 1996; Myrskylä, 2009). Based on this theory, to realize improved healthcare outcomes, essential building blocks for a health system need to operate effectively. In this case, for programmes such as OBA to be implemented successfully, project team need to consider all essential requirements.

2.1.4 Human Capital Theory

Healthcare systems are increasingly becoming more complex, thereby impacting healthcare providers' ability to provide high-quality healthcare with consequent decrease in demand for specialized care (Wanyoike, 2016). The human capital theory was suggested by Schultz (1961) popularised by Becker (1962). The human capital theory considers health as a commodity that is utilize and maximize with respect to budget constraint; because of endogenous and exogenous variables or characteristics that impact on an individual's health (Grossman, 1972). The theory likens health to stock of goods inherited but depreciates over time. Due to the depreciation, an investment in health is needed such as medical care in combination with other relevant factors to produce new health stock to replace the deterioration in health stock. If the health stock is not replaced, the health stock depletes to zero, and finally results to death.

2.2 Empirical Literature Review

Evidence suggests that vouchers subsidy programmes leads to increase in health service use and increase quality of service offered to groups of people (Bellows *et al.*, 2011; Meyer *et al.*, 2011). A study in Bangladesh and Pakistan on voucher schemes on sexual and reproductive health revealed that voucher programmes can lower inequity in access to healthcare through raising demand among the poor more than the non-poor (Ahmed, and Khan, 2011; Agha, 2011a; Agha, 2011b & Nguyen, *et al.*, 2012). Similar studies found positive relationship

between voucher programme and health care utilisation (Bellows, *et al.*, 2012; Obare *et al.*, 2014).

Akazili *et al.*, (2012) analysed the progressivity of health system financing as well as the incidence of service benefits in Ghana. They used data obtained from the Ghana Living Standards Survey for 2005/2006. Data on household survey collected from six districts was also used in the study from Ghana's three key ecological zones. Information on actual tax revenue was acquired from the Finance Ministry in triangulation with evaluations of the revenue from various taxes. The results showed that indicates that healthcare financing system in the country was driven by progressivity of taxes hence making it progressive. The National Health Insurance (NHI) levy is slightly progressive whereas NHI payments by the informal sector are regressive.

In Kenya, studies have been conducted on the OBA voucher programme. Oyugi *et al.*, (2017) examined access to LTFP methods. They compared OBA with non-OBA clients in facilities supported by voucher programme in Kenya. A multistage was used to assess the determinants of choice of LTFP methods. The FP methods assessed in the study were BTL, Vasectomy, IUCD and Implants. The finding from the study indicates total or combined LTFP methods revealed significant statistical differences in the mean use between OBA versus non-OBA clients. The estimated Difference in Difference (DiD) analysis also revealed that the variations in access between OBA and non-OBA individuals was attributed significantly, to the execution of the OBA programme for Implants, IUCD and total or combined LTFP methods. The study established that location of residence is a significant determinant for uptake of all LTFP methods apart from Vasectomy. The year of registration was also found to be a significant factor in respect to implants as well as total or combined LTFP methods.

Mwangangi (2017) conducted a study to establish use of reproductive health services through voucher scheme in Kilifi County, Kenya. Mixed method research design was used where both primary as well as secondary information was gathered. A logistic regression model was employed to establish the relationship between the uptake of RH services and other explanatory factors. The study used age, education, occupation, marital status and number of births as a determinate for reproductive health use through voucher. Finding from the study indicates that no education, primary education and unemployment had positive effect on demand for RH-OBA health vouchers. In particular, it was revealed that age, age squared, being single and

being married significantly influenced utilization of RH-OBA. The study concluded that having a voucher or insurance do not guarantee improved utilization of healthcare.

In addition, a quasi-experimental assessment of the programme revealed that there is causal link between growth of voucher programme and variations in the quality of healthcare after birth delivery among groups in Kenya (Watt, Abuya, *et al.*, 2015). Obare, *et al.*, (2014) also explored the impact of vouchers (population-level) on assisted skilled birth as well as assessed the community level effect of voucher service use. The finding indicates that the voucher schemes led to reduction in the portion of women in the community who were exposed to Out-of-Pocket (OOP) for safe motherhood services.

Grainger, Gorter, *et al.*, (2017) examined commonalities and the variations ways voucher is designed and implemented. Lessons learnt from the study were explored for the design of a new voucher programmes. Key experts were employed to develop inclusion or exclusion methodology, up-date literature database and review voucher programmes systematically. The result was that, a networking key contacts for identification of new programmes were obtained for additional programme documents. About 40 programmes were studied which led to 120 programme features extracted for detailed analysis. Thus, they posited that healthcare programme utilization, especially maternal health services, are overwhelmingly among the poor. The study concluded that without vouchers subsidy, most client in the study would have been less likely to seek healthcare; and in each programme a positive behavioural response for voucher subsidy was observed.

The implementations of modified healthcare financing structures are embraced to provide equitable access to healthcare for the attainment of Universal Health Coverage. To test this hypothesis, Munge and Briggs (2014) assessed proportionality of progressivity deviations between diverse healthcare financing sources with respect to payment capability. They employed Kakwani index and information was obtained from Kenya Household Health Utilization and Expenditure Survey (KHHES, 2007). The study obtained the concentration and Kakwani indices from healthcare financing sources (direct and indirect taxes as well as OOP) contributions, from private insurances and payments to the National Hospital Insurance Fund (NHIF). The findings from the assessment revealed that the overall healthcare financing structure was regressive. Non progressivity was also observed in OOP payments where all other payments observed to be proportionate. Sensitivity income used as a substitute to measure

ability to pay was also observed because of the effect of direct and indirect taxes and private insurance premiums.

Abuya *et al.*, (2012) analysed policy on Reproductive Health Vouchers (RHV) implementation in Kenya. Their study was conducted because of the innovative health financing approach adopted to lower financial hindrances to use of RH services. Content analysis was as well employed in this study. Also, in-depth interviews were conducted for 10 head of facilities, 18 health providers from the contracted facilities, field administrators and local administration from Kitui, Kisumu, Kiambu and slums areas of Viwandani and Korogocho in Nairobi counties. The finding from the study indicates the implementation of the OBA programme offered opening for knowledge and adapting lessons learnt to local setting.

A review of an in-depth study by Abuya *et al.*, (2012) also revealed some aspects of delayed reimbursement. The five parts reviewed were contracting and quality assurance; benefit package; promotion and supply of vouchers and processing of entitlements and compensation. However, the major finding was the delay in reimbursement of service providers after service provision. Other findings revealed that the clients' limited channel to express to providers, the outcomes of quality of care, accreditation and financial restrictions actual promotion. Hence, insufficient information to clients on how the package could benefit them more. While several studies have been done on the OBA programme in Kenya, it is unlikely that research has been undertaken on progressivity of OBA voucher programme in the country.

2.3 Overview of the Literature Review

This study reviewed both theoretical and empirical study in respect to uptake of healthcare services and policies surrounding healthcare service utilization through the demand side financing. From the review, it is evident that voucher programme addresses equity in accessing reproductive healthcare among the poor and vulnerable groups (Bellows *et al.*, 2011 and Meyer, Bellows, *et al.*, (2011). There is evidence that voucher health programme increases equity in healthcare services and insulate the poor catastrophic health spending. According to Oyugi *et al.*, (2017), the increase in healthcare equity, is a cornerstone for achieving universal health coverage currently being advocated by the Kenyan government.

The last decade has seen increased number of voucher programmes that targets output-based grants for indigents. Despite the increased health subsidy programme, there is still large gaps in access to healthcare (reproductive health) among the poor and vulnerable (Barros,

Ronsmans, *et al.*, 2012). Some scholars are of the view that competition in voucher programs improves health equity (Abuya, *et al.*, 2012; Grainger, *et al.*, 2014).

From the review of the literature on OBA voucher programme, age, education, occupation, marital status and number of births have been associated with demand for RH-OBA health vouchers and utilization of RH services (Abuya, *et al.*, 2012; Oyugi *et al.*, 2012; Mwangangi, 2017). Various analytical techniques such as logistic regressions, linear regression analysis have been utilized by different studies in estimation. Most studies, however, have basically relied on basic qualitative assessments and not econometric estimation. On progressivity, studies including Akazili *et al.*, (2012) and Munge and Briggs (2014) have concentrated on modelling healthcare financing system with little focus on modelling progressivity of programme-based healthcare services.

In Kenya, public healthcare is used as a tool for wider poverty elimination as well as redistribution strategy. Such rationalizations on public healthcare expenditure are considerable and subject to the dissemination of the benefits from the expenditure. In this study, the question is, does the voucher programme benefit poor or a significant proportion, or disproportionate proportion benefits the well off? In this case, few studies have been conducted using benefit incidence analysis to establish whether there is any progressivity of the voucher OBA programme in Kenya. This study is carried out to fill this gap with a focus in Nairobi and Kiambu counties in Kenya.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter presents the method used to realize the study objectives. This includes research design, population of study, as well as sampling. Also, the theoretical framework and empirical model.

3.1 Research Design

The study adopted a case study approach as a research design in contrast to sweeping statistical survey or all-inclusive comparative investigation. It opens a very expansive research field into one or more easily research studies to sufficiently address the problem in space and existing time. The case study design is also important to test theories or models if the phenomenon relates to the real world. It is a very suitable approach when little is known about a phenomenon of study.

3.2 Target Population

The target population for this study are women of reproductive age (15-49 years) who benefited from the OBA voucher programme across the 58 health facilities in Nairobi (Viwandani and Korogocho) and Kiambu counties. These women received reproductive health services in public, private hospitals or Non-Governmental Organizations (NGO) healthcare facilities that were accredited to implement the OBA programme.

3.3 Sampling Criteria

The study used secondary data from MOH database. The master sample (sample frame) of the household survey was developed using a multistage design. The multistage design process included the initial creation of two clusters reflecting the OBA voucher programme, Phase 1, (2006-2009) and phase 2 (2010-2014). A further sub-cluster was created to reflect the two counties (Nairobi and Kiambu counties). A third smaller sub-cluster was created to select the OBA information on levels of maternal health care services (hospital deliveries), family planning (clinical methods), costs per client and services, and socioeconomic status of clients. The data provides vital information which shows whether voucher clients are poorer or not compared to non-voucher clients. The sample size of the study was 20,000 clients drawn from the data base of the Ministry of Health. An inclusive criterion was developed to select all women client who fitted the inclusive criterion.

3.4 Theoretical Framework

Developing nations are challenged on how to finance healthcare among poor people. Pro-poor public expenditure on healthcare improves health of poor people; and this has corresponding increase in productivity and economic development (Castro-Leal *et al.*, 2000). Meerman, (1979) and Van de Walle, and Nead (1995) states that public expenditure distribution across the population are ranked by living standards. However, this should not be the only measure by income because it could be subjected to socioeconomic status such as wealth index among other key indicators. Thus, specific public subsidy provided to an individual is represented by:

$$S_{ki} = q_{ki}c_{kj} - f_{ki} \dots \dots \dots 3.1$$

Where S_{ki} is public subsidy; q_{ki} represent number of service k spent by people i ; and c_{kj} represent cost of providing k in the region j where individual i is located and lastly, f_{ki} is the fee paid for k by i ; that is, the unit cost calculated by obtaining a proportion of total recurrent spending to total units used.

From equation 3.1, O'Donnell *et al.*, (2007) suggests the total public subsidy obtained by an individual can be represented as:

$$S_i = \sum_k \alpha_k (q_{ki}c_{kj} - f_{ki}) \dots \dots \dots 3.2$$

Where: α_k is a constant of proportionality that standardizes usage recall periods across services. In this study, the recall period for the OBA services (maternal health and family planning utilization) is required to be considerably longer such that the items or subjects observed (in this case women using these services) is not very small but at the same time not too long in that the recall biases is huge. On the other hand, if the available information provides the total amount paid to all public health services at the aggregation level, then equation 3.2 can be modified as:

$$S_i = \sum_k \delta_k q_{ki}c_{kj} - f_i \dots \dots \dots 3.3$$

Where f_i represents the amount paid in all accredited healthcare facilities, whereas δ_k is the scaling factor which normalise the recall periods on variables linked to treatment and healthcare use for the recall period and applicable to the variable(s) indicating all payment. The objective is to make sure that subsidy benefits the poor. When this happens, the subsidy concentration curve must dominate the 45-degree line. If subsidies incorporate part of the individuals' final

income, then alternative distributional goals may be evenly distributing the final income more than pre-subsidy income.

Castro-Leal *et al.*, (2000) argued further that between the rich and the poor, subsidy decreases inequality when it terminates the relative gap in welfare. Subsequently, the concentration curve for subsidy must dominate the Lorenz curve, which is apparently much less demanding than dominate the 45-degree line. The domination of the Lorenz curve is called progressivity; weak progressivity of the subsidy, as opposed to absolute or strong progressivity in the case that the concentration curve dominates the 45-degree line according to Castro-Leal *et al.*, (2000); and Sahn *et al.*, (2000).

The theory of consumer demand as postulated by McClelland, (1983), is that a woman's demand curve is relative to indifference curves preferences and Budget Constraint(s) (BC). Thus, women distribute income among different and many goods and services with a view of welfare maximization. Suppose that a household maximizes his utility function as illustrated in equation 3.4;

$$U = f(H, C) \dots \dots \dots 3.4$$

Where; U is the utility of the household, C is the goods consumed and H represent the health of the woman. The household maximizes the utility function, subject to BC as well as Health Production Function (HPF), which depends on market purchased inputs e.g. paying for a gym, health insurance services in order to acquire more medical services. The following is the representation of the budget constraint;

$$S_i FM + P_j J + P_c C = Y \dots \dots \dots 3.5$$

Where: S_i is the subsidy paid in order to acquire health services (FP&MH services)
 P_j is the price of other market inputs e.g. payment to access gynaecology services.
 P_c is the cost of consumption goods.
 Y is the household earnings.

The HPF that is (H) is given by;

$$H = f(FM, J, K) \dots \dots \dots 3.6$$

Where FM is the Family planning and Maternal health, J is women predisposing and K is the enabling factors for instance; age, marital status, accessibility, information, quality of health services etc.

Equations 3.4, 3.5 and 3.6 above can be used to develop the following Lagrangian function;

$$L = f(H, C) + \gamma_1(Y - P_i FM + P_j J + P_c C) + \gamma_2(H - f(FM, J, K)) \dots \dots \dots 3.7$$

Equation 3.7 is solved to generate the following reduced demand function for FP in addition to MH services among the women of reproductive age;

$$D_{FM} = f(P_{FM}, P_j, P_c, Y, K) \dots \dots \dots 3.8$$

Where;

D_{RF} is the demand for FP & MH services, while P_i, P_j and P_c and Y and K are as defined above.

3.5 Empirical Model

Beneficiaries of voucher program are poorer than non-voucher clients, Abuya *et al.*, (2011). This implies that vouchers are serving the intended audience; a claim being refuted. To realize the first objective of this study, the study derives progressivity of the OBA voucher program by employing the Benefit Incidence Analysis (BIA) as described by Castro-Leal, Dayton, *et al.*, (1997). Through equation 3.2 and 3.3, progressivity of the subsidy is derived from the concentration curve; which is double the area between the concentration curve and the Lorenz curve. This is used as an immediate measure of retrogressive or progressive (Kakwani, 1977) also known as the Kakwani index. This is expressed as $\pi_k = C - G$; where C is subsidy concentration index and G is the Gini coefficient of the measure for the living standard. The π_k value ranges between minus two (-2) and one (1). It is negative (positive) if the concentration curve dominates (is dominated by) the Lorenz curve. However, where the concentration lies on top of the Lorenz curve, the Kakwani index is zero.

We have said above that Kakwani index is the variance between concentration index and the Gini index; then both can be computed by the convenient regression method; and its value is expressed in the following form;

$$2\sigma_r^2 \left(\frac{s_i}{\bar{\mu}_s} - \frac{y_i}{\bar{\mu}_y} \right) = \alpha + \beta x_i + u_i \dots \dots \dots 3.9$$

Where s_i , represents subsidy of health service provided to client i ; $\bar{\mu}_s$ represent estimate of its mean; y_i represent the living standard measure, $\bar{\mu}_y$ represent, estimate of its mean, r_i represent, the weighted fractional rank of the living standards distribution and σ_r^2 represent its variance. The use of OLS elucidates β which is an estimate of the Kakwani index (Demery and Gaddis, 2009). This is, however, equivalent to estimation of the percentage shares and their variance matrix as well as joint estimation across multiple outcome variables or sub-populations (Jann, 2016).

Further, considering service volume, and the cost of services received, benefits for service delivered were estimated by type of service, such as FP and Maternal Health (MH). These subsidies (benefits) were then disseminated following the living standard of the women gaining the said benefits. The study thus employed Lorenz curves and concentration curves which, according to Jann (2016) are widely used tools for the analysis of economic inequality and redistribution. According to Jann (2016) on contrasts, we computed the distributional differences. This aids in evaluating whether distribution say W Lorenz dominates distribution Z . Further, the difference that is $GLW(p)-GLZ(p)$ could be used to determine whether distribution W generalized Lorenz dominates distribution Z . Note that dominance is given if the difference is positive for all p .

In the second objective, the study establishes how access to OBA voucher influenced use of FP services and birth deliveries by poor women who are still giving birth in selected counties. The link was examined by utilizing binary (probit) regression model that falls between an interval of 0 and 1 which is a probabilistic distribution. In this case, the interpretation of the likelihood of either using or not using FP or MH services. The error term is assumed to take a standard normal distribution.

$$y = \begin{cases} 1 & \text{if } y^* > 0 \\ 0 & \text{if } y^* \leq 0 \end{cases} \dots\dots\dots 3.10$$

Where y is the likelihood of receiving FP&MA service is 1 if one utilizes; and 0 when otherwise. The probit model, assumes a normal distribution with a mean of zero and a variance of one; then the study estimates the marginal effects in order to interpret the results of the model. The analysis seeks to reflect the change in the probability of experiencing an event that is receiving FP&MH services by women, given a unit change in independent variable. Comparing equations 3.8 and 3.10, the specified model is used, and it is represented as follows;

$$Y = \beta_s X_s + \varepsilon_i \dots\dots\dots 3.11$$

Where; Y is dependent variable (received FP&MH service) while X_s are the independent variables (demographic factors, socioeconomic status, utilization levels of OBA vouchers, access to health information) and ε_i is the error term. Other variables apart from access to OBA vouchers are included in the model as control variables.

3.6 Model Specification

The multiple regression model (s) for FP & MH services demanded is represented in equation 3.12 and 3.13. The model estimated the Average Marginal Effects (AME) of the resulting coefficients. The following is the general model.

$$H = f(\text{OBA Vouchers, HD, SOC, EXM}) \dots\dots\dots 3.12$$

Where H is the demand for reproductive healthcare services (family planning services, maternal health), OBA Vouchers is the level of subsidy received under OBA, HD refers to household demographics, SOC is the socioeconomic status and EXM stands for exposure to mass media also implying access to maternal health information.

Therefore, the specified equation was expressed as;

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon_i \dots\dots\dots 3.13$$

Where:

Y_i = A dummy variable for demand of reproductive health by women where $i=1$ for family planning which is the first model (*Model 1*) and 2 for maternal health which is second model (*Model 2*)

X_1 = Subsidy received under the OBA voucher programme

X_2 = Age of the woman

X_3 = Education

X_4 = Marital status

X_5 = Wealth Quintiles

X_6 = Exposure to Mass Media

μ = error term

3.7 Variable Definition and Measurement

Family Planning: This is defined as “the ability of individuals and couples to expect and achieve their anticipated number of children as well as the spacing and timing of their births. It is realized through use of contraceptive methods and the treatment of involuntary infertility” (WHO, 2000).

Maternal Health: This refers to woman’s health status during pregnancy, delivery and post delivery period which may last up to six months. In this case, maternal health utilization is focused on those women who gave birth with the help of skilled birth attendants (hospital deliveries).

Age of the Woman: This is the period of woman's life beginning from birth to any given time usually measured in years. This study focusses on women of reproductive age (15 and 49 years).

Age of the Woman Squared: This variable was introduced to the woman's family planning and maternal health equations. This variable mainly measures the experience of an individual in an activity. Thus, we expect older women to have more knowledge about use of contraceptives compared to young women. This variable is expected to have a negative effect.

Marital Status: This defines an individual's status regarding whether they are single, married, widowed, divorced or separated. Mostly, individuals who are married tend to demonstrate a particular behaviour compared to the other categories. In this study, marital status was operationalized into two categories; that is, married and not married.

Educational Levels: It refers to highest education level that a woman under OBA program has successfully completed which is an indication of an achievement of learning objectives for that particular level. Usually, this is validated through assessment of acquired knowledge, skills and competencies.

Socioeconomic Status: This is an economic and sociological combined total measure of a woman or family indicating the social class or economic status in relation to others. It's measured through considering key social and economic components such as income levels, employment and occupation. It reveals inequities in access and use of resources.

Subsidy Levels under OBA Voucher: The amount subsidized under OBA voucher in accessing FP & MH services.

Exposure to Mass Media: This variable measure access to health information through various mass media channels.

Table 3.1: Definition of the Research Variables

Variables	Variable definition and measurements	Expected sign
Family Planning (Model 1)	Is a dummy variable taking the value of 1 for women of reproductive age who accessed and utilized any of family planning products under OBA voucher programme. 0; Otherwise	
Maternal Health (Model 2)	Is a dummy variable measured taking the value of 1 for women of reproductive age who accessed and utilized maternal healthcare services (birth deliveries) under the OBA voucher programme, 0 otherwise.	
Independent Variables		
Demographic factors	Age of the Woman: This is a continuous variable commonly expressed in units of years. In this study it is measured in complete years.	Positive
Age Squared	Age Squared: This measures experience of a woman in the use of FP and/or understanding of the benefits of accessing maternal health care. This is computed by squaring age of the woman.	Negative
Marital Status:	Is a dummy variable where; 1 if Married and 0 not married	Indeterminate
Educational levels:	This is a dummy variable categorized into four variables: 1= no education (<i>reference variable</i>), 2= primary education level, 3= secondary education level, 4= Higher level of Education	Positive
Socioeconomic status	Wealth Quintiles: This was operationalized into five categories: 1= poorest (<i>reference</i>), 2= poorer, 3= middle, 4= rich, and 5= richest.	Positive

Employment Status:	A dummy variable taking the value of 1 if employed and 0 if otherwise	Positive
Subsidy levels under OBA voucher	This is a continuous variable. This is computed as the difference in cost of obtaining FP and MH service and the actual amount paid.	Positive
Exposure to Mass Media	This is a dummy variable where 1, if exposed to any mass media channel and 0 otherwise.	Positive

3.8 Diagnostic Tests

3.8.1 Multicollinearity

Multicollinearity is deemed present when two variables are linearly dependent. If this is the case, the inconsistency of parameter estimates will be inflated prompting delivery of wrong degree of estimates for coefficient as well as signs; leading to poor as well as incorrect decisions (Vatcheva, Lee, *et al.*, 2016). Correlation analysis was used to confirm for its presence. If confirmed present, one of the correlating variables in that particular pair is either retained if not highly correlated or even sample size is large. As well it can be dropped if these conditions are not attained (Gujarati, 2004).

3.9 Data Type and Source

The study made use of secondary data obtained from Ministry of Health database. The dataset meets the BIA computation required for health service information to measure living standards. Secondly, client who access service is weighted by the unit value to the subsidy of the public of the service. Lastly, subsidy utilisation is evaluated against some target distribution which in this case is women of reproductive age who benefited from the Safe Motherhood of the OBA programme. The dataset covers the entire two phases of the OBA programmes between 2006 and 2014. The following variables are considered for the study: usage levels of MH care services such as hospital deliveries, FP, costs per client, and socio-economic status of the sampled population. This information is vital to the study because it shows whether voucher clients are poorer or not, compared to non-voucher clients.

3.10 Data Analysis

All OBA data collected from Ministry of Health was entered in the data sheet, coded and cleaned. Data cleaning involves cross checking for contradictions as well as missing data. In addition, the coded data was edited to check for the errors and omissions. Once the quality of

the data was ascertained, it was further uploaded to statistical software- *STATA* version 14.2. Analysis was undertaken in two-fold; First, descriptive statistics were computed using the means, standard deviations, minimum and maximum. Second, regression analysis was used in estimating the econometric models.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.0 Introduction

Chapter four presents the findings of the progressivity of the Output Based Aid (OBA) Voucher scheme and its effects on Family Planning and Maternal Health in focused counties of study. The study objectives addressed analysis of progressivity of the OBA voucher programme and the effect of the OBA voucher programme on FP and MH in Nairobi and Kiambu Counties of Kenya. The study adopted Benefit Incidence Analysis (BIA) and Binary Probit Regression models in estimation. Descriptive and regression results are presented largely in form of tables.

4.1 Descriptive Statistics

Table 4.1 indicates that 23.4% of the respondents needed family planning services. On the other hand, birth deliveries recorded were about 39%. The average amount of subsidy was Kshs 3,542 with a standard deviation of 2,862 while the respondent mean age was 29 years. The age range was 15 years being the youngest and 49 years being the oldest. Most respondents (55%) were married.

On education attainment, the study revealed that 52% had no education at all while 17% attained primary school level of education. Also, 24% completed secondary level education; while 6.5% had higher or tertiary education. Considering the wealth quintiles, majority of the respondents were in the first (Mean=24.3%) and fifth (Mean=21.2%,) wealth quintiles. The differences between the second, third and fourth quintiles were small and thus negligible. The results also revealed that 56.5% of the respondents were engaged in some form of employment. Finally, majority of the respondents (60.6%) had access to mass media (radio, TV or read newspaper). This implied that only 39.4% had no access to health information through mass media.

Table 4.1: Summary Statistics

Variable	Observations	Mean	STD	Min	Max
Family Planning	19,982	0.2340	0.4234	0	1
Birth Deliveries	20,000	0.3858	0.4868	0	1
Subsidies (OBA)	20,000	3542	2862.16	200	42951.62
Age	20,000	29.11	9.40	15	49
Age Squared	20,000	936.21	581.91	225	2401
Marital Status	20,000	0.55	0.50	0	1
Educational Levels					
None	20,000	0.52	0.50	0	1
Primary	20,000	0.20	0.40	0	1
Secondary	20,000	0.2421	0.43	0	1
Higher/Tertiary	20,000	0.07	0.25	0	1
Wealth Quintiles					
1st quintile	20,000	0.24	0.43	0	1
2nd quintile	20,000	20,000	0.38	0	1
3rd quintile	20,000	0.17	0.38	0	1
4th quintile	20,000	20,000	0.39	0	1
5th quintile	20,000	0.21	0.41	0	1
Employment	9,148	0.56	0.50	0	1
Exposure to Mass Media	20,000	0.61	0.49	0	1

Source: Study Estimation

4.2 Diagnostic Test: Multicollinearity Analysis

A correlation matrix was adopted to establish the relationship between the independent variables. The positive and negative signs in the analysis indicatives the direction of association between variables. From table 4.2, subsidies were shown to be negatively correlated with age and education while having a positive correlation with other covariates. Other pairs of correlations that had negative relationships includes, age and marital status; age and exposure to mass media; marital status and education, wealth quintiles, employment and exposure to mass media. Lastly, employment and exposure to mass media had a negative correlation. Based on the correlation matrix presented, it can be observed that there was no multicollinearity since most correlations were below 0.5.

Table 4.2: Correlation Matrix for Independent Variables

<i>Variables</i>	<i>Subsidies</i>	<i>Age</i>	<i>Marital status</i>	<i>Education</i>	<i>Wealth quintiles</i>	<i>Employment</i>	<i>Exposure to mass media</i>
<i>Subsidies</i>	1.00						
<i>Age</i>	-0.01	1.00					
<i>Marital status</i>	0.01	-0.0093	1.00				
<i>Education</i>	-0.05	0.018	-0.07	1.00			
<i>Wealth quintiles</i>	0.03	0.02	-0.07	0.11	1.00		
<i>Employment</i>	0.05	0.38	-0.02	0.05	0.18	1.00	
<i>Exposure to mass media</i>	0.03	-0.00	-0.04	0.43	0.04	-0.0049	1.00

Source: Study Estimation

4.3 Progressivity of the Output Based Aid (OBA) Voucher Programme

Subsidization of family planning and maternal healthcare services by German Development Bank (KfW) in Nairobi and Kiambu counties was meant to ensure that spending by women on these services is pro-poor. The clinics involved in the study were public and private clinics as well as NGO health facilities that provide primary healthcare services. Analysis of economic inequality and redistribution was explored through Lorenz curves and concentration curves. These benefits of subsidies were spread in line with the living standard of the women that were recipient of the subsidy.

The study focused on women who were in the bottom 20 of the aggregated wealth quintiles. The coefficient on women in the first (0-20) wealth quintile was $\beta=4.44$, and statistically significant at 5% level. This implies that women in the quintile enjoys on 4.44% of the OBA services. This means that other categories enjoy 95.6% of the subsidies. The coefficient on the second (20-40) wealth quintile is positive ($\beta=10.73$, $t=164.64$) and statistically significant at 5% level implying that only 10.73% of the OBA services. The results further show that the coefficient on women in the third or middle (40-60) wealth quintile was positive ($\beta=17.07$) and statistically significant at 5% ($t=234.94$) level implying that only 17.07% of the OBA services. Furthermore, in the fourth (60-80) wealth quintile ($\beta=25.5$, $t=235.27$) women significantly benefited at 5% level by 25.5%. The t statistic was also way above 1.96; meaning that other categories enjoy 74.5% of the OBA subsidies. That means, this category of OBA clients was not intended to enjoy the services. Lastly, women in the fifth (80-100) wealth quintile ($\beta=42.25$, $t=192.66$) significantly benefited at 5% level by 42.25%. This implies that 42.25% OBA

services were consumed by women in that categories. Like other categories, the t statistic value was way above 1.96. In this category, the findings imply that other categories enjoy only 57.75% of the OBA subsidies.

The findings generally imply that the top 20% of the population considered in this study benefited by 42% of the OBA subsidies which is progressive to this category. On other hand, the poorest population (the bottom 20%) only benefitted by 4.4% of the OBA subsidies which is regressive. These results demonstrate that OBA voucher programme was regressive to the poorest of the poor women. This was further evident in the bottom 20% (0-20) of the women categorized in the first wealth quintile (poorest of the poorest) who benefited only by 4% of OBA subsidies while the top 20% (80-100) of women in the same quintile enjoyed about 43% of OBA subsidies. According to Jann (2016), this is highly regressive.

Table 4.3: Benefit Incidence Analysis (Quintiles Shares in Percentages)

Subsidies	Coefficients	Std. Err.	t-stat	[95% Conf. Interval]	
1st Quintile					
0-20	4.17	0.11	37.15	3.95	4.39
20-40	11.29	0.13	88.96	11.05	11.54
40-60	15.29	0.17	88.00	14.95	15.64
60-80	26.55	0.24	110.45	26.08	27.02
80-100	42.69	0.44	97.17	41.83	43.55
2nd Quintile					
0-20	3.88	0.12	31.84	3.64	4.12
20-40	10.34	0.19	53.75	9.96	10.72
40-60	18.51	0.28	66.90	17.96	19.05
60-80	25.68	0.32	80.64	25.05	26.30
80-100	41.60	0.53	77.87	40.55	42.65
3rd Quintile					
0-20	4.19	0.13	31.59	3.93	4.45
20-40	10.96	0.19	58.21	10.59	11.33
40-60	17.38	0.18	96.45	17.03	17.73
60-80	25.57	0.24	106.06	25.09	26.04
80-100	41.90	0.52	80.61	40.88	42.92
4th Quintile					
0-20	4.75	0.13	36.99	4.50	5.00
20-40	11.06	0.17	66.27	10.73	11.38
40-60	17.53	0.16	108.53	17.21	17.84
60-80	24.90	0.24	105.78	24.43	25.36
80-100	41.77	0.47	88.62	40.84	42.69
5th Quintile					
0-20	5.35	0.13	42.66	5.11	5.60
20-40	11.54	0.16	72.23	11.23	11.86
40-60	17.60	0.18	98.87	17.26	17.95
60-80	22.38	0.23	98.06	21.94	22.83
80-100	43.11	0.49	88.08	42.15	44.07
Total (Aggregated)					
0-20	4.44	0.06	75.63	4.33	4.56
20-40	10.73	0.07	164.64	10.60	10.86
40-60	17.07	0.07	234.94	16.93	17.21
60-80	25.50	0.11	235.27	25.29	25.72
80-100	42.25	0.22	192.66	41.82	42.68

Source: Study Estimation

The study also explored the Lorenz curves and Gini coefficients for the total individuals involved in the study as categorized in the standard living measure. Lorenz curve graphically relates the cumulative percentage of total subsidies or income received against the cumulative number of beneficiaries (in this case, women aged, 15-49 years) starting with the poorest woman. Gini index represent the degree of the distribution of OBA voucher subsidy beneficiaries within the study sites as it deviates from a perfectly equal distribution. Figure 4.1 shows Lorenz curves for women participating and the extent of benefits from the OBA voucher programmes in the two counties.

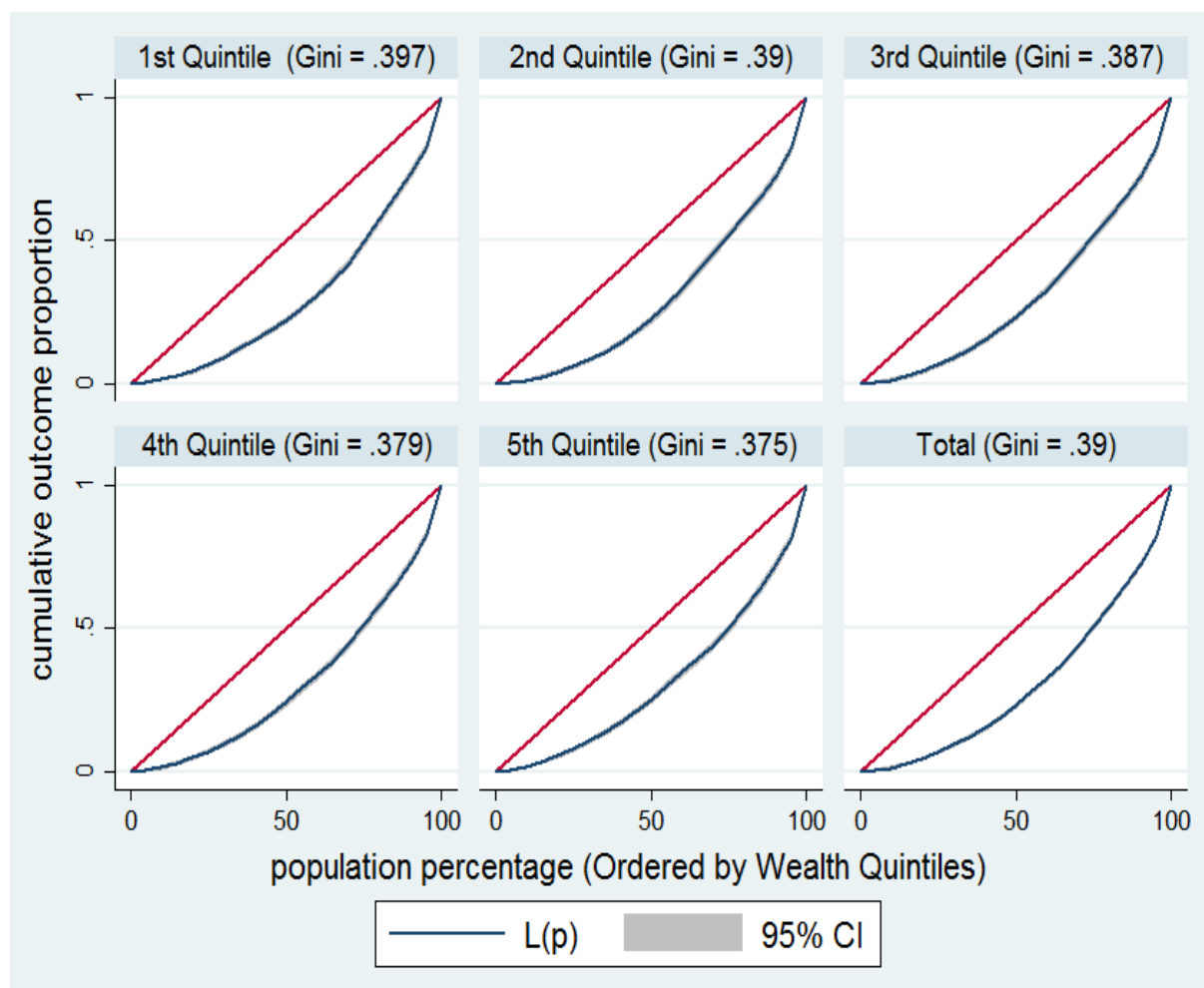


Figure 4.1: Lorenz Curves and Gini Coefficients

Figure 4.1 describes the Gini index which is represented by the area between the Lorenz curve and a hypothetical line of absolute equality, expressed in of the maximum area under the line. Therefore, Gini index of 0 represents perfect equality. While an index of 100 represent perfect inequality. This can also be represented as between 0 and 1. Overall, the programme

demonstrated moderate inequality given the (Total) Gini coefficient of 0.39. This characteristic was also observed across the five categories of wealth quintiles.

The study further explored the contrasts and Lorenz dominance. A useful feature of Lorenz curve is that contrasts between sub-populations (or outcome variables) that can be computed. The study evaluated whether the subsidy distribution of women from other wealth quintiles dominates the subsidy distribution of women from lowest quantiles (poorest). The findings are as shown in figure 4.2 and appendix 3. On contrasts, we compute the distributional differences. Dominance is given if the difference is positive for all p . The study thus considered the difference of the coefficient estimates in the remaining four wealth quintiles against the first wealth quintile (poorest) as well as the overall socioeconomic status (total). The second wealth quintile demonstrated a negative difference with coefficients ranging between 0.00083 and 0.01426 implying no dominance of the second wealth quintile on the first wealth quintile for bottom 45%. These characteristics were also observed in the top 15% of poor women. The rest of women proportion that is between 50 and 80% had positive dominance. The third wealth quintile demonstrated similar trend as the second wealth quintile for the bottom 45% and the top 15%.

The study however established a different trend for the fourth and fifth wealth quintiles. It was shown that there was dominance up to 80% and 75% for the former and latter respectively since the difference in coefficients were all positive. In the fourth wealth quintile, there was no dominance; positive dominance between 85% and 90%. However, at 95%, there is a positive dominance. On the other hand, the fifth wealth quintile has negative difference and thus no dominance. Instead, the first wealth quintile dominates the first wealth category for the top 20%. Following Atkinson (1970), when distribution W Lorenz dominates distribution Z , then distribution W can be seen as less unequal than distribution Z under weak conditions. This observation was as well made by Lambart (2001) who noted that if distribution W generalized Lorenz dominates distribution Z then the distribution W can be seen as preferable over distribution Z in terms of welfare under weak conditions.

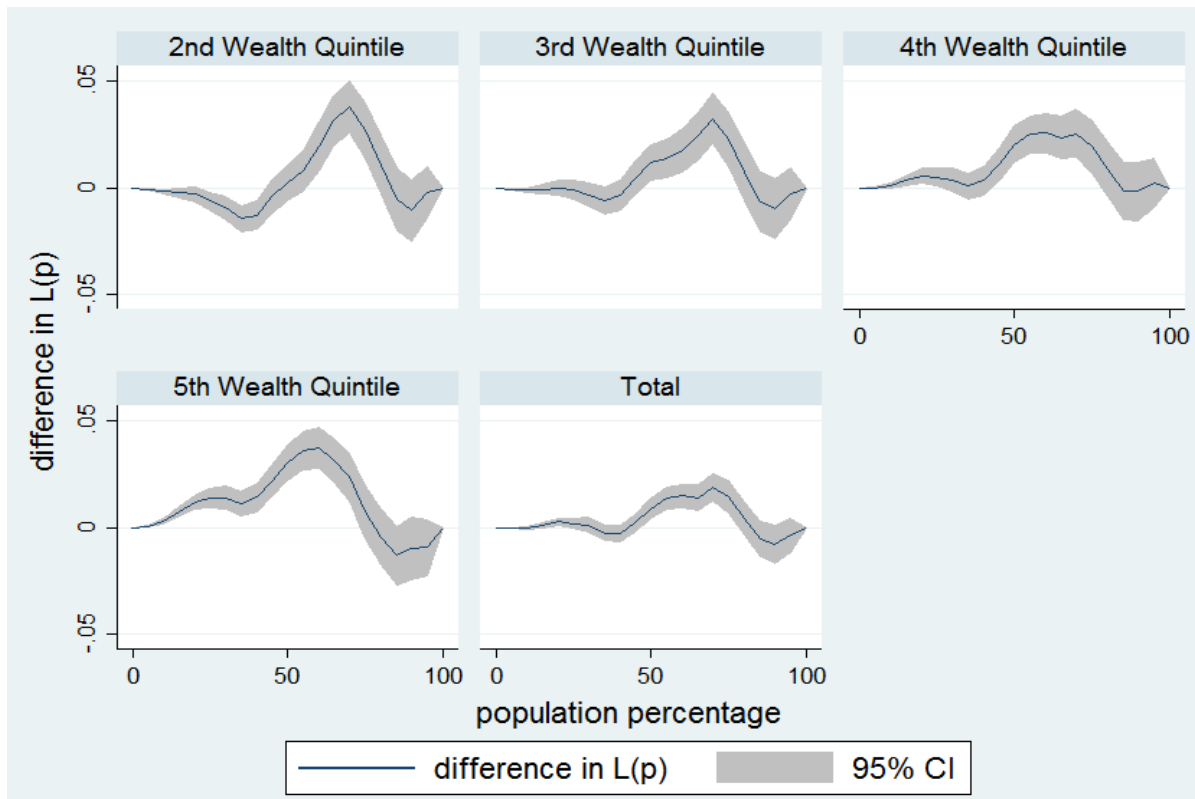


Figure 4.2: Contrasts and Lorenz dominance of OBA subsidies

According to Bellù and Liberati (2005) it's worth noting that Lorenz dominance is based on a visual inspection of income distributions. From the findings, it is evident that the Lorenz curve of all other wealth quintiles lies above the Lorenz curve of the subsidy beneficiaries in the first wealth quintile. This means that it is positively dominated. The finding clearly shows that OBA subsidy distribution among beneficiaries in the first wealth quintile (poorest women) is unequal when compared with the OBA subsidy distribution to women in other categories of wealth quintiles. This was observed in each category as well as total women considered in the study.

4.4 The Effect of the OBA Voucher Program on Family Planning and Maternal Health

The study estimated the probit indexes and respective marginal effects to elucidate the categorical role of each variable influencing utilization of family planning and maternal health in the study sites in Kenya; there by confirming the study as a joint overall significance of the OBA subsidies and the covariates given a χ^2 value of 1420.8 and an overall p value of 0.0000 and a χ^2 value of 889.7 and an overall p value of 0.0000 for FP and MH respectively. This means that the variables used in the model were jointly significant in explaining the FP and MH respectively. More details of the coefficients for marginal effects of the probit models of OBA subsidies and the covariates are as shown in Table 4.4.

Table 4.4: Probit Marginal Effects for Family Planning and Birth Deliveries

Family Planning (Robust Model 1)				Birth Deliveries (Robust Model 2)		
Independent Variables	Marginal effects	t-statistics	P value	Marginal Effects	t-statistics	P value
Number of observations	= 9,470			Number of observations	= 9,478	
LR chi2(13)	= 1420.78			LR chi2(13)	= 889.73	
Prob > chi2	= 0.0000			Prob > chi2	= 0.0000	
Log likelihood	= -4176.24			Log likelihood	= -5860.16	
Pseudo R2	= 0.1924			Pseudo R2	= 0.0717	
Dependent Variable(s)						
<i>OBA Subsidies</i>	0.0141***	4.25	0.000	0.00002***	10.76	0.000
<i>Age</i>	-0.0005	-0.18	0.859	-0.0151***	-4.26	0.000
<i>Age squared</i>	0.00001	0.27	0.791	0.0002***	4.33	0.000
<i>Marital Status (1=married)</i>	-0.0063	-0.80	0.425	0.0204**	2.12	0.034
Education (None= Reference)						
<i>Primary</i>	0.0533***	4.77	0.000	0.0283**	2.09	0.037
<i>Secondary</i>	0.0836***	8.24	0.000	-0.0103	-0.80	0.424
<i>Tertiary</i>	0.2701***	14.28	0.000	-0.0499**	-2.44	0.015
Wealth Quintiles (1st Quintile=Reference)						
<i>2nd quintile</i>	0.0703***	5.61	0.000	0.2549***	16.85	0.000
<i>3rd quintile</i>	0.0637***	5.15	0.000	0.2316***	15.24	0.000
<i>4th quintile</i>	0.0540***	4.47	0.000	0.1801***	12.30	0.000
<i>5th quintile</i>	0.0307***	2.65	0.008	0.0915***	6.51	0.000
<i>Employment</i>	-0.0086	-0.96	0.339	0.1208***	11.14	0.000
<i>Exposure to Mass Media</i>	0.3175***	31.45	0.000	-0.0817***	-7.62	0.000

***Significant at 1%, **Significant at 5% and *Significant at 10%.

The results in Table 4.4 indicates that the pseudo R was very low at 19.2% and 7.2% for FP and MH respectively which according to Awiti, (2013) and Achieng, (2014) is normal for studies of this nature¹. The results from the probit model show that the coefficient on OBA subsidies ($\beta= 0.0141$, p value=0.000), on MH ($\beta= 0.00002$, p value=0.000) were statistically significant at 5% level. This finding indicates that a unit increase in subsidy, increases the probability of FP by 1.41% and MH by 0.002% holding other variables constant.

The coefficient on age ($\beta= -0.0151$, p value=0.000) was found to be negative and statistically significant at 1% level in determining uptake of maternal health or birth deliveries. This means that an increase in the age of the mother, reduces the probability of a woman giving birth in a clinic. Similarly, the coefficient on age squared ($\beta= 0.0002$, p value=0.000) was found to be

¹ Cross sectional studies*

positive and statistically significant at 1% level implying that as women advance in age and so is the experience in the use of FP and understanding the benefits of accessing maternal health care. However, age of the woman was negative ($\beta=-0.0005$, p value=0.859) and not statistically significant at all levels implying that the age insignificant effect in the use of contraceptives. Conversely, the coefficient on mother's age squared ($\beta= 0.00001$, p value=0.791) was positive and statistically significant at 1% level in influencing use of contraceptives.

The findings also revealed that the coefficient on marital status was negative but not statistically significant ($\beta= -0.0063$, p value=0.425). By contrast, the coefficient on marital status was positive and statistically significant ($\beta= 0.0204$, p value=0.034) for MH. This means that being married increases uptake of MH services by 2.04%.

Women who attained primary, secondary and tertiary education were compared to their counterparts who had no education in this study. The coefficient on primary education was 0.0533 with a p -value of 0.000, indicating that women who attained primary level of education had significantly higher likelihood to use family planning compared to those who had no education. The coefficient on secondary education was 0.0836 with a p value of 0.000 showing that women who attained secondary level of education had significantly higher probability (8.4%) of using contraceptives in contrast to those with no education. Furthermore, the results showed the coefficient on tertiary education ($\beta= 0.2701$, p value=0.000) was positive and statistically significant. This implies that women who attained higher level of education had increased probability for uptake of family planning services by 27.01% compared to those who had no education. Considering maternal health, the coefficient on primary education ($\beta= 0.0283$, p value=0.037) indicates that women who attained primary level of education had significantly increased chances of utilizing maternal healthcare by 2.83% compared to those who had no education. The coefficient on secondary education level ($\beta= -0.0103$, p value=0.424) is negative and not statistically significant. The findings showed the coefficient on tertiary education was -0.0499, (p value=0.015) and statistically significant at 5% level, indicating that women who attained higher level of education had a 4.9% probability of utilising maternal healthcare services compared to those who had no education.

Among the socio-economic and key variables, the study considered the wealth quintiles levels where first wealth quintile was treated as a reference category. On FP, women on second wealth quintile had the coefficient of 0.0703, and a p value of 0.000; indicating that there was a significant rise in uptake of FP at 1% level by 7.03% among respondents in the second wealth

quintile contrasting with respondents in the first wealth quintile. Women on third wealth quintile had a coefficient of 0.0637, and a p value of 0.000. This shows that there was a significant increase in uptake of FP at 1% level by 6.37% among women in the third wealth quintile in contrast to women on the first wealth quintile. Women who are on fourth wealth quintile had a coefficient of 0.0540, and a p value of 0.000. Here the findings revealed that there was a significant increase in uptake of FP at 1% level by 5.4% among women on the fourth wealth quintile as compared to women on the first wealth quintile. Furthermore, women on the fifth wealth quintile had a coefficient of 0.0307, and a p value of 0.008. This indicated that there was a significant increase in uptake of FP at 1% level by 3.07% among women on the fifth wealth quintile in contrast to those on first wealth quintile. Based on the established effects of the second, third, fourth and fifth wealth quintiles on FP use, the findings imply that women who are high on socio-economic status are more likely or better placed to use family planning compared to women on lower socio-economic status.

On maternal health, women on second wealth quintile had a coefficient of 0.2549, and a p value of 0.000. This shows that there was a significant rise in uptake of MH at 1% level by 25.49% for women on the second wealth quintile when compared to women on the first wealth quintile. Women on third wealth quintile had a coefficient of 0.2316, and a p value of 0.000. The findings indicate that there was a significant increase in uptake of MH at 1% level by 23.16% among women on the third wealth quintile as compared to women on first wealth quintile. Women who are on fourth wealth quintile had a coefficient of 0.1801, and a p value of 0.000. It showed that there was a significant increase in uptake of MH at 1% level by 18.01% among women on the fourth wealth quintile when compared to those on first wealth quintile. Further, women on the fifth wealth quintile had a coefficient of 0.0915, and a p value of 0.000. The finding revealed there was a significant increase in access to MH at 1% level by 9.15% for women on the fifth wealth quintile when compared to women on first wealth quintile. Considering the established effects of the second, third, fourth and fifth wealth quintiles on MH, the results imply that women ranked highly in terms of socio-economic status are more likely to access MH services compared to women who are ranked low on socio-economic status.

Similarly, employment had a coefficient of -0.0086, and a p value of 0.339. The finding indicates that being employed had a negative and non-significant effect on uptake of FP services by 0.86%. The coefficient did not indicate any significant effect of employment on use of FP services at all levels. However, it had a positive and significant effect on uptake of

MH services. Employment was revealed to have a coefficient of 0.1208, with a p value of 0.000. This means that, at 1% level, being employed led to about 12.08% significant rise in uptake of MH services; implying that, women under employment are likely to be empowered and have ability (such as transport cost and non-medial fees) to access MH services.

The coefficient on exposure to mass media was also found to have a positive and significant effect on utilizing FP services given its coefficient of 0.3175, and p value of 0.000. This indicates that there was a significant increase in uptake of FP at 1% level by 31.75% among women with high frequency of exposure to mass media compared to women with no exposure to mass media. This implies that women who have frequent access to health information, are likely to be more informed on different available methods of family planning and thus, have increased drive for demand. On MH, the result indicates that there was a significant effect at 1% level on access to MH given a coefficient of -0.0817, with a p value of 0.000. This shows that women who were exposed to mass media were 8.2% less likely to have access to use MH services significantly at 1% level. Despite being contrary to apriori expectation, the finding may be attributed to the fact that, some women perceive subsidization and associate widely promoted health services to of poor quality.

Further discussions of the results are done in the next sub section. However, the key observed result is that OBA subsidies had a significant effect on uptake of both family planning and maternal health. Only significant covariates are comprehensively discussed further.

4.5 Discussion of the Results

The study findings indicate that only 4.4% (or bottom 20%) of OBA subsidies benefitted the poorest women implying that the financing was regressive to the poorest of the poor. The Lorenz curve dominance analysis showed that OBA subsidy distribution among women comprising of the first wealth quintile (poorest women) are unequal than the OBA subsidy distribution among women in other categories of wealth quintiles. The study also revealed that the Lorenz dominance does not necessarily imply that one distribution of OBA subsidies is preferable over the others from a welfare perspective (Jann, 2016). The study result differed with the findings of Akazili *et al.*, (2012) who studied the progressivity of healthcare financing and the incidence of its benefits in Ghana. Their findings showed that healthcare financing system in Ghana was driven by progressivity of taxes.

From the model estimation (binary probit regression model), the coefficient on OBA subsidies in MH had a positive and statistically significant effect. This implies that an additional subsidy

increases the probability of FP and MH uptake. Subsidy, therefore, increases access to health products which otherwise inaccessible because inability to pay. The results support the view that voucher schemes can lower inequity in access to healthcare by raising demand among the poor more than the non-poor (Ahmed, and Khan, 2011 & Nguyen *et al.*, 2012).

The coefficients on the age of the mother and the age squared showed significant effect in influencing uptake of maternal health or birth deliveries. The former however had negative effect while the later had a positive effect albeit coefficient being too small and thus negligible. This shows nonlinearity of the age of the mother and the probability among woman giving birth in a clinic. Contrary findings were reported by Mwangangi (2017) who indicated that, an increase in the age of the mother increased utilization of RH-OBA services.

On educational attainment, women with primary, secondary and tertiary education were compared to women who had no education. The results indicate that women who attained primary level of education had significantly higher likelihood of utilizing FP when compared to women who had no education, which indicate that women with secondary education level had significantly higher likelihood of using FP as compared to women who had no education which shows women who attained higher level of education had higher chances of consuming FP services in contrast to women who had no education. On maternal health, the findings showed that women with primary level of education were more likely to utilise the subsidized maternal healthcare services compared to women with no education. The findings further revealed that women who attained higher level of education were less likely to use the subsidised maternal healthcare services. These findings clearly show that the voucher program is more beneficial to women who have low education. Those with low education are also likely to have low income. Although various studies have found education to be a major determinant of contraceptive use, our findings clearly indicate that more educated women rarely use the subsidized voucher services. This is expected because women with higher education are likely to have stable employment and higher income, hence are able to afford FP and MH services.

The result showed that women on second, third, fourth and fifth wealth quintiles had an increased and significant rise in uptake of FP compared to those in first wealth quintile. Similarly, the findings showed an increase in the uptake of MH among women in second, third, fourth and fifth wealth quintiles compared to those in first wealth quintile. This further underscore the importance of subsidisation of health care services among the indigent people.

It should be noted that all the women who participated in the program came mainly from low income households and such a program would naturally be more beneficial to them.

From the analysis on socioeconomic and uptake of either FP or MH, it can be deduced that compared to 1st wealth quintile, the coefficients of all other four wealth quintiles (2nd, 3rd, 4th and 5th) were statistically significant in influencing demand for FP and MH. Such a significance rise may be attributable to individuals in higher wealth cadres being more concerned about their well-being and able to cater for the high non healthcare costs associated with subsidized healthcare services offered under OBA voucher programme also established by Oyugi *et al.*, (2018). The findings of the study concur with that of Abuya, *et al.*, (2012) who concluded that most women, especially those in low income countries are unable to prevent pregnancy because of the cost contraceptives. The high cost of maternal healthcare and the catastrophic expenditure thereof on the household, was established in the recent KDHS, (2014) statistics to increases poverty; where, at least, 37% of women were found to give birth at home or delay seeking care.

Similarly, the result show that being employed influences uptake of MH services. This implies that employment is associated with more purchasing power of healthcare services. The coefficient of exposure to mass media was also found to have a significant effect on utilizing FP and MH. Specifically, a significant increase in probability of uptake of FP among women with exposure to mass media compared to without exposure was observed. Contrastingly, women more exposed to mass media were less likely to access and use MH services. This implies that the more an individual is exposed to health information the more is likely to demand for FP services, and less of MH perhaps due to other unseen factors like the recent case of mix of Kakamega twins, attitudes and lack of assured security to new-borns especially in public hospitals.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND POLICY RECOMMENDATIONS

5.0 Introduction

Chapter five explores summary and conclusions of the study on progressivity of the Output Based Aid (OBA) Voucher Programme and its effects on Family Planning and Maternal Health in Nairobi and Kiambu counties, Kenya. The study further recommends policy based on the conclusions drawn. Lastly, further area of studies is suggested.

5.1 Summary of the Study Findings

Health equity in Family Planning and Maternal Health remains a challenge because of health financing constraints in Kenya. To address the constraints experienced by poor women, the Kenya government and development partners implemented the OBA voucher program in Kisumu, Nairobi, Kitui and Kiambu counties in Kenya. The OBA voucher provided subsidized FP and MH services to poor women. Specifically, services such as Antenatal Care (ANC), Birth Deliveries (Normal deliveries and Caesarean Session), Post-Natal care for up to six weeks, and pregnancy complications as well as Clinical FP methods were subsidized for among poor women. The OBA voucher programme was funded by KFW with support from the Kenya Government.

Several studies have been done on the OBA voucher programme. However, no study has been done to establish the progressivity of the OBA Voucher Programme in Nairobi and Kiambu counties, Kenya. The study determines the progressivity of OBA voucher programme and its effects on Family Planning and Maternal Health in Nairobi and Kiambu counties in Kenya.

A total of 54 health care facilities from both from public and private sectors in Nairobi and Kiambu was used for the study. The percentile shares and their variance matrix as well as joint estimation across multiple outcome variables or sub-populations was considered. The finding indicates that top 20% among the poor women benefited by 42.3% of the OBA subsidies while only 4.4% among women of OBA subsidies were associated to the poorest of the poor who are bottom 20%.

On the effect of OBA voucher programme on FP and MH as indicated in objective two of the study, the covariates, that is, education levels (primary, secondary and tertiary), wealth quintiles (2nd wealth quintile, 2nd wealth quintile, 3rd wealth quintile, 4th wealth quintile and 5th

wealth quintiles) and exposure to mass media were found to be statistically significant. Also, the coefficients for the OBA subsidies, and its respective covariates; marital status, education levels (primary, and tertiary), wealth quintiles (2nd wealth quintile, 3rd wealth quintile, 4th wealth quintile and 5th wealth quintiles), employment and exposure to mass media were found to be statistically significant at all levels in MH in Nairobi and Kiambu counties.

5.2 Conclusions of the Study Findings

Due to healthcare financing challenges, poor women face huge financial barriers in accessing FP and MH. The barriers associated with funding women face reduce their access to these reproductive health services because of catastrophic health expenditure.

The study has firmly established that the voucher programme was not progressive. In this regard, the study concludes that routine financing for health is not all that is required to access health services among the population among the low-income earners. On OBA voucher programme in the two counties and the consequent health benefits, the study concludes that use of health-care services is inequitable, with a predominance of pro-rich use of OBA vouchers. Secondly, the study has comprehensively revealed that OBA subsidies or OBA voucher programme significantly increase utilization of both FP and MH services across the two counties.

5.3 Policy Recommendations

Health financing sources in Kenya are generated from government taxes, Out-Of-Pocket and international Development Partners. The OBA is a Collaboratory venture between the Kenya government and the German government through KWF. The project was developed with a range of objectives in mind. The implementations of modified healthcare financing structures are embraced in developing countries to provide equitable access to healthcare for the attainment of Universal Health Coverage. Since society is stratified, it's evident that healthcare payment is mostly not proportional. The OBA voucher programme in this regard was geared towards reducing the catastrophic household healthcare expenditure, especially in accessing and utilizing reproductive and maternal health services.

Considering the current debate on healthcare financing, there is need to ensure that the widely advocated Universal Healthcare Coverage (UHC) is progressive. This will provide quality healthcare services for all, as well cushion the low-income earners and poor households from catastrophic health expenditures. This is in line of the study results that shows OBA voucher programme was found to be regressive. The government should therefore ensure that all

components of the program are well encompassed. For health system and implementation of UHC in Kenya, the government need to enhance healthcare service delivery systems, the health workforce, health facilities and communications networks, health technologies, information systems, quality assurance mechanisms, and governance and legislation. The regressive finding of the OBA programme according to the finding of the study may have been associated with other challenges faced at design or implementation phases.

Since reproductive health (FP and MH) services are covered under UHC, the design of this programme and its implementation need to address factors that negatively affected the OBA voucher programme improving equitable healthcare financing. This programme employed a combination of health and non-health strategies that emphasized the need for maternal health services, extend family planning services, and improve the status of women. Thus, UHC is best placed towards correcting this inequitable.

Also, the results showed that OBA voucher subsidies as well as educational status were associated with increased use of FP and maternal healthcare. The study suggests the need by the government to ensure that the proposed UHC reach individuals of all social class including the indigent. The government at all levels in Kenya can take actions to move more quickly towards it or and maintain the gains achieved so far. The study appraises UHC under the government main agenda that ensure provision of appropriate, accessible and of the highest quality reproductive health services to the population.

During ANC attendance, there are sessions on awareness or education on various issues. In view of this, the study recommends for the most feasible and attainable strategy of creating awareness apart from introduction of curriculum at any level of schooling. Specifically, the study recommends for creating more awareness among those with low level of education or even extending awareness at the community level, through innovation by engaging Community Health Workers (CHWs) by taking up leading role in Informing, Educating and Communicating health subjects to community members; while also providing economic incentives to them. Increased awareness among the population is necessarily to inform them on their right to obtain better and quality care.

This is based on the study findings which showed that women who had either primary, secondary and higher education levels as well as those who had exposure to mass media had higher chances of utilizing reproductive health services. The government need to establish the correct information including other health campaigns to pass information to the general public

through the media, as access to media was associated with increased use of the FP and MH services. There is a further need to popularize UHC targeting couples. Married women were shown to have higher chances of utilizing MH services. This kind of awareness would lead to increase use of health care services. As the national and county governments embrace UHC as an ultimate solution to improved health outcomes, there is need to observe countries (such as Thailand and Mexico) that have successfully implemented the same and how they finance their health systems.

5.4 Areas of Further Study

The study has mainly considered at estimating progressivity of the Output Based Aid (OBA) Voucher Programme and its effects on Family Planning and Maternal Health in Nairobi and Kiambu counties, Kenya. The cross-sectional data set with several socio demographic factors considered in the study focused only in two counties; that is, Kiambu and Nairobi. However, other counties such as Kisumu, Kitui among others were not considered. Each county has its own dynamics including cultural beliefs. Therefore, there is need to include these counties in other future studies.

Among the poorest people, the causes for not registering for benefits (such as OBA subsidies) could be having insufficient information about the programme, being unable to pay the transport fares, other ancillary fees, and sometimes the under-the-table payments required to get all the required documentation in order, and having difficulty standing in queues for long periods because of disability, pregnancy, or child care needs. These challenges relate to private costs. These costs could be particularly high for those who needed (poorest of the poor) the service most. This study suggests for similar study that accounts for the private costs.

The idea of implementing only one targeting approach, which identifies the beneficiaries for several pro-poor programmes, seems to be more efficient than using different methods for different programmes. There is need to consider comparative study on other similar programmes under different approaches as well as sponsorship for example those sponsored and initiated by the government(s) and those initiated by international organizations. However, this will only be possible when the target groups of different interventions are highly comparable. In other words, the group benefitting of different policy interventions will always be the same.

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APPENDICES

Appendix 1: Health Facilities Accredited in Kiambu and Nairobi Counties (2006-2014)

No	Kiambu County (Total=43)		Nairobi County (Total=15)
1	Kiambu District Hospital	1	Pumwani Hospital
2	Tigoni District Hospital	2	Kayole Hospital
3	Karuri Sub District Hospital	3	Marura Nursing Home
4	Kigumo Sub District Hospital	4	Makadara Health Centre
5	Kihara Sub District Hospital	5	Mathare North Health Centre
6	Lari Sub District Hospital	6	Jahmii Medical Center
7	Lusigetti Sub District Hospital	7	St. Patricks Medical Centre
8	Nyathuna Sub District Hospital	8	Olive Link Medical Clinic
9	Wangige Sub District Hospital	9	Alice Nursing Home
10	Ahadi Health & Maternity Services	10	Lengo medical Centre
11	Beta Care Hospital	11	Nairobi Women Hospital
12	Immanuel Medical Clinic	12	Provide International
13	Limuru Nursing Home	13	Cana Medical Centre
14	Mercylight Hospital	14	Tumaini Clinic
15	Ruby Medical Centre	15	RGC Korogocho
16	St. Antony Medical Clinic		
17	St. Lucy Medical Centre		
18	St Teresa Mat & Nursing Home		
19	AIC Kijabe Hospital		
20	Nazareth Hospital		
21	Marie Stopes Kenya		
22	Gathanga Health Centre		
23	Githiga Health Centre		
24	Githunguri Health Centre		
25	Gitiha Health Centre		
26	Karatina Model Health Centre		
27	Limuru Health Centre		
28	Miguta Health Centre		
29	Ndeiya Health Centre		
30	Ngewa Health Centre		
31	Blessed Palazallo Health Centre		
32	Holy Family Mission Hospital		
33	Immaculate Heart Hosp Kereita		
34	Kimende Orthodox Mission H/C		
35	Ngarariga Health Centre		
36	Orthodox Maternity and Healthcare		
37	PCEA Murengeti Health Centre		
38	PEFA Mercy Medical Centre		
39	St. Pauls University H/C		
40	Gichuru Dispensary		
41	Rironi Dispensary		
42	Kagaa Dispensary		
43	Kinale Dispensary		

Source: Ministry of Health (2015)

Appendix 2: Trends in Use of Contraceptives in Kenya

Percent distribution of all women, currently married women, and sexually active unmarried women age 15-49 by contraceptive method currently used, according to age, Kenya 2014

Age	Modern method												Any traditional method	Traditional method			Not currently using	Total	Number of women
	Any method	Any modern method	Female sterilisation	Male sterilisation	Pill	IUD	Injectables	Implants	Male condom	Female condom	LAM	Other		Rhythm	Withdrawal	Other			
ALL WOMEN																			
15-19	10.1	9.3	0.0	0.0	0.5	0.0	4.9	1.2	2.5	0.1	0.0	0.0	0.8	0.6	0.2	0.0	89.9	100.0	5,820
20-24	42.0	38.5	0.0	0.0	4.6	0.9	20.6	7.2	4.9	0.1	0.0	0.0	3.5	2.9	0.4	0.2	58.0	100.0	5,735
25-29	54.2	51.0	0.4	0.0	5.9	2.7	27.7	11.0	3.2	0.0	0.1	0.1	3.2	2.6	0.4	0.2	45.8	100.0	6,100
30-34	57.5	53.8	2.0	0.0	7.9	3.6	26.5	10.8	2.7	0.0	0.1	0.1	3.7	2.7	0.6	0.4	42.5	100.0	4,510
35-39	55.7	51.0	4.2	0.1	9.1	3.7	21.6	9.2	3.0	0.0	0.1	0.0	4.7	4.0	0.6	0.2	44.3	100.0	3,773
40-44	48.4	43.4	7.1	0.0	7.3	5.2	15.3	5.8	2.5	0.0	0.0	0.1	5.0	4.1	0.6	0.4	51.6	100.0	2,885
45-49	37.3	31.0	9.5	0.0	5.9	2.0	9.4	2.4	1.8	0.0	0.0	0.0	6.3	5.2	0.5	0.6	62.7	100.0	2,257
Total	42.6	39.1	2.2	0.0	5.5	2.3	18.7	7.1	3.1	0.0	0.1	0.0	3.5	2.8	0.4	0.2	57.4	100.0	31,079
CURRENTLY MARRIED WOMEN																			
15-19	40.2	36.8	0.0	0.0	1.9	0.2	27.1	5.4	2.1	0.0	0.0	0.0	3.4	2.0	1.3	0.1	59.8	100.0	695
20-24	53.5	49.8	0.1	0.0	6.3	1.4	30.2	9.6	2.2	0.0	0.0	0.0	3.7	2.9	0.5	0.3	46.5	100.0	3,133
25-29	60.8	57.3	0.4	0.0	7.2	3.1	31.4	12.9	2.1	0.0	0.1	0.0	3.6	2.9	0.4	0.2	39.2	100.0	4,556
30-34	63.5	59.1	2.3	0.0	9.1	4.0	29.7	11.9	1.9	0.0	0.2	0.0	4.5	3.2	0.7	0.5	36.5	100.0	3,566
35-39	63.0	57.7	4.8	0.1	10.8	4.5	24.5	10.4	2.6	0.0	0.1	0.0	5.3	4.4	0.8	0.1	37.0	100.0	2,894
40-44	57.7	51.1	8.1	0.1	9.1	6.7	18.0	6.5	2.6	0.0	0.0	0.1	6.6	5.3	0.8	0.5	42.3	100.0	2,091
45-49	45.2	37.2	11.0	0.0	7.5	2.3	11.6	2.9	1.9	0.0	0.0	0.0	8.0	6.7	0.7	0.6	54.8	100.0	1,615
Total	58.0	53.2	3.2	0.0	8.0	3.4	26.4	9.9	2.2	0.0	0.1	0.0	4.8	3.8	0.7	0.3	42.0	100.0	18,549
SEXUALLY ACTIVE UNMARRIED WOMEN¹																			
15-19	50.1	49.3	0.0	0.0	1.8	0.0	14.3	6.0	27.2	0.0	0.0	0.0	0.7	0.7	0.0	0.0	49.9	100.0	79
20-24	69.3	64.2	0.0	0.0	12.2	0.0	13.4	1.5	35.0	2.1	0.0	0.0	5.1	3.8	1.3	0.0	30.7	100.0	157
25-29	75.7	69.8	0.0	0.0	7.6	1.8	35.0	8.2	17.2	0.0	0.0	0.0	5.8	3.2	2.0	0.6	24.3	100.0	117
30-34	74.4	71.3	0.4	0.0	3.9	3.9	30.2	15.1	17.8	0.0	0.0	0.0	3.1	1.3	1.8	0.0	25.6	100.0	94
35-39	64.2	55.2	5.3	0.0	4.8	1.6	25.1	9.4	7.8	0.0	0.0	1.2	9.1	9.1	0.0	0.0	35.8	100.0	57
40-44	(39.0)	(38.3)	(5.0)	(0.0)	(5.5)	(0.0)	(18.1)	(0.0)	(9.7)	(0.0)	(0.0)	(0.0)	(0.7)	(0.7)	(0.0)	(0.0)	(61.0)	100.0	52
45-49	(64.6)	(56.3)	(20.6)	(0.0)	(0.0)	(0.0)	(17.2)	(12.5)	(6.0)	(0.0)	(0.0)	(0.0)	(8.3)	(8.3)	(0.0)	(0.0)	(35.4)	100.0	26
Total	65.4	60.9	1.9	0.0	6.6	1.1	22.3	6.8	21.4	0.6	0.0	0.1	4.5	3.3	1.1	0.1	34.6	100.0	583

Note: If more than one method is used, only the most effective method is considered in this tabulation. Figures in parentheses are based on 25-49 unweighted cases.

na = Not applicable

LAM = Lactational amenorrhoea method

¹ Women who have had sexual intercourse within 30 days preceding the survey

Source: KDHS (2014)

Appendix 3: Lorenz Estimates (Contrasts and Lorenz Dominance)

L(p) Number of observations = 20,000				
1: wealth index = 1 2: wealth index = 2 3: wealth index = 3 4: wealth index = 4 5: wealth index = 5				
OBA Subsidies	Coefficients	Std. Err.	[95% Conf.	Interval]
1st Wealth quintile				
0	0	(omitted)		
5	0.0047445	0.0001098	.0045293	.0049596
10	0.0127313	0.000333	.0120785	.013384
15	0.0248437	0.0006759	.0235189	.0261686
20	0.0417422	0.0011233	.0395404	.043944
25	0.0644928	0.0014737	.0616043	.0673813
30	0.0918781	0.0020638	.0878329	.0959233
35	0.1232764	0.0020943	.1191715	.1273813
40	0.1546908	0.0021501	.1504764	.1589051
45	0.1861051	0.0022654	.1816647	.1905454
50	0.2215043	0.0026306	.2163481	.2266605
55	0.262517	0.002766	.2570954	.2679385
60	0.3076402	0.0031252	.3015146	.3137657
65	0.3599424	0.0033165	.3534419	.3664429
70	0.4175281	0.0036821	.410311	.4247453
75	0.4927114	0.0043686	.4841485	.5012743
80	0.573125	0.0043929	.5645147	.5817354
85	0.6535387	0.0046144	.6444942	.6625832
90	0.7339523	0.005007	.7241382	.7437665
95	0.8273506	0.004302	.8189184	.8357828
100	1	.	.	.
2nd Wealth Quintile				
0	0	(omitted)		
5	.0039102	.0001174	.0036801	.0041404
10	.0110305	.0003816	.0102825	.0117786
15	.0225005	.0007943	.0209437	.0240574
20	.0387186	.0012176	.0363321	.0411052
25	.058342	.0014552	.0554897	.0611943
30	.0824616	.0018313	.0788722	.0860511
35	.1090193	.0022931	.1045246	.113514
40	.1420651	.0028023	.1365724	.1475577
45	.1818097	.003325	.1752924	.188327
50	.2238329	.0033212	.217323	.2303428

55	.2708049	.0039559	.263051	.2785588
60	.327109	.004761	.317777	.336441
65	.3912228	.0048397	.3817365	.400709
70	.4554592	.0048645	.4459244	.464994
75	.5196956	.0050367	.5098233	.5295679
80	.583932	.005342	.5734613	.5944028
85	.6482062	.0056849	.6370634	.659349
90	.7233053	.0051515	.7132079	.7334026
95	.8251148	.0043183	.8166506	.833579
100	1	.	.	.
3rd Wealth Quintile				
0	0	(omitted)		
5	.0040676	.0001388	.0037955	.0043398
10	.0116697	.0004317	.0108236	.0125159
15	.0241341	.0008917	.0223863	.0258818
20	.0418344	.0013259	.0392354	.0444333
25	.0633729	.0017453	.0599519	.0667938
30	.0887472	.0018801	.0850621	.0924324
35	.1172594	.0024307	.1124951	.1220237
40	.1513253	.0028591	.1457213	.1569293
45	.1906101	.0033844	.1839765	.1972438
50	.2332199	.0033746	.2266053	.2398344
55	.2763556	.0035272	.2694421	.2832691
60	.3252447	.0039756	.3174523	.3330371
65	.3842496	.0047376	.3749635	.3935357
70	.4497479	.0047366	.4404637	.4590321
75	.5152462	.0048945	.5056525	.5248399
80	.5807445	.0051969	.5705582	.5909309
85	.6467262	.0053916	.6361582	.6572941
90	.7243416	.0051257	.7142948	.7343884
95	.8246164	.0042647	.8162572	.8329756
100	1	.	.	.
4th Wealth Quintile				
0	0	(omitted)		
5	.0047851	.0001662	.0044592	.0051109
10	.0137771	.000497	.0128029	.0147513
15	.0283778	.0009459	.0265236	.0302319
20	.0475083	.0012848	.0449899	.0500266
25	.0694895	.0015225	.0665053	.0724737
30	.0957168	.0018381	.0921141	.0993196
35	.1240302	.0021263	.1198624	.1281979
40	.1580196	.0025996	.1529241	.163115
45	.1973619	.0030595	.1913651	.2033587
50	.2418876	.0033489	.2353234	.2484517
55	.2874237	.0034139	.2807322	.2941151

60	.3332273	.0035742	.3262217	.3402329
65	.3835435	.0038211	.3760538	.3910331
70	.4430169	.0041676	.434848	.4511858
75	.5120385	.0044745	.5032681	.5208089
80	.5820352	.0047117	.5727998	.5912706
85	.6520975	.0050095	.6422784	.6619165
90	.7322736	.0049673	.7225372	.74201
95	.8298887	.0039624	.8221221	.8376553
100	1	.	.	.
5th Wealth Quintile				
0	0	(omitted)		
5	.0053272	.0001835	.0049675	.0056869
10	.0159317	.0006031	.0147496	.0171137
15	.0325722	.0010053	.0306017	.0345428
20	.0534761	.001255	.0510162	.0559361
25	.0780698	.0016718	.074793	.0813467
30	.1059365	.0018205	.1023681	.109505
35	.134543	.0020849	.1304564	.1386296
40	.168935	.0025373	.1639618	.1739082
45	.2075377	.00296	.201736	.2133395
50	.2516938	.0034032	.2450232	.2583643
55	.2982674	.0035739	.2912622	.3052725
60	.344841	.0038292	.3373354	.3523466
65	.3915159	.0041424	.3833964	.3996353
70	.4414516	.0043194	.4329851	.449918
75	.4998295	.0045644	.490883	.5087761
80	.5687304	.0048938	.5591382	.5783226
85	.6405237	.0052949	.6301452	.6509022
90	.7242535	.0055325	.7134094	.7350976
95	.8180936	.0050773	.8081417	.8280456
100	1	.	.	.
Total (Total Women)				
0				
5	.0044959	.0000633	.0043718	.0046199
10	.0127664	.0001878	.0123982	.0131346
15	.0259903	.000387	.0252317	.0267489
20	.0444215	.0005873	.0432703	.0455727
25	.0664571	.0007077	.0650701	.0678442
30	.0931075	.0008511	.0914393	.0947756
35	.120678	.0008713	.1189701	.1223859
40	.1517321	.0010993	.1495774	.1538867
45	.1882143	.0012551	.1857542	.1906744
50	.230381	.0014939	.2274527	.2333092
55	.2762929	.001517	.2733194	.2792664
60	.32245	.0015878	.3193378	.3255622
65	.3739779	.0017434	.3705607	.3773952
70	.4363446	.0020317	.4323622	.4403269

75	.5069123	.0020791	.5028372	.5109875
80	.5774868	.0021931	.5731881	.5817854
85	.6480612	.002371	.6434137	.6527086
90	.7261294	.0023199	.7215823	.7306765
95	.823854	.0019307	.8200697	.8276382
100	1	.	.	.

Appendix 4: Overlay Lorenz Curves

