

**UTILIZATION OF PRECONCEPTION CARE SERVICES AMONG WOMEN OF
REPRODUCTIVE AGE IN KIAMBU COUNTY, KENYA.**

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P139/CE/26571/2011**

**A RESEARCH THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF
PUBLIC HEALTH (REPRODUCTIVE HEALTH) IN THE SCHOOL OF
PUBLIC HEALTH OF KENYATTA UNIVERSITY.**

JULY, 2018

DECLARATION

This thesis is my original work and has not been presented for a degree in any other University.

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DEDICATION

To all women of reproductive age (15-49 years) as you carry out the noble task of reproduction the healthy way.

ACKNOWLEDGEMENT

I take this opportunity to thank everyone who has supported me and contributed towards my writing of this thesis and above all the Almighty God for his care, guidance and provision. Special thanks goes to my supervisors Prof. Margaret Keraka and Dr. Joan Njagi for their relentless encouragement and timely advice during this work. This work will not have been completed without your immense support and guidance.

I also want to pass my sincere gratitude to my employer The Presbyterian University of East Africa for the support towards my professional development. I also want to thank the County Commissioner and County Director of Education Kiambu County for granting me permission to carry out the study in the county. I want to thank all the women of reproductive age in Ruiru Sub-county who participated in the study, without forgetting my research assistants, this study would not have been successful without you. Gratitude to my dear family for their support and encouragement. My husband Mr. Raymond Cheruyot; you have been my pillar throughout the study and to my lovely daughter Michelle Chepngeno; you have been the driving force from within. I thank you all and may God Almighty bless you abundantly.

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ABBREVIATIONS AND ACRONYMS

ACOG	-	American Congress of Obstetrics and Gynecology
ANC	-	Antenatal Care
ART	-	Anti Retroviral Treatment
BP	-	Blood pressure
CDC	-	Centers for Disease Control
CMV	-	Cytomegalovirus
CWC	-	Child Welfare Clinic
DNA	-	Deoxyribonucleic Acid
FADS	-	Fetal Alcohol Spectrum Disorders
FGD	-	Focused Group Discussion
FGM	-	Female Genital Mutilation
FHOK	-	Family Health Options Kenya
FP	-	Family Planning
HIV	-	Human Immune-deficiency Virus
KAIS	-	Kenya AIDS Indicator Survey
KNBS	-	Kenya National Bureau of Statistics
MNCH	-	Maternal, Newborn and Child Health

MOH	-	Ministry of Health
MOMS	-	Ministry of Medical Services
MOPHS	-	Ministry of Public Health and Sanitation
MTCT	-	Mother to Child Transmission
NACOSTI	-	National Commission for Science, Technology and Innovation
PCC	-	Preconception care
RTI	-	Reproductive Tract Infections
SDG	-	Sustainable Development Goals
SIDS	-	Sudden Infant Death Syndrome
SPSS	-	Statistical Package for Health sciences
STI	-	Sexually Transmitted Infections
TB	-	Tuberculosis
UTI	-	Urinary Tract Infections
VCT	-	Voluntary Counseling and Testing
VDRL	-	Venereal Diseases Research Laboratory
WHO	-	World Health Organization

DEFINITION OF OPERATIONAL TERMS

Parity/ Para- Status of woman in regard to the number of children (Viable children) she has borne.

Planned pregnancy- Pregnancy that is intended and wanted at the time of conception.

Preconception care- It is the provision of the biomedical, behavioral and social health interventions to women and couples before conception occurs.

Pregnancy outcome-Results of conception and ensuing pregnancy for example live birth stillbirth, spontaneous abortion.

Unplanned pregnancy- Pregnancy that is unintended or unwanted at the time of conception.

Utilization- The amount of usage of health services per unit population.

Woman of reproductive age- a woman aged 15-49 years.

ABSTRACT

Pre-conception care (PCC) is the provision of the biomedical, behavioral and social health interventions to women and couples before conception occurs. Despite the advances in maternal and neonatal care, Kenya still record a high maternal mortality rate with the leading maternal causes being hemorrhage and anaemia both of which can be prevented or adverse effects reduced through preconception care interventions. Kenya still reports a high number of unplanned pregnancies which poses a lot of health risks to both the mother and the unborn baby. The study aimed at assessing the utilization of preconception care services among women of reproductive age in Ruiru sub-county in Kiambu County . The objectives of the study were to find out on the knowledge on preconception care, uptake level of preconception care services and the factors that influence the utilization of these services by women of reproductive age. Descriptive cross-sectional study design was used with a target population of 65,045 women of reproductive age, para one and above in Ruiru sub-county. Simple random sampling method was used to select study participants. A total of 384 women of reproductive age took part in the study. A semi-structured interviewer-administered questionnaire was used to collect data and Focused Discussion groups. Quantitative data from the questionnaire was checked daily for completeness and coded for appropriate computer entry. Thematic content analysis was done for Qualitative data from the FGDs and triangulated during discussion. Thereafter, data was analyzed using SPSS version 20.0 statistical package. Univariate and bivariate data analysis were involved. Chi-square was used to determine the significance of associations between variables. Data finding were then presented using tables, pie charts and bar graphs. Findings showed that 61.7% had inadequate knowledge on preconception care services with the major source of information being from the health care providers in the hospital (66.3%). The uptake level of preconception care is fairly low with 80.2% of the women never used folic acid and only 20.3% were immunized against tetanus before conception. HIV testing during preconception period was the leading medical condition screened with 64.6% aware of their HIV status before conception. Findings further showed that there is a significant association between the knowledge level on preconception care and the age of the woman ($\chi^2=10.976$, $P<0.05$, $df=1$). Preconception folic acid use was significantly associated with occupation ($\chi^2=5.766$, $df=1$, $P<0.05$), education level ($\chi^2=5.683$, $df=1$, $P<0.05$) and area of residence ($\chi^2=6.577$, $df=1$, $P<0.05$). The conclusions from the study is that there is low level of knowledge on preconception care and uptake of the preconception care services is low among the women of reproductive age. The factors that influence its utilization include age of the woman, level of education, occupation, the cost of services, previous obstetric problems and partner support. The study recommended health education of women on preconception care and its importance, public awareness campaigns, women empowerment, male involvement for partner support during preconception period.

CHAPTER ONE: INTRODUCTION

1.1 Background information

Pre-conception care is the provision of the biomedical, behavioral and social health interventions to women and couples before conception occurs. It is aimed at improving their health status, reducing behaviors, individual and environmental factors which could contribute to poor maternal and child health outcomes. Preconception care include the care before the first pregnancy and the care between the subsequent pregnancies (Mason, et al., 2014). It is therefore patient education, evaluation, and management aimed to prevent unplanned pregnancies and decrease the risk of adverse health effects for the woman, fetus, and neonate by optimizing the woman's health and knowledge before planning and conceiving a pregnancy (New York State Department of Health AIDS Institute, 2010).

Preconception period is a period of three months before pregnancy occurs. It is the time where an individual make life changes that can help improve fertility, reduce health problems during pregnancy and aid in recuperation from childbirth (Pregnancy birth & baby, 2016)

Since a majority of women and couples of reproductive age are normally unaware of the effects that their own health conditions and health-related behaviors may have on the fetus during pregnancy, preconception care addresses the care before pregnancy occur. Even though antenatal care is part of care in the Maternal, Newborn, and Child Health (MNCH), it begins too late thereby neglecting the most critical time of embryonic development which frequently occurs even before a woman knows she is pregnant. Evidence strongly suggests that earlier care before pregnancy leads to improved women's

health and improved pregnancy outcome for both the mother and the newborn. Preconception care therefore is any intervention provided to women and couples of reproductive age, regardless of pregnancy status or desire, before pregnancy, to improve health outcomes for women, newborns and children (Dean, et al., 2013).

In the Old Testament the practice of preconception care is portrayed before the birth of Samson in the following passage " The angel of the Lord appeared to her and said you who are sterile and childless, but you are going to conceive and have son. Now see to it that you drink no wine or other fermented drink and that you do not eat anything that is unclean because you will conceive and give birth to a son" (Judges 13:3-5 New International Version) This means that preconception care was valued and practiced in the ancient days and it clearly indicates that even before the birth of Christ, preconception care was in existence and it is currently being improved as medical inventions and technology is improving.

The main causes of maternal mortality are post-partum hemorrhage, hypertensive disorders and obstructed labor. The indirect causes of maternal mortality include malaria, severe anaemia, TB, HIV disease and pregnancy related violence (WHO, 2013). Most of these causes of maternal mortality can be prevented or its adverse effects reduced, if women receive preconception care.

The core preconception care services includes; screening for undiagnosed, untreated, or poorly controlled medical conditions, checking the immunization history to ensure it's up to date, assessment of the nutritional status of the mother, assessment of family history

and genetic risk factors, assessment of tobacco and substance use and other high-risk behaviors among other components to allow early detection and intervention before the woman conceives (Department of Health, New York, 2009).

Prior to conception, specific health interventions would address most of the reproductive health risks including the age (age below 16 years and those above 35 years), the parity (primigravida and grand multiparity), Nutritional status (under nutrition, obesity and malnutrition), previous adverse effects (recurrent spontaneous abortions, still births, early neonatal deaths within one week, previous baby with congenital abnormalities), Medical conditions (anaemia, malaria, HIV/AIDS, TB, Diabetes, sickle cell anaemia, asthma, hypertension, STI/RTIs), previous obstetric complications (hemorrhage, Caesarean Section, preterm labour, eclampsia), Gender based violence (Female Genital Mutilation, early marriage, physical and psychological abuse, sexual violence) and low socio-economic status. Most of which appropriate health information and interventions would be given during preconception care visit (MoPHS; MoMS, 2012).

1.2 Statement of the problem

Maternal mortality is still high in the sub-Saharan Africa where Kenya falls, despite the adoption of the sustainable development goal number three whose objective is to reduce the global maternal mortality ratio to less than 70 per 100,000 live births by the year 2030. The SDG report 2014 indicates that since 1990 to 2015 maternal mortality has reduced by only 50% and the proportion of mothers who do not survive childbirth compared to those who survive childbirth in the developing regions is 14 times higher than in developed nations (United Nations, 2015). The reason is that, the emphasis on the realization of this goal was to increase the number of deliveries done by a skilled birth

attendant and unless a shift to the use of preconception care whose aim is to prepare a mother to conceive at its optimal health and have a normal pregnancy, then we are still far from achieving this goal.

Kenya is one of the countries with the highest proportion of unplanned pregnancies. Reports indicates that 1.8 million married women still have unplanned births every year and further still 1.1 million married women currently have an unmet need for contraception. Whereas a further 7,500 women die every year due to pregnancy related conditions (East African Center For Law & Justice, 2015).

A study done in Kenya by IPSOS, (2012) found out that Central province where Ruiru sub-county is, has a huge burden of Non-Communicable diseases where the prevalence of diabetes mellitus was 9% while the Kenya's overall prevalence was 5%. These non-communicable diseases such as diabetes and hypertension could be diagnosed and controlled before a woman conceives as they can complicate pregnancy and have serious effects on pregnancy outcome (IPSOS, 2012).

Ruiru sub-County is in Kiambu County whose current health indicators on the contraceptive use is 73% compared to the Kenya's average of 58%, Antenatal care coverage of over 90%, Delivery care in health facility at over 85% and a fertility rate of 2.7 (KDHS, 2015). Ruiru sub-County has been selected for the study since there are no documented statistics on the utilization of preconception care services which if utilized would seek to boost the maternal health services towards achieving the desired 100% reproductive health coverage.

1.3 Justification

Preconception care services to women and couples before and between pregnancies improves the chances of mothers and babies being healthy. Preconception care is a prerequisite in reducing maternal mortality rate which is paramount for health workers to promote the practice at every contact with women of reproductive age.

In 2012, the Ministry of Medical Services in conjunction with the Ministry of Public Health and Sanitation released guidelines to improve perinatal care which includes preconception care (MoPHS; MoMS, 2012). Despite the availability of these guidelines, there is still a lot to be done for the implementation of these guidelines.

This study will document the utilization of preconception care services in Ruiru Sub-County. The study findings may be used by the county government to formulate policies that will enhance utilization of pre conception care thus improving perinatal outcomes.

1.4 Research questions

1. What knowledge on preconception care do women of reproductive age in Ruiru Sub-County, Kiambu County have?
2. What is the uptake level of preconception care services among women of reproductive age in Ruiru Sub-County, Kiambu County?
3. What factors influence the utilization of preconception care services among women of reproductive age in Ruiru Sub-County, Kiambu County?

1.5 Hypothesis

The research hypothesis in this study was "Preconception care services are under utilized by women of reproductive age in Ruiru Sub-County, Kiambu County".

1.6 Research objectives

1.6.1 Broad objective

To assess the utilization of preconception care services among women of reproductive age in Ruiru Sub-County, Kiambu County.

1.6.2 Specific objectives

1. To determine the knowledge on preconception care among women of reproductive age in Ruiru Sub-County, Kiambu County.
2. To establish the uptake level of preconception care among women of reproductive age in Ruiru Sub-County, Kiambu County.
3. To determine the factors that influence the utilization of preconception care among women of reproductive age in Ruiru Sub-County, Kiambu County.

1.7 Study significance

Reducing the health risks before conception is beneficial to the mother since this will reduce the pregnancy associated complications such as pre-eclampsia and eclampsia, uncontrolled blood sugars in diabetic mothers among other medical conditions. In this study, women of reproductive age are going to give information on the utilization of preconception care services. The study findings will help stakeholders to understand the uptake level of preconception care and then address the barriers.

1.8 Delimitation and limitation

The study limitations were limited finances and language barrier. A language interpreter was obtained and trained to overcome the limitation of language barrier.

1.9 Conceptual framework

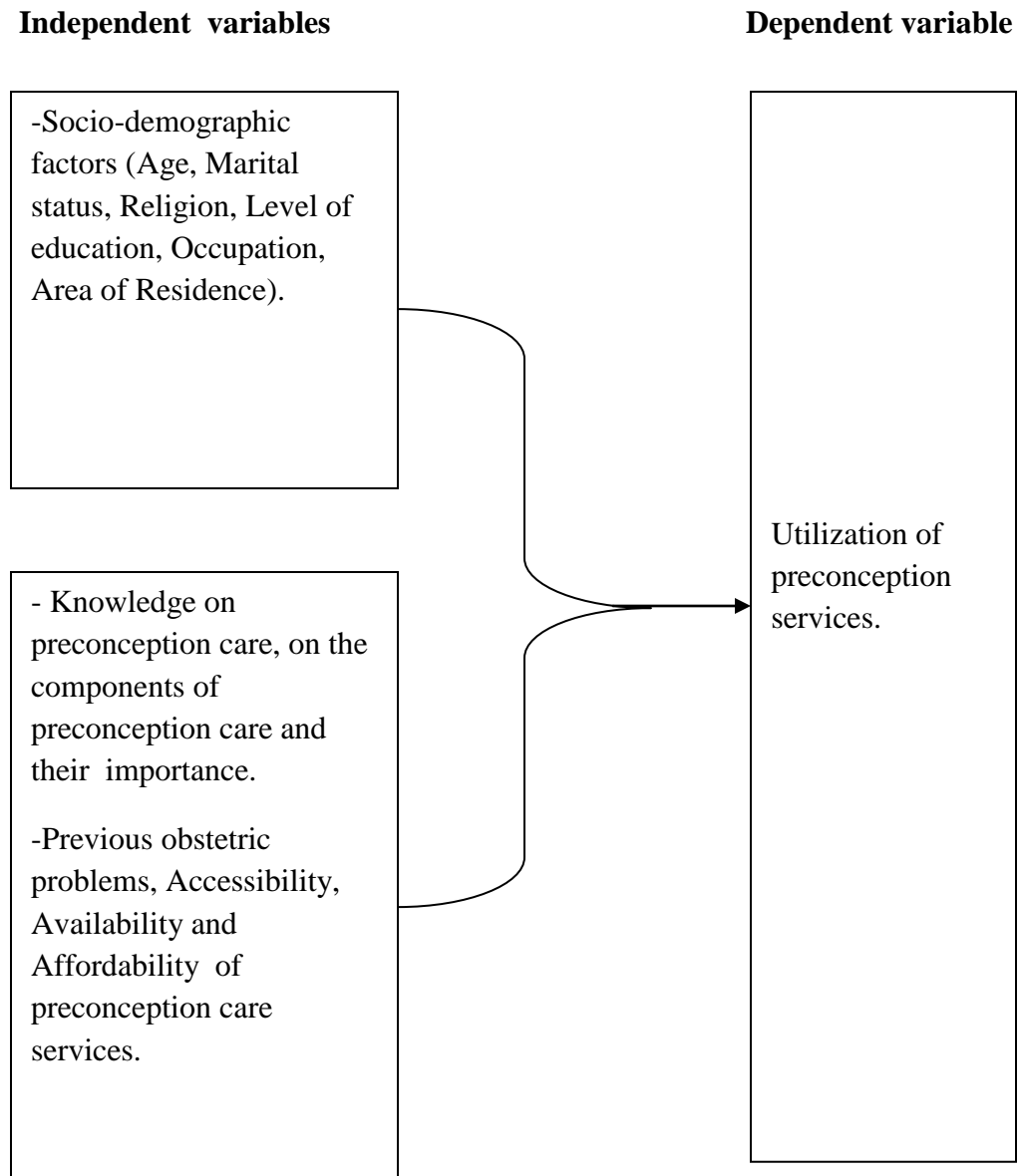


Figure 1.1: Conceptual Framework

The conceptual framework above was developed from literature review.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Maternal mortality rate in Kenya is currently 488/100,000 live births and out of this, 11.3% are due to preventable causes some of which could be prevented if preconception care is practiced (WHO, 2013).

Preconception care recognizes that many adolescent girls and young women will plunge into parenthood without the knowledge, skills or support that they need in order to become mothers. Preconception care is any intervention provided to women and couples of reproductive age regardless of pregnancy status or desire before pregnancy so as to improve the health outcomes for the women, newborns and children. Provision of care throughout the life stages from childhood through adolescence to adulthood ensures that gains at every stage enhance the transition of boys and girls from adolescent to becoming adults and potential parents (Dean, Zohra, Ayesha, & Bhutta, 2014)

Health workers should encourage women of reproductive age to have a reproductive life plan which includes preconception care. This can be made possible by initiating the communication by asking a simple question like "Are you considering pregnancy in the near future, or could you possibly become pregnant soon?". This in itself can initiate several preconception care interventions such as a dialogue regarding the patient's readiness for pregnancy, an evaluation of her overall health and opportunities for improving her health and preventive measures put in place. If the woman does not desire pregnancy, current contraceptive use and options should be discussed to assist her in identifying the most appropriate and effective method (ACOG, 2005).

Although the recommended first ANC visit is before 16 weeks, most women present when it is too late to prevent some placental development problems or birth defects. Organogenesis begins early in pregnancy and therefore, initiating folic acid supplementation after neural tube closure at six weeks after conception, has no demonstrated benefit for preventing a neural tube defects. In addition to targeting optimal health outcomes for the baby, preconception care should promote the mother's health, regardless of her plans for future pregnancies. Evidence suggests that pregnancy complications such as preeclampsia or preterm birth may increase the mother's risk of chronic diseases later in life (Michael, 2007).

2.2 Components of preconception care

The components of preconception care includes family planning, screening for medical and infectious diseases, immunization history, lifestyles changes, screening for use of environmental toxins and screening for genetic diseases. These components have been discussed below.

2.2.1 Family Planning

Encouraging pregnancy planning is one way of ensuring that mothers and babies have good outcomes. Women who have very closely spaced pregnancies that is within 6 months from a previous live birth or pregnancy are more at risk of having preterm or low birth weight babies. This is usually because their bodies have not had enough time to replenish the nutritional reserve and treat any infection present. Women should therefore be encouraged to consistently use correct family planning method which will lead to the ideal pregnancy spacing of 18-24 months apart (Sohni, et al., 2013).

2.2.2 Screening for medical and infectious diseases

A woman who is planning to get pregnant should be screened for existing chronic medical conditions. The medical conditions that should be screened include Diabetes, Asthma, High blood pressure, anaemia, blood clotting disorders and thyroid disease among others. These diseases should be screened because they can cause complications during pregnancy. If the patient has a chronic medical condition the drugs and dosages used by the woman to manage it, should be reviewed and adjusted accordingly because some of the drugs are contraindicated for use during pregnancy (Baby Center, 2017)

Infectious diseases such as syphilis, HIV, Rubella also known as German Measles, Cytomegalovirus(CMV) infection, Hepatitis B and C should be screened before a woman conceives. Rubella infection in early pregnancy can lead to intra uterine fetal death, prematurity and cardiac defects among others. On the other hand, Hepatitis B and C can be passed from an infected mother to the unborn child and which results in the inflammation of the liver causing serious effects. HIV screening should be done before conception so that preventive measures can be put in place in order to prevent mother to child transmission. If a woman is found to be HIV positive, she is put on Antiretroviral therapy and monitored so that she can try conceiving when the viral load is low. A HIV positive woman is also counselled that she has more than 99% chance of getting a HIV negative child with preventive interventions in place. Cytomegalovirus infected mother can spread the infection through contact with cervical secretions and breast milk. Cytomegalovirus infection can be passed to the fetus and the neonate and has serious effects to the development of the child as it is associated with deafness, blindness, lung and liver problems. It can also cause stillbirths in early pregnancy. Syphilis is an infection

caused by *Treponema Pallidum* bacteria and it can be passed from the mother to unborn child and also after birth through breast milk. Syphilis can be treated successfully with antibiotics before one conceives. Syphilis can cause miscarriage, prematurity and intrauterine fetal death. Screening of these infectious diseases is paramount during the preconception period to prevent the serious consequences it poses on pregnancy (Central Manchester University Hospitals NHS Foundation Trust, 2016)

2.2.3 Immunization history

During the preconception period, a woman should ensure that her immunization history is up to date. This is because some of the vaccines are not safe during pregnancy while at the same time vaccination helps to protect the mother and her unborn child from contracting the disease and also after birth during the first few months. Measles, Mumps and Rubella vaccine should be given to a woman at least one month before conception. Immunization against Rubella is important because it helps to reduce serious problems such as miscarriage and birth defects. A pregnant woman should get vaccinated against Whooping Cough and Influenza in every pregnancy (CDC, 2016)

2.2.4 Lifestyle Changes

Lifestyle adjustments is critical before conception takes place so that pregnancy can occur when lifestyle related problems are limited because of the pregnancy related complications. Weight monitoring and management is important during preconception period because being overweight predisposes to pregnancy complications such as hypertension, gestational diabetes, preeclampsia and preterm delivery. Weight loss can be achieved through exercise and diet management. On the other hand, being underweight predisposes to Low-Birth Weight babies. It is also important that folic acid and iron

supplements be taken at least one month before one conceives. Folic acid help to prevent incidence of Neural tube defects such as Spina Bifida. It is recommended that 400 micrograms of folic acid should be taken as supplements daily or individual encouraged to take foods rich in folic acid such as lentils, dried beans and avocado. Iron supplementation helps to boost iron stores needed during pregnancy so as to increase the oxygen carrying capacity of red blood cells to both the mother and the developing fetus (ACOG, 2015)

2.2.5 Screening for use of environmental toxins

Exposure to environmental toxins before and during pregnancy can cause harmful effects to the fetus. Cigarette smoking in particular can make it difficult for a woman to conceive. In addition to the fact that cigarette smoking cause cancer and Heart disease, it can cause early birth of the baby, fetal death and birth defects such as cleft lip and palate during pregnancy. Cigarette smoking also predispose the infant to Sudden Infant Death Syndrome (SIDS) where the infant dies suddenly and the cause of death cannot be found (CDC, 2016)

Women who are sexually active and are not using a reliable method of contraceptive should not take alcohol including those who are trying to conceive. Alcohol whether wines or beer is harmful to the health of the developing fetus throughout pregnancy. Alcohol use during pregnancy can cause stillbirths, Miscarriages and Fetal Alcohol Spectrum Disorders (FASDs). A baby born with FASDs is hyperactive, has a small head, learning disabilities and memory problems among others. Alcohol should not be consumed any time in pregnancy because the baby's brain develops throughout pregnancy (CDC, 2016)

Women who are planning to conceive should discuss with their doctor on the use of medications and especially over-the-counter medications as some of the drugs such as valproic acid, antipsychotic drugs, mood stabilizers and anti-pain medications. These drugs have teratogenic effects when used during pregnancy. Women are further advised to take plenty of fresh fruits and vegetables during preconception period but they should be cleaned thoroughly. This is in order to minimize microbial contamination and to remove the pesticides sprayed on them which could cause adverse effects to the baby during pregnancy. Women are also encouraged to limit intake of fat fish and tuna to at least once in a week during preconception and pregnancy. This is because tuna fish tend to accumulate lead and mercury which can cause harmful effect to the baby. Women anticipating pregnancy should also take folic acid so as to reduce the risk of autism in their baby (Autism Speaks, 2017)

2.2.6 Screening for Genetic diseases

Genetic counseling is a blood test done to potential parents to determine the presence of abnormal genes that cause certain disease in their baby. Genetic screening is mainly done to detect recessive genes which may be passed on by the parents to the baby. When both parents have the recessive gene, then the probability of their child inheriting the disease is 25%. Genetic counseling should be done before pregnancy but because most pregnancies are unplanned then it can be done in early pregnancy. The genetically linked conditions that require genetic counseling include cystic fibrosis, sickle-cell disease and Thalassamia among others (Gelman, 2017).

Genetic counseling is important for women with or at risk for genetic conditions, and their families, as this give them the opportunity to make informed decisions about

whether they will opt for genetic testing and the risk of having an offspring given a particular genetic condition. This is because women who discover that they are at risk for a genetic condition preconceptionally, as opposed to during pregnancy, can use the information in deciding whether or not they desire to become pregnant or not. Cancer survivors who are considering pregnancy should be counselled about the possible reproductive effects of various cancer treatments on fertility and on pregnancy. When considering pregnancy, breast cancer survivors who have been using selective estrogen receptor modulators should be counselled that they need to avoid these agents because they are teratogenic and is associated with several birth defects. Cancer survivors are therefore counselled to avoid pregnancy for at least two years after successful treatment of the cancer (Ruhl & Moran, 2008).

2.3 The importance of preconception care

The goal of preconception care is to decrease the risk of adverse health effects for the woman, fetus, or neonate by optimizing the woman's health and knowledge before planning and conceiving a pregnancy. Although most pregnancies result in good maternal and fetal outcomes, a number of pregnancies may result in adverse health effects for the woman, fetus, or neonate. Even though some of these outcomes cannot be prevented, optimizing a woman's health and knowledge before planning and conceiving a pregnancy; preconception care may do away with or reduce the risk. For instance, initiation of folic acid supplementation at least 1 month before pregnancy reduces the incidence of neural tube defects such as spina bifida and anencephaly. In the same way, adequate glucose control in a woman with diabetes before conception and throughout pregnancy can reduce maternal morbidity, spontaneous abortion, fetal malformation, fetal

macrosomia, intrauterine fetal death, and neonatal morbidity (Fraser, Cooper, & Nolte, 2006)

2.4 Preconception care practices across the world

Worldwide, low and middle-income countries where Kenya falls carry a disproportionately heavy burden of maternal and neonatal mortality and morbidity. Many women bleed profusely to death peripartum, develop acute stroke, renal failure, or pulmonary edema from uncontrolled hypertension, or are affected by severe sepsis, including after unsafe abortion. A negative outcome to an expectant mother directly affects the fetus or the newborn which may result in neonatal sepsis or preterm delivery and in which most of these countries lack the facilities to take care of the preterm baby whose organs are immature. In these countries preconception care would greatly help to reduce maternal and neonatal mortalities if utilized by the adolescents and women of reproductive age and yet it has been neglected by many women of child bearing age to date (Young, Arquia, & Ray, 2013).

In Sri Lanka, preconception care has yielded benefits and now all eligible couples should be registered in the eligible couple register and all the women who are getting pregnant are assumed to have pre-conception care that is; Rubella immunization, preconception folic acid supplementation, screening for medical condition and nutritional assessment. Throughout the preconception care, couples are educated regarding pregnancy symptoms and the importance of early initiation of antenatal care. They are also educated on when and how to get the health practioners informed once they get pregnant. In Sri Lanka, preconception care and antenatal care is provided through clinic care and domiciliary care. Upon registration at the clinic or at home, pregnant mother should receive the clinic

antenatal care as early as possible, preferably around 6-8 weeks of gestation so that the growth of the fetus is monitored and the health of the mother is also monitored throughout pregnancy (MOH, 2011).

A study done in the United Kingdom on the challenges of preconception care indicated that, most women had inadequate knowledge and awareness on preconception care. Some of challenges include little prevailing culture of preparation for pregnancy and the realities that their pregnancies often were unplanned; and for those planning pregnancy, the sensitivity and maintaining secrecy when trying to conceive were cited by the women. Preference for female professionals was also cited (Tuomainen, Cross, Bhoday, Qureshi, & Kai, 2013).

Prevention of pregnancy in adolescents involves preconception care that starts early and continues between pregnancies, helps to ensure that women have a reproductive health plan since some culture encourage early marriage when the adolescent body is not ready for pregnancy. Increasing universal access to primary and secondary education for girls lead to formal and informal opportunities and many at times, girls who pursue their education will less likely become pregnant during adolescence as sexual education will also be enhanced (Sohni, et al., 2013).

Reports indicate that among Kenyan urban teenagers, there was a substantial increase in pregnancy rates from 17% in 1998 to 22% in 2003 (Jean, Kizito, Lumumba, Guilkey, & Wamukoya, 2011).The pregnancy rate was higher among the uneducated. A considerable proportion of pregnancies and births to these adolescents are ill-timed or unwanted. Therefore, there is need for programs to support comprehensive sexuality education for

uneducated sexually active urban teenagers. There is need to educate the adolescents on the consequences of teenage pregnancy through strengthening the implementation of the adolescent reproductive health policy which addresses on adolescent sexual and reproductive health and the provision of adolescent-friendly services (Jean, Kizito, Lumumba, Guilkey, & Wamukoya, 2011).

In Kenya there is limited researches done on preconception care yet there is a dire need to incorporate preconception care in the maternal and child health so as to improve pregnancy outcomes by reducing the risks before conception occurs so that women of reproductive age enter pregnancy in optimum health. It is important that preconception care services are integrated into other services and programmes such as; FP services, ANC services, CWC, Postpartum care, Outpatient services, Youth friendly sites, Comprehensive care clinics, Specialized clinics, School health programmes, VCT centers, and other specific service sites that target men. (MoPHS; MoMS, 2012).

In Kenya guidelines exist on the need to enhance the utilization of preconception care as documented in the community midwifery guidelines which states that the role of a community midwife is to provide information and education on preconception care and early initiation of antenatal care to individuals and families. The other role is to provide counselling to women and partners on the various contraceptive methods and the importance of endeavoring for a safe pregnancy, healthy newborn and mother after delivery (MOH, 2012).

2.5 Preconception care in special groups

Many HIV-infected women report unplanned pregnancies, and so it is of paramount importance that all HIV-infected women of childbearing potential (from adolescence through perimenopause) receive preconception care and counseling, regardless of their intentions of becoming pregnant. Preconception counseling provides an opportunity for clinicians and the individual to discuss the woman's current health status, ARV regimen and adherence, current and future treatment options, and more so the strategies to either avoid an unintended pregnancy or maximize the chances of a healthy pregnancy outcome. Research shows that the best time for an HIV-infected woman to become pregnant is when her viral load is undetectable (<50 copies/mL). When the viral load suppression is not attainable, the woman's health should be optimized before conception with goal of achieving maximal suppression with a stable viral load. Studies have also shown that women who are on antiretroviral therapy (ART) and with a low viral load at the time of conception have a decreased risk for Mother to Child Transmission(MTCT) compared with women who are not receiving ART at the point of conception. Preconception care services therefore is of paramount importance among women of reproductive age regardless of their HIV status (New York State Department of Health AIDS Institute, 2010).

According to KAIS 2012, lack of knowledge of one's partner's HIV status continues to be an obstacle in HIV prevention and so this needs an extra effort to facilitate couple testing and disclosure. KAIS 2012 also reports that there is higher HIV testing among women than among men in all categories of couples whether concordant or discordant with

92.8% women and 88.8% men ever tested for HIV. While ANC HIV testing has increased over the years, nearly one in ten pregnant women were not tested and this increases the risk for Mother to Child Transmission of HIV (KAIS, 2014).

Preconception care reduces the burden of disability in that, folic acid supplementation and food fortification reduces the occurrence of congenital defects such as hydrocephalus and spina bifida. preconception care also entails educating the mother to avoid exposure to ionizing radiation like x-rays in early pregnancy as it contributes to certain forms of physical disability. Couple education on the dangers of drugs and substance abuse is key because it is associated with low birth weight babies (MoPHS; MoMS, 2007).

2.6 Summary of Literature review isolating gaps to be addressed

Most women in the world report unintended and unplanned pregnancies, and therefore, the challenge of preconception care lies not only in addressing pregnancy planning for women who seek medical care and consultation specifically in anticipation of a planned pregnancy but also in educating and screening all women of reproductive age on an ongoing basis to identify potential maternal and fetal risks and hazards to pregnancy before the first pregnancy and between pregnancies (Fraser, Cooper, & Nolte, 2006).

CHAPTER THREE: MATERIALS AND METHODS

3.0 Introduction

This chapter covers the research design and methodology to include the sampling and sample size determination methods, study population, data collection, data analysis and ethical considerations.

3.1 Research design

Descriptive cross-sectional study design was used because the findings from cross-sectional studies are representative and can be generalized and the research and data on utilization of preconception services was collected at one point in time. This study design allowed for the description and reporting of things the way they were. It also allowed for the description of the characteristics of the study participants and their behaviour pertaining the utilization of preconception care services (Mugenda & Mugenda, 2003).

3.2 Variables

3.2.1 Dependent variable

The dependent variable was utilization of preconception care services among women of reproductive age.

3.2.2 Independent variables

The independent variables included Socio-demographic variables (age, education level, occupation, residence, marital status and religion of the woman), accessibility to preconception services, availability of preconception services, affordability of preconception care services, previous obstetric problems and the knowledge level on preconception care services.

3.3 Location of the study

The study was conducted in Ruiru sub-county, Kiambu county, Kenya. Ruiru sub-county has 8 administrative wards namely; Mvihoko, Kiuu, Mwiki, Kahawa Wendani, Kahawa Sukari, Viwandani, Githothua and Gatongora (Appendix Viii). Kiambu County has 364 health facilities. Regarding the public facilities, the county has one level-five hospital (Thika level -5 Hospital), three level-4 hospitals , four level-three hospitals. There are 20 level-two (Health Centres) and 54 level-one (dispensaries) which are well distributed within the County. The rest of the facilities are private with 17 Mission Hospitals, five nursing homes, 36 dispensaries and 169 private clinics. The doctor to population ratio in the county is 1:17,000 and the nurse to population ratio is 1:1,300 (Kiambu County Government, 2015). Ruiru sub-county was selected for the study since it records an excellent uptake of the other reproductive health services and yet it does not have any documented statistics on the uptake of preconception care services.

3.4 Study population

The study targeted all women of reproductive age (15-49 years), para one and above in Ruiru sub-county. The total population of women of reproductive age in Ruiru sub-County is 65,045 (KNBS, August 2010).

3.4.1 Inclusion criteria

The study subjects were women of reproductive age (15- 49 years) and para one (para 1+) and above and who consented to participate in the study.

3.4.2 Exclusion criteria

The study excluded women of reproductive age who are mentally challenged at the time of study since they were not able to give consent and relevant data.

3.5 Sampling Techniques and sample size

3.5.1 Sampling Techniques

Purposive sampling method was used to select Ruiru sub-County since it is in Kiambu County whose uptake level of reproductive health services is high but has no data available on the uptake of preconception care services. Simple random sampling was used to select 4 wards out the seven wards since Mvihoko ward was used for pre-testing of the research tools. The names of the seven wards were written and put in box and four wards (Gatongora, Mwiki, Kahawa-Wendani and Gitothua) selected randomly. Thereafter simple random sampling method used to identify the subjects who met the inclusion criteria until the desired representative sample size of 384 was attained. Ninety six (96) questionnaires were administered by the research assistants in each ward.

3.5.2 Sample size

Ruiru sub-county has a total population of 65,045 women of reproductive age. The representative sample from this total population was obtained using fisher's formula, Fisher *et al* (Mugenda & Mugenda, 2003).

$$n = \frac{Z^2 Pq}{d^2}$$

where; n= the desired sample size since the target population was greater than 10,000

z= the standard normal deviate at the required confidence level

p = the proportion in the target population estimated to be utilizing the preconception care services. Since no estimate was available 50% was used.

$$q = 1 - p$$

d = the level of statistical significance test

$$n = \frac{(1.96)^2 (0.5) (0.5)}{(0.5)^2}$$

$$= 384$$

3.6 Data collection tools

The study utilized an interviewer administered semi-structured questionnaires and Focused group discussions as the primary methods of data collection. These two methods were used because they complement each other in their open nature to allow a deeper understanding of the beliefs, practice, opinions, and views concerning the utilization of preconception care services (Mugenda & Mugenda, 2003).

3.7 Validity

Validity is the degree to which a test measures what it purports to measure so as to permit appropriate interpretation of the scores. Pre-testing of the study tools were done and their validity assessed through expert reviews.

3.8 Reliability

Pre-testing of the questionnaire was done in Mwihoko ward in Ruiru sub-county where 38 questionnaires were administered which was 10% of the sample size. Research assistants were recruited and trained on the study tools to ensure that the respondents

gave the correct answers. Reorganization and corrections were made on the study tool based on the pitfalls identified before the actual data collection. This was done to ensure that the questions on the tools gave the correct answers to the research objectives.

3.9 Data Collection Techniques

Data was collected within two months with the help of two research assistants using a semi-structured questionnaire (See Appendix II) and Focused Group Discussions Guide (See Appendix III). Data was obtained from the respondents who meet the inclusion criteria and who gave informed consent to participate in the study. The respondents filled the questionnaire with both open and closed ended questions with the help of the research assistants. Three focused group discussions consisting of 4-6 women of reproductive age were organized where the study subjects gave their views on the questions on the focused group discussion guide. The FGD participants were drawn from the four wards, the time and venue of the meeting communicated to them. Each focused discussion group had a leader who moderated the discussion and also an assistant moderator who took notes. The discussion took place in a room, lasting for 30-45 minutes were recorded in tapes which were later transcribed.

3.10 Logistical and Ethical Considerations

Permission to conduct the study was obtained from the Kenyatta University's Research and Ethical Committee (See Appendix IV), and thereafter permission was obtained from the National Commission for Science , Technology and Innovation(NACOSTI) (See Appendix V). Thereafter permission was sought from the county commissioner of Kiambu County seeking for permission to carry out the study in Ruiru sub-county (See Appendix VI). Permission was also obtained from the Kiambu County Director of

Education (See Appendix VII). During the study, written consent was obtained from the study participants and given the assurance of confidentiality of the information obtained (See Appendix I).

3.11 Data Management and Analysis

All the questionnaires were screened for completeness before data entry and analysis. Responses on the focused discussion groups were also checked for completeness before data entry and analysis. Quantitative data from the questionnaires were coded and entered using Statistical Package for Social Sciences (SPSS) data entry program. Thereafter, data was cleaned and analysis done using SPSS version 20 statistical package. The significance level was at 95% and a P-Value<0.005 was considered significant for all statistical analysis. The study utilized both univariate and bivariate analysis. In univariate analysis, frequency distributions showed the distribution of the study population by background characteristics. In bivariate analysis, Chi-square values were used to determine the association between the dependent (utilization of pre conception care services) and the independent variables. The findings generated were then presented using frequency tables, pie charts, bar graphs and narratives. Qualitative data was transcribed thematically and used in the discussion of the results.

CHAPTER FOUR: RESULTS

4.0 Introduction

This chapter presents the data analysis and presentation of the results which were done according to the study objectives. A total of 384 (100%) women of reproductive age participated in the study through researcher-administered questionnaire. Three focused group discussions of 4-6 women each were also used to obtain the qualitative data on the utilization of preconception care services among women of reproductive age in Ruiru sub-county.

4.1 Socio- demographic characteristics of participants

Nearly all the respondents were Christians (96.1%) with the only 3.9% being Muslims. More than half of the study participants resided in the urban area (71.6%) while only 28.4% resided in the rural areas. About three quarters of the study participants were self-employed (70.3%) with 19.3% employed and another 10.4% unemployed. More than half of the women were married (70.4%) and 29.4% single. On education level, about half of the participants (46.1%) had attained secondary level, 28.9% tertiary level, 21.1% with primary education and only 3.9% being formerly unschooled. The age distribution was that about half of the respondents were aged 25-34 (46.6%), 35-44 (35.2%), 15-24 (14.3%) and those aged 45 and above were 3.9% of the respondents. Table 4.1 below shows the socio-demographic distribution of participants.

Table 4.1 Socio-demographic characteristics of study participants

Variable	Category	Frequency	Percentage(%)
Age distribution	15-24	55	14.3
	25-34	179	46.6
	35-44	135	35.2
	45 and above	15	3.9
	TOTAL	384	100%
Level of education	Not schooled	15	3.9
	Primary	81	21.1
	Secondary	177	46.1
	Tertiary	111	28.9
	TOTAL	384	100%
Religion	Christians	369	96.1
	Muslims	15	3.9
	TOTAL	384	100%
Marital Status	Single	113	29.4
	Married	271	70.6
	TOTAL	384	100%
Occupation	Employed	74	19.3
	Self employed	270	70.3
	Unemployed	40	10.4
	TOTAL	384	100%
Residence	Rural	109	28.4
	Urban	275	71.6
	TOTAL	384	100%

4.2 Knowledge on Pre-conception Care

Knowledge level about the services may influence an individual to utilize the service. The study's first objective was to find out the knowledge level of the study participants on preconception care services. Study participants were asked questions ranging from whether they had heard about preconception care services and its various components.

4.2.1 Knowledge level on preconception care

The knowledge level of the study participants was determined using a dichotomous scale. A total of eight knowledge statements were used ranging from whether one had heard about preconception care services and the components of preconception care services. Each Yes answer statement earned the participant 1 point and a No answer earned 0 point. 0-8 points was used; where a participant scored 0-5 points was considered inadequate knowledge, while a participant who scored 6-8 points was considered to have adequate knowledge on preconception care services. More than half of the study participants (61.7%) had inadequate knowledge. The findings were as shown in table 4.2 below.

Table 4.2: Knowledge level on Preconception care

Knowledge level	Frequency	Percentage(%)
Adequate knowledge	147	38.3%
Inadequate knowledge	237	61.7%
TOTAL	384	100%

4.2.2 Sources of information on preconception care services

While establishing the knowledge level of the participants on preconception care, participants were asked to indicate the source of information about preconception care. More than half of the study participants (61.7%) had never heard about preconception care services with the major source of information being in the hospital (66.3%) and the least being place of worship (3.1%). Table 4.3 shows the findings on the sources of information on preconception care.

Table 4.3: Source of Information on Pre-conception Care services

Place	Frequency (n=163)	Percentage (%)
In Community	17	10.4
Hospital	108	66.3
Place of Worship	5	3.1
Mass media (Radio, television)	30	18.4

4.2.3 Components of Pre-conception Care

The study participants were asked to name the services covered in preconception care that are otherwise referred to as the components of preconception care. Table 4.4 shows the components of preconception care as indicated by the study participants. The component that was the highest indicated by the study participants was screening for

infectious diseases (28.4%) and the least known component being screening for genetic diseases (7.6%).

Table 4.4: Components of Pre-conception Care

Component	Frequency N=384	Percentage (%)
Family planning	64	16.7
Vaccination E.g. Rubella, Tetanus	76	19.8
Screening for medical conditions (E.g. Hypertension, DM)	97	25.3
Use of environmental toxins (Alcohol stoppage, smoking)	96	25.0
Lifestyle changes (healthy weight, folic acid supplement)	44	11.5
Screening for genetic diseases (E.g. sickle cell anemia)	29	7.6
Screening for infectious diseases (E.g. Syphilis)	109	28.4

4.2.4 Knowledge level on Pre-conception Care Against Socio-demographic variables

Chi-Square test was performed to find out the association between the knowledge level on preconception care and the socio-demographic variables. For this study during cross-tabulation, the socio-demographic variables were further re-categorized as; age: Below 25 years, above 25 years, Occupation into employed (employed and self-employed) and unemployed, Education level as primary and below (not schooled and primary) and post

primary level (secondary and tertiary). Table 4.5 shows the results where the knowledge level on preconception was significantly associated with age ($\chi^2=10.976$, $P<0.05$, $df=1$).

Table 4.5: Chi-Square Test of Knowledge level on Pre-conception Care against Socio-demographic Variables

Variable	Knowledge level on preconception care N=384		
	Adequate	Inadequate	
Age			$\chi^2=10.976, df=1, P<0.05$
Below 25 years	10 (2.6%)	45 (11.7%)	
Above 25 years	137 (35.7%)	192 (50%)	
Occupation			$\chi^2=2.595, df=1, P>0.05$
Employed	127 (33.1%)	217 (56.5%)	
Unemployed	20 (5.2%)	20 (5.2%)	
Education			$\chi^2=0.445, df=1, P>0.05$
Primary and below	34 (8.9%)	62 (16.1%)	
Post primary level	113 (29.4%)	175 (45.6%)	
Religion			$\chi^2=0.465, df=1, P>0.05$
Christians	140 (36.5%)	229 (59.6%)	
Muslims	7 (1.8%)	8 (2.1%)	
Marital Status			$\chi^2=2.078, df=1, P>0.05$
Single	37 (9.6%)	76 (19.8%)	
Married	110 (28.6%)	161 (41.9%)	
Residence			$\chi^2=0.004, df=1, P>0.05$
Rural	42 (10.9%)	67 (17.4%)	
Urban	105 (27.3%)	170 (44.3%)	

4.3 The uptake Level of Pre-conception Care services

The uptake level of preconception care services was determined by how the study participants utilized the various components of preconception care. The components includes preconception family planning, preconception immunization against tetanus, preconception use of folic acid, preconception screening for medical and genetic conditions and preconception screening for use of environmental toxins such as alcohol and cigarette. The study findings were presented using tables and figures as follows.

4.3.1 Family planning during preconception period

During preconception period, a woman should be on a family planning method and should only stop using the method when she is in good health. This will allow for stabilization of any health problem that could be harmful to her health and that of her unborn baby such as hypertension and unstable blood glucose concentration. The participants were asked if they were on a family planning method during preconception period. Almost half of the participants (44.5%) reported that they had unplanned pregnancy as since they were not on any method of family planning. Figure 4.1 below shows the findings.

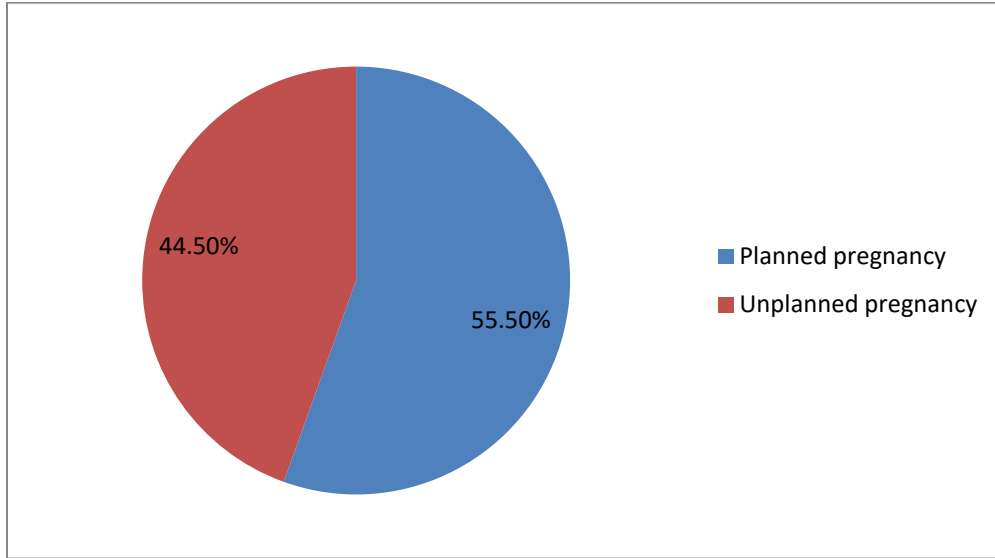


Figure 4.1: Pregnancy planned and unplanned before conception

Further statistical analysis on the relationship between family planning use before conception with the socio-demographic variables. For this study during cross-tabulation, the socio-demographic variables were further re-categorized as; age into below 25 years and above 25 years, Occupation into employed (employed and self-employed) and unemployed, Education level as primary and below (not schooled and primary) and post primary level (secondary and tertiary). The study findings indicated that the utilization was significantly associated with age ($\chi^2=24.418, df=1, P<0.05$) and the marital status ($\chi^2=5.454, df=1, P<0.05$). The level of education, religion and the area of residence were other factors thought to influence but the study findings did not find any significant association as $P>0.05$. These findings indicate that a married woman, and those older than 25 years were likely to utilize preconception care services than the single and young women below 25 years. Table 4.6 below shows the findings.

Table 4.6: Relationship between Family Planning use before conception with the socio-demographic variables

Variable	On Family Planning method before conception n=369		
	Yes	No	
Age			
Below 25 years	6(1.6%)	41(11.1%)	$\chi^2=24.418,df=1,P<0.05$
Above 25 years	165 (44.7%)	157 (42.5%)	
Education			
Primary and below	47 (12.7%)	49 (13.3%)	$\chi^2=0.357,df=1,P>0.05$
Post primary level	124 (33.6%)	149 (40.4%)	
Religion			
Christians	166 (45.0%)	188 (51.0%)	$\chi^2=1.064,df=1,P>0.05$
Muslims	5 (1.4%)	10 (2.7%)	
Marital Status			
Single	39 (10.6%)	67(18.2%)	$\chi^2=5.454,df=1,P<0.05$
Married	132 (35.8%)	131(35.5%)	
Residence			
Rural	59 (16.0%)	50(13.6%)	$\chi^2=3.772,df=1,P>0.05$
Urban	112 (30.4%)	148 (40.1%)	

4.3.2 Tetanus Toxoid immunization during preconception period

Women of reproductive age should be immunized against tetanus before conception so as to protect them and the developing fetus against tetanus. Figure 4.2 below shows the participants' immunization against tetanus during preconception period. More than three quarters of the study participants (79.7%) were not immunized against tetanus before conception.

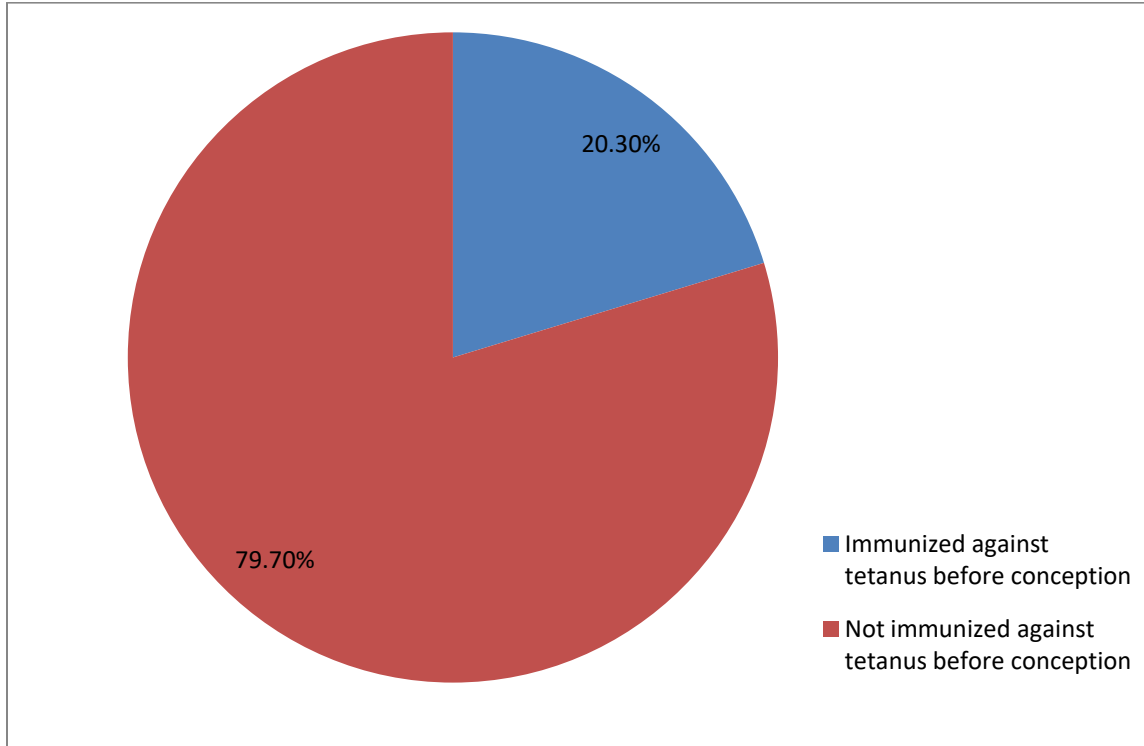


Figure 4.2: Tetanus immunizations before conception

Further statistical analysis (Table 4.7) shows relationship between the tetanus toxoid injection during the preconception period and the socio-demographic variables. For this study during cross-tabulation, the socio-demographic variables were further re-categorized as; age: Below 25 years, above 25 years, Occupation into employed (employed and self-employed) and unemployed, Education level as primary and below (not schooled and primary) and post primary level (secondary and tertiary). The study findings indicated a significant association with occupation ($\chi^2=5.521, df=1, P<0.05$). There was no significant association on tetanus injection use with age, education level, marital status and the area of residence $P>0.05$. These study findings indicates that a

woman who is employed is more likely to utilize the preconception care services compared to their unemployed counterparts.

Table 4.7: Relationship between the Tetanus toxoid injection before conception with the socio-demographic variables

Variable	Tetanus Toxoid injection before conception n=362		
	Yes	No	
Occupation			$\chi^2=5.521, df=1, P<0.05$
Employed	65 (18.0%)	265 (73.2%)	
Unemployed	12 (3.3%)	20 (5.5%)	
Education			$\chi^2=0.171, df=1, P>0.05$
Primary and below	19 (5.2%)	77 (21.3%)	
Post primary level	58 (16.0%)	208 (57.5%)	
Marital Status			$\chi^2=1.505, df=1, P>0.05$
Single	17 (4.7%)	83 (23.0%)	
Married	60 (16.6%)	202 (55.8%)	
Residence			$\chi^2=0.258, df=1, P>0.05$
Rural	25 (6.9%)	84 (23.2%)	
Urban	52 (14.4%)	201 (55.5%)	

4.3.3 Screening for medical conditions during preconception period

Women of reproductive age should be screened for several medical conditions during the preconception period. These medical conditions could complicate the pregnancy and may cause serious harmful effects to the fetus and the mother. HIV screening is important during preconception period because preventive measures when instituted early could allow the mother to have a HIV-free neonate. Table 4.6 shows detailed study findings on the medical conditions that the study participants were screened for before conception. More than half of the participants (64.6%) were screened for HIV and Diabetes screening being the least with only (4.4%) of the participants being screened for diabetes before

conception. The high HIV screening results were affirmed by a participant in the focused discussion group who said " *HIV test is very important to know before you conceive because these men at times are not faithful. Again the HIV test is free and the VCT tents sometimes are brought to the market where many people get tested to know their status even if you are not planning to get pregnant*" (FGD participant Ruiru sub-County).

Table 4.8: Medical Conditions Screened before conception

Medical Condition	Frequency	N=384	Percentage%
Blood Pressure	76	384	19.8
Diabetes	17	384	4.4
Tuberculosis	80	384	20.8
HIV	248	384	64.6
VDRL(Syphilis)	89	384	23.2
Anemia	34	384	8.9
Epilepsy	22	384	5.7
Asthma	40	384	10.4

Since the study participants were asked to indicate whether they were screened for any of the medical conditions during the preconception period, cross tabulation was done to find out the relationship between screening for medical conditions during preconception period with the socio-demographic variables. For this study during cross-tabulation, the socio-demographic variables were further re-categorized as; age into below 25 years, above 25 years, Occupation into employed (employed and self-employed) and unemployed, Education level as primary and below (not schooled and primary) and post primary level (secondary and tertiary). Study findings (Table 4.9) found no significant

association between screening for medical conditions with occupation and area of residence ($P>0.05$). There was also no statistical relationship between preconception screening for medical conditions and the age, education level, religion and the marital status of the study participants. Therefore the participant's socio-demographic variables did not influence the utilization of preconception screening for medical conditions.

Table 4.9: Relationship between screening for medical conditions with the socio-demographic variables

Variable	Screening for medical conditions before conception n= 153		
	Yes	No	
Occupation			
Employed	85 (55.6%)	48 (31.4%)	$\chi^2=0.115,df=1,P>0.05$
Unemployed	12 (7.8%)	8 (5.2%)	
Residence			
Rural	26 (17.0%)	19 (12.4%)	$\chi^2=0.868,df=1,P>0.05$
Urban	71 (46.4%)	37 (24.2%)	

4.3.4 Folic acid use before conception

It is important for women of reproductive age to use folic acid during preconception so that by the time conception takes place folic acid is present in adequate amounts in the body. Folic acid is required in early development of the embryo for the formation of the neural tube preventing the fetus from developing neural tube defects congenitally. Figure 4.3 below shows the participants' findings on the number of months they started using folic acid before conception. More than three quarters of the participants (80.2%) never used folic acid before conception. These findings were further explained by a participant in the focused discussion group who said " *I have always known that folic acid is used by women only during pregnancy and not before one is pregnant mainly to boost the blood*

level. I have never known that it protects spinal disability in a child before birth." (FGD woman from Ruiru Sub-County).

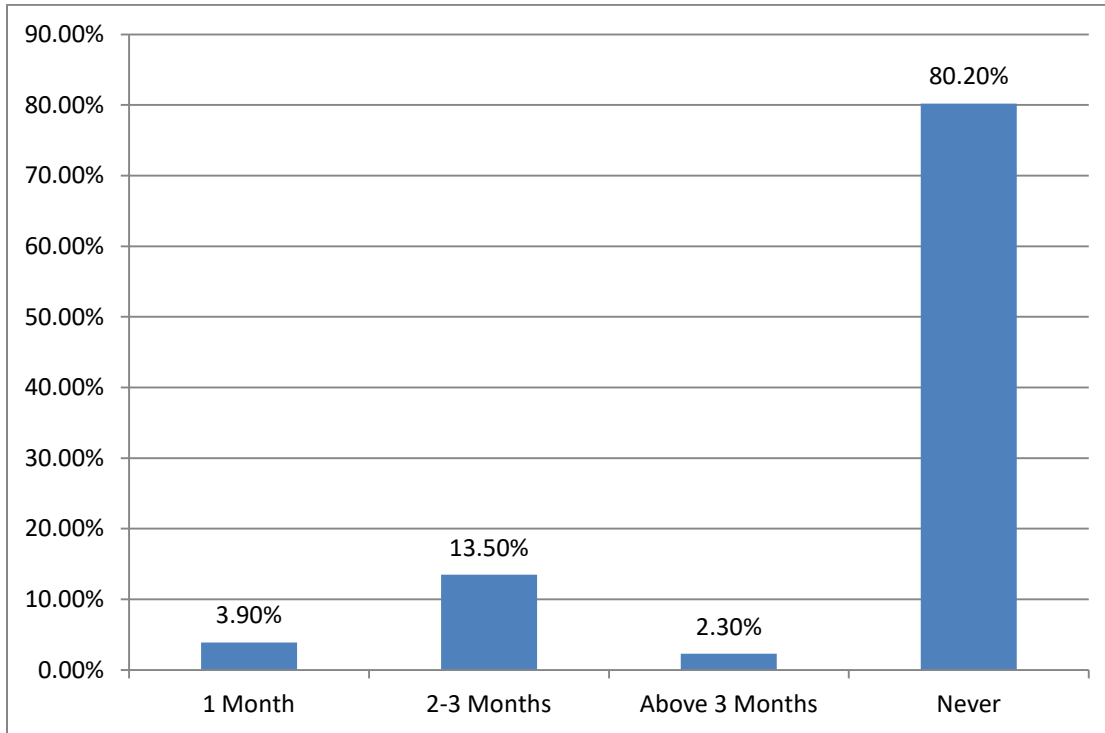


Figure 4.3: Months of folic acid use before conception

Further statistical analysis (Table 4.10) below shows the study findings on the relationship of folic acid usage during preconception period and the socio-demographic variables. For this study during cross-tabulation, the socio-demographic variables were further re-categorized as; age into below 25 years, above 25 years, Occupation into employed (employed and self-employed) and unemployed, Education level as primary and below (not schooled and primary) and post primary level (secondary and tertiary). Study findings showed that folic acid use was significantly associated with education level ($\chi^2=5.683, df=1, P<0.05$), occupation ($\chi^2=5.766, df=1, p<0.05$), and area of residence ($\chi^2=6.577, df=1, P<0.05$). There was no significant association between folic acid use with

age and the marital status as $P > 0.05$. These findings indicate that a married, employed woman who lives in the urban area is more likely to utilize the preconception folic acid compared with the single, unemployed woman who lives in the rural area. These findings were affirmed by a FGD participant who said " *Most of us women would use folic acid because we have it being advertised in the television but only during pregnancy and since we have heard then we will use it in future*" (FGD woman from Ruiru Sub-County).

Table 4.10: Relationship between folic acid use before conception with the socio-demographic variables

Variable	Folic acid use before conception n=362		
	Yes	No	
Occupation			
Employed	64 (17.7%)	266 (73.5%)	$\chi^2=5.766, df=1, P<0.05$
Unemployed	12 (3.3%)	20 (5.5%)	
Education			
Primary and below	12 (3.3%)	84 (23.2%)	$\chi^2=5.683, df=1, P<0.05$
Post primary level	64 (17.7%)	202 (55.8%)	
Marital Status			
Single	21 (5.8%)	79 (21.8%)	$\chi^2=0.000, df=1, P>0.05$
Married	55 (15.2%)	207 (57.2%)	
Residence			
Rural	32 (8.9%)	77 (21.3%)	$\chi^2=6.577, df=1, P<0.05$
Urban	44 (12.2%)	209 (57.7%)	

4.3.5 Screening for use of environmental toxins

Women of reproductive age should stop taking alcohol and smoking cigarettes before conception or as soon as they suspect they are pregnant. Alcohol intake during pregnancy is associated with stillbirths and miscarriages. Study findings indicated that, more than

three quarters of the study participants (77.6%) were advised on the negative effects of taking alcohol and cigarette smoking on pregnancy before conception. Further findings indicates that a small proportion of the participants (3.9%) were taking alcohol and smoking cigarettes before conception. When asked whether they stopped before conception, nearly all the participants (92.7%) stopped taking alcohol and smoking cigarettes less than one month before conception. A small proportion of the participants (7.3%) continued taking alcohol and smoking cigarettes throughout pregnancy. These findings were farther affirmed by a FGD participant who said " *A woman who smokes and drinks will always stop it once she realize that she is pregnant for the fear of a having a child with disabilities of various parts of the body. Those who fail to stop smoking and drinking maybe are drug addicts but still are aware that it is not healthy for the developing baby. There is no pregnant woman who wants to have a baby with problems it is only bad luck at times* (FGD woman from Ruiru Sub-County).

4.4 Factors that Influence the Utilization of Pre-conception Care services

It is important to understand the factors that influence the utilization of preconception care services so that they can be addressed accordingly. Some of the factors could be barriers that may hinder a woman to utilize the services while other could be those factors that promote the utilization of preconception care services.

4.4.1 Socio-demographic variables

Age of the study participants was found to influence the utilization of preconception care services as shown by study findings in table 4.6. The study findings showed a significant association between the preconception use of family planning and age of the woman

($P < 0.05$) implying that an older woman above 25 years was more likely to utilize the preconception care services.

Level of education of the study participants was found to influence the utilization of preconception care services as shown in Table 4.10. There was a significant association between preconception folic acid use and the level of education ($P < 0.05$) meaning that a woman with post primary education was more likely to utilize preconception care services compared with a woman with primary and below.

Occupation of the study participants was also found to significantly influence the utilization of Tetanus toxoid injection before conception ($P < 0.05$) as shown in Table 4.7. This implies that an employed woman was more likely to utilize preconception care services compared to the unemployed woman.

The marital status of the study participants was also found to significantly influence the utilization of preconception family planning use ($P < 0.05$) as shown in table 4.6. The study findings showed that married women were more likely to be on a family planning method during preconception period as opposed to the single women.

The area of residents of the study participants was also found to significantly influence the utilization of preconception folic acid use ($P < 0.05$) as illustrated in table 4.10. These findings implies that a woman living in the urban area is more likely to use folic acid during preconception period compared to those living in rural areas.

The religion of the study participants was not found to influence the utilization of the various components of preconception care.

4.4.2 Partner support during preconception period

Partner support during preconception care is believed to influence a woman's chance of utilizing preconception care services. Table 4.11 below shows the type of support the participants' partners offered during pre-conception period. The study found out that about three quarters of the participants (68.9%) received financial support from their partners during preconception period. The least type of support received by the participants was being accompanied by their partner to the clinic (39.3%) during the preconception period.

Table 4.11: Type of Support Offered by partner during Pre-conception period

Type of Support	Frequency N=384	Percentage(%)
Accompanying to the clinic	151	39.3
Financial Support	268	69.8
Psychological Support	185	48.2
Spiritual Support	152	39.6

Further statistical analysis on the relationship between partner support offered during preconception period with religion and marital status found out that there was a significant association between partner support and marital status ($P < 0.05$). There was no significant association between partner support and religion ($P > 0.05$). This means that a married woman was more likely to receive partner support during preconception period and is likely to utilize the preconception care services. Table 4.12 below shows the findings.

Table 4.12: Relationship of partner support with religion and marital status

Variable	Partner support during preconception period n=345		
	Financial support		
	Yes	No	
Religion			$\chi^2=1.097, df=1, P>0.05$
Christians	258 (74.8%)	72 (20.9%)	
Muslims	10 (2.9%)	5 (1.4%)	
Marital status			$\chi^2=11.151, df=1, P<0.05$
Single	63 (18.3%)	33 (9.6%)	
Married	205 (59.4%)	44 (12.8%)	
	Spiritual support		
	Yes	No	
Religion			$\chi^2=3.252, df=1, P>0.05$
Christians	142 (41.2%)	188 (54.5%)	
Muslims	10 (2.9%)	5 (1.4%)	
Marital status			$\chi^2=10.352, df=1, P<0.05$
Single	29 (8.4%)	67 (19.4%)	
Married	123 (35.7%)	126 (36.5%)	

4.4.3 Preconception care practices secondary to previous obstetric problems

The utilization of preconception care services could be directly related with previous obstetric problems suffered by the woman in the previous pregnancies. For example, a woman who has experienced a miscarriage is likely to utilize preconception care more than the one who experienced a normal pregnancy. Figure 4.4 below shows the findings on the preconception practice following a previous obstetric problems. More than half of

the participants (72.7%) who had suffered an obstetric problem in previous pregnancies sought preconception care services.

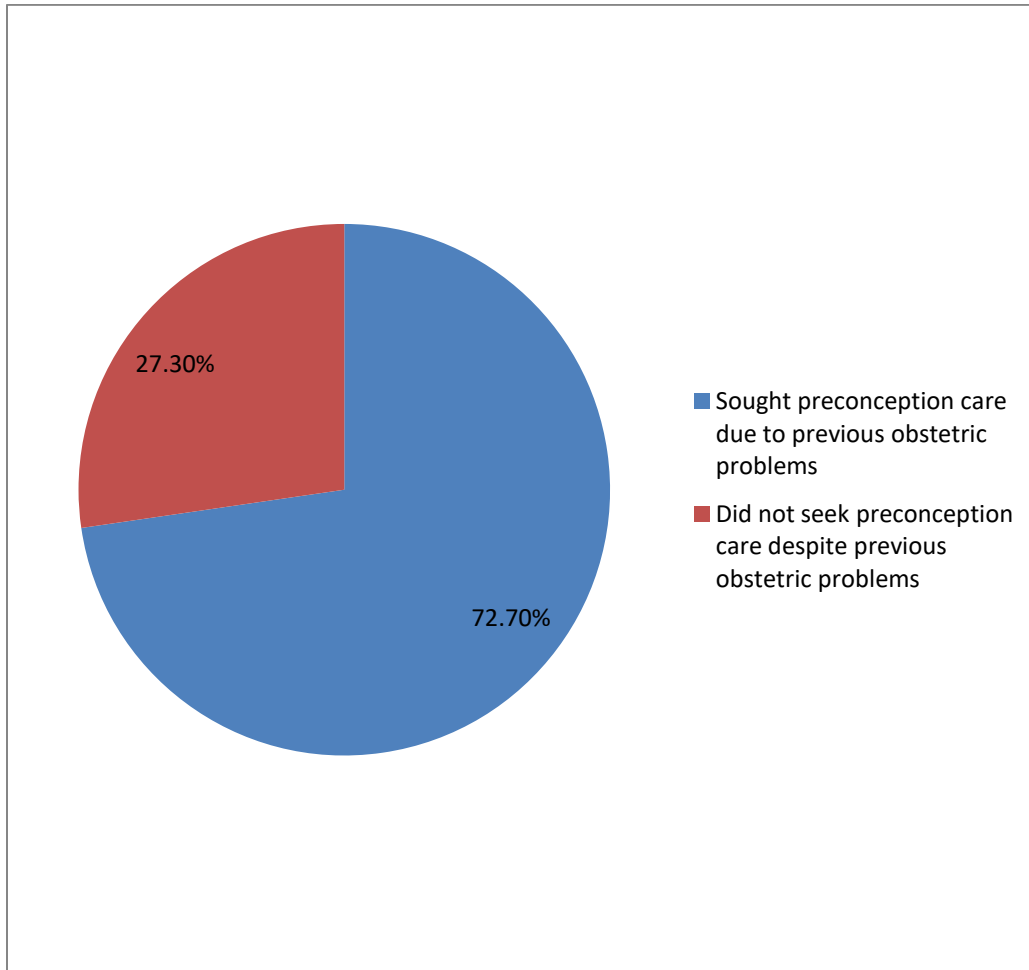


Figure 4.4: Preconception practice secondary to previous obstetric problems

4.4.4 Cost of preconception care services

Cost of every service is likely to influence one's chance of utilizing the preconception care services. The study also revealed that 33.9% of women had to pay in order to receive the preconception care services. Nearly half of the participants (42.9%) indicated that the cost of the preconception services was fair. Figure 4.5 below presents the findings.

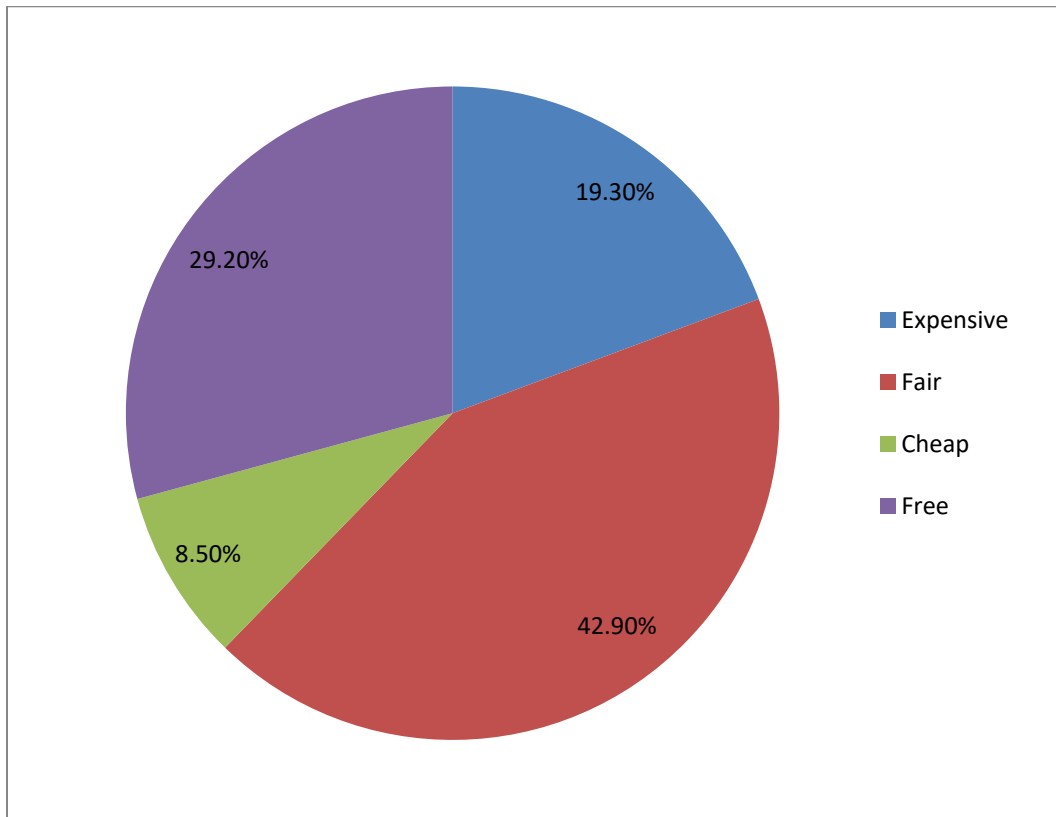


Figure 4.5: Cost affordability of Pre-conception Care Services

4.4.5 Culture and preconception care services

Cultural beliefs surrounding reproduction are likely to influence the utilization of preconception care services. Cultural beliefs associated with preconception care were reported by 17.2% of the study participants. The findings further affirmed by a FGD participant who said " *Most of women believed that children came from God and so didn't seek health care services even if one is having challenges conceiving*" (FGD participant, Ruiru sub-County). Another participant added that " *If you have been looking for a child for a long period of time, and then you conceive, then the pregnancy is kept a secret because people can bewitch as others are bewitched and that's why they don't conceive*"

(FGD participant, Ruiru sub-County). Another study participant from the focused discussion added that " *planning for pregnancy is a secret for two people and so you cannot go announcing matters to do with the process i.e. sexual acts*" (FGD participant, Ruiru sub-County).

4.4.6 Participants' experiences with factors that influence utilization of preconception care services

The study findings indicated that, only a small proportion of the participants (29.2%) had long distance as problem to overcome during preconception period. Majority of the participants did not find the factors in Table 4.13 below being a problem to them seeking preconception care services.

Table 4.13: Participants' experiences with factors that influence utilization of preconception care services

	N=384	
	<i>Problem</i>	<i>Not a problem</i>
Factor	<i>Frequency</i>	<i>Frequency</i>
Transport money	90 (23.4%)	294 (76.6%)
Long distance	112 (29.2%)	272 (70.8%)
Perception of being low risk	33 (8.6%)	351 (90.4%)
Obtaining permission from partner	13 (3.4%)	371 (96.6%)
Availability of health care providers	34 (8.9%)	350 (91.1%)

4.4.7 Participants' rating on factors that influence the utilization of preconception care services

Certain factors perceived to influence the utilization of preconception care. The study participants were asked to rate to what extent they agreed to the factor in influencing the utilization of preconception care services. Table 4.14 below shows the participants' rating on the factors that influence the utilization of preconception care services. A majority of the participants (87.8%) agreed that health education on preconception care during hospital visits influence the utilization of the services.

Table 4.14: Participants' rating on factors that influence the utilization of preconception Services

	N=384		
Factors	Disagree	Agree	Don't Know
Health education on pre-conception care during hospital visits	14(3.6%)	337 (87.8%)	33 (8.6%)
Subsidized costs for pre-conception services	33(8.6%)	304(79.2%)	47 (12.6%)
Increase insurance coverage to include pre-conception care	34 (8.9%)	294 (76.6%)	56 (14.6%)
Health education on pre-conception care in schools	33 (8.6%)	308 (80.2%)	43 (11.2%)
Male partner involvement and education	37 (9.6%)	300 (78.1%)	47 (12.2%)

CHAPTER FIVE:DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

The chapter discusses the findings and relate them to literature review, conclusions and findings. The first part discusses the knowledge on preconception care services, the second part discusses the uptake level of preconception care services and the third part discusses the factors affecting the utilization of preconception care services among women of reproductive age in Kiambu County, Ruiru Sub-County, Kenya.

5.1 Discussion

5.1.1 Knowledge on preconception care

Findings from the study showed that the level of knowledge on preconception care services among women of reproductive age in Ruiru Sub-County was low since more than half of the participants had inadequate knowledge level on preconception care services. This is similar to study done in the United Kingdom by Huang, Vellot and Weisman which explored the knowledge and attitudes related to pregnancy and preconception health in women with chronic medical conditions which found out that more than half of the women had no knowledge about the availability of preconception care services at the hospital (Huang, Vellot, & Weisman, 2010).

The study found out that less than half of the respondents had heard about preconception care services. The study also revealed that the major source of information about preconception care is from the health workers in the hospital with more than half of the study participants receiving information from health workers. These findings are similar to a study done in France among women with diabetes type 1 which found out that most

of the women obtained information from the diabetologist (Diabetes and Pregnancy Group, 2005)

5.1.2 Uptake level of preconception care services

The study found out that majority of the study participants never used folic acid in the preconception period during any of their previous pregnancies. These findings are similar to study by Maina, Omolo, Wanzala and Makokha on the utilization of folic acid and iron supplementation services by pregnant women attending an antenatal clinic at a regional referral hospital in Kenya which found out that most pregnant women initiated folic acid after 12 weeks of gestation, well away from the recommended period before conception and during the first trimester to prevent neural tube defects (Maina, Omolo, Wanzala, & Makokha, 2013) .

The findings on screening for medical conditions were that HIV screening was leading with more than half of the study participants knowing their HIV status before pregnancy and the least being Diabetes. These findings concur with a study on 'Opt-Out HIV Testing' among pregnant women in rural districts in Kenya by Ujiji et al, which indicated that almost all the women were tested for HIV during antenatal visits (Ujiji, et al., 2011)

The study found out that about half of the previous pregnancies experienced by the study participants were unplanned. These findings are similar a STEP-UP research report April 2014 on unintended pregnancies in Kenya by Mumah et al, which found that that almost half of all pregnancies in Kenya are unintended or unplanned (Mumah, et al., 2014)

Tetanus is a disease caused by bacteria that enters into the body through breaks in the skin (open wounds) in a mother and can gain entry to the fetus to cause neonatal tetanus.

The study found out that only a small proportion of the study participants were immunized against tetanus during the preconception period. One participant in one the focused groups said " *I have only heard that anyone who has been hurt and has wound should go to the hospital to get a tetanus injection to prevent infections and when one go for antenatal clinic. This is news to say that a woman who is planning to become pregnant should be injected tetanus, won't it harm the baby? the participant asked* "(FGD woman from Ruiru Sub-County). These findings contrasts with the World Health Organization guidelines on Tetanus Toxoid immunization schedule where women of reproductive age are to get up to five doses of tetanus vaccine for them to have a protection for all their reproductive years i.e. lifelong immunity (WHO, 2006)

5.1.3 Factors influencing the utilization of preconception care services

The study found that age is a factor influencing the utilization of the preconception care services among women of reproductive age. The older the woman the more the likelihood of utilization of the preconception services ($P < 0.05$). These findings are in contrast with the findings of a study done in Dubai on knowledge on preconception care among reproductive age women by Phrashansa, which showed no significant association between the knowledge on preconception care and the age of a woman ($P > 0.05$) (Phrashansa & Rojana, 2016)

The level of education was significantly associated with the utilization of preconception care services ($P < 0.05$). This means that, the higher the level of education, the more likely the woman would be able to utilize the preconception care services. These findings are similar to findings of a study done in Nigeria among women of the Amassoma community on awareness and barriers to utilization of maternal health services by

Onasoga, Osaji, Alade and Egbuniwe which found that education level is a significant predictor to the utilization of maternal services (Onasoga, Osaji, Alade, & Egbuniwe, 2014)

Occupation of a woman was found to influence the utilization of preconception services as more than half of the study participants were self employed. The study found that there was a significant association between the occupation of a woman and the utilization of the preconception care services ($P < 0.05$). These findings contrasts with the study done in Nigeria among women of the Amassoma community on awareness and barriers to utilization of maternal health services by Onasoga which found out that there was no association between the occupation of woman and the utilization of maternal services (Onasoga, Osaji, Alade, & Egbuniwe, 2014)

Further study findings showed that the cost of preconception care services is a predictor of the utilization of the services. Majority of the study participants agreed that most women would utilize the preconception care if the cost of the services was subsidized. When the study participants were asked about insurance coverage, more than half agreed that most women would utilize the services if the insurance covers. " *Most insurance covers in Kenya do not cover these services and especially when you go to the private hospitals. NHIF on the other hand is meant to cover in public hospitals but then you can't get even drugs when we are sick and I don't think even these services will be available*" (FGD woman from Ruiru sub-County). These findings contrast with those of a study done among mothers in northern Nigeria on barriers to utilization of maternal health services in a semi-urban community by Idris, which found out that cost was not a major

barrier to the utilization of maternal health services (Suleiman, Mohammed, & Muhammed, 2013).

The study also found out that partner support during preconception period influenced the utilization of the preconception care services by the study participants. Financial support was reported by the study participants as the leading support offered by their partners during preconception period. Both financial support and spiritual support were found to be significantly associated with the marital status $P < 0.05$. A married woman was more likely to utilize the preconception care services if they received support from her partner. One participant added to this by saying " *when a man has given you money to go to the hospital, then it is your role as a woman to go to hospital. Most of them won't accept to go with you. If they can't go with you during antenatal visits would they go with you during preconception period? It's not possible*" (FGD woman from Ruiru sub-County).

The study findings also showed that culture was a factor that influenced the utilization of preconception care services though cited by a small proportion of the study participants. The study participants believed that a woman should only seek preconception care if she has been trying to conceive without success. A section of the participants believed that children came from the God and so there is no need to seek health services. These findings are similar to those of a study done in Washington State by Hye-Kyung on influence of culture and community perceptions on birth and perinatal care of immigrant women which found out that cultural meaning about birth and perinatal practice was diverse in terms of social class status and generational differences (Hye-Kyung, 2014)

The study finding further indicated that a woman who experienced obstetric problems during previous pregnancies was likely to be influenced by her previous obstetric (pregnancy & childbirth) experience to seek preconception care. The obstetric problems that were cited by the study participants included miscarriages, per Vaginal bleeding (before & after delivery), blood sugars and hypertensive conditions among others. These study findings are similar to those of a study done by Huang, Vellot and Weisman in the United States of America on exploring knowledge and attitudes related to pregnancy and preconception health in women with chronic medical conditions which found out that women with diabetes indicated that they would ensure blood sugar control before a future pregnancy (Huang, Vellot, & Weisman, 2010)

5.2 Conclusions

The following conclusions were made from the study. There is low level of knowledge on preconception care services among the study participants with a larger proportion who have never heard about the services and not able to name the components of preconception care and the main source of information was obtained from the health workers in the hospitals.

The uptake of various preconception care services in Ruiru Sub-County among women of reproductive age is low e.g. majority of women (80.2%) did not use folic acid before conception, 79.7% were not immunized against tetanus, pregnancies are unplanned (44.5%) and most study participants were not screened for the medical conditions like blood pressure, anaemia, diabetes among others before conception.

The factors that were found to influence the utilization of preconception care services include level of education, the occupation, age of the woman, culture, previous obstetric problems, partner support and the cost of preconception care services.

5.3 Recommendations

- i. Health education of women of reproductive age on preconception care services, its components and importance in the health facilities and institutions of higher learning so that they can have the knowledge on preconception care services hence increasing its utilization. This is because the utilization of preconception care services is influenced by the level of education, occupation and age.
- ii. The ministry of Health at national and county level to increase public awareness on preconception care services through mass media, chief's barazas, mobile clinics, churches, women groups so as to increase the uptake of preconception care services.
- iii. The County Government of Kiambu in collaboration with National ministries to improve on measures to address the factors that influence the utilization of preconception care services such as women empowerment to enable them to access and afford the preconception care services and male involvement should be encouraged for provision of partner support.

5.4 Further Research

Further research should be done on the relationship between partner support and the utilization of preconception care services.

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APPENDICES

Appendix I: Consent Form

My name is Joyce Chepngetich. I am a Master of Public Health student from Kenyatta University. I am conducting a study on “Utilization of preconception care services by women of reproductive age in Ruiru sub-county, Kenya”. The decision to join, or not to join, is up to you. In this research study, the results of this research study may be published, but the name or identity of participants or their place of work will not be revealed. They will be used to improve the preconception care services in this region as well as other regions of Kenya.

Procedures to be followed

If you decide to participate you will be asked to answer some questions about preconception care services. I will record the information from you in a questionnaire. You have the right to refuse participation in this study. Please remember that participation in the study is voluntary. The researcher may also stop the study or take you out of the study at any time they judge it is in your best interest. They may also remove you from the study for various other reasons. They can do this without your consent. You may ask questions related to the study at any time. You may refuse to respond to any questions and you may stop an interview at any time. You may also stop being in the study at any time without any consequences.

Discomforts and risks

This study has no known risk. If any of the questions causes any form of discomfort you have the right to refuse to answer.

Benefits

It is reasonable to expect the following benefit from this research: If you participate in this study you will help us to learn about the utilization of preconception care services and how the services can be improved. However, we can't guarantee that you will personally experience benefits from participating in this study. The community may benefit in the future from the information we find in this study.

Reward

There is no reward if you agree to participate in this study.

Confidentiality

We will take the following steps to keep information about you confidential, and to protect it from unauthorized disclosure, tampering, or damage. Your name will not be recorded on the questionnaire. The questionnaires will be kept in a locked cabinet for safe keeping after the data collection. Everything will be kept private and confidential.

Contact information

If you have any questions you may contact Prof. Margaret Keraka on 0721817521 or Dr. Joan Njagi on 0722359391 or the Kenyatta University Ethical Review Committee Secretariat on kuerc@ku.ac.ke.

Participant's Statement

The above information regarding my participation in the study is clear to me. I have been given a chance to ask questions and my questions have been answered to my satisfaction. My participation in this study is entirely voluntary. I understand that my records will be kept private and that I can leave the study at any time.

Participant's signature

Date _____

Investigator's statement

I, the undersigned, have explained to the volunteer in a language she understands, the procedures to be followed in the study and the risks and benefits involved.

Name of Interviewer

Interviewer signature

Date

Sehemu ya I: Ruhusa ya kushiriki katika Utafiti

Jina langu ni Joyce Chepngetich. Mimi ni mwanafunzi wa chuo kikuu cha Kenyatta ambaye anaomba kushiriki kwenu katika utafiti ambapo lengo lake ni kujua jinsi akina mama wa umri miaka (15-49) wanavyotumia huduma za kabla ya kupata mimba (preconception care services) katika kaunti ndogo ya Ruiru. Kushiriki kwenu kutajumuisha kujibu maswali ambayo yanaonyesha hoja kuhusu utafiti.

Muda wa kushiriki unaotarajiwa ni saa moja. Hakuna shida ambazo zinajulikana kama utakubali kushiriki. Utafiti hauna manufaa ya moja kwa moja lakini jamii inaweza kufaidika kulingana na matokeo ya utafiti. Matokeo ya utafiti huu, yanaweza kuchapishwa lakini majina ya mshiriki au pahali pa kazi hapatatajwa. Mtafiti wakati wowote atakuwa huru ili asishawishiwe kutengeneza matokeo ya utafiti kwa njia isiofaa. Matokeo yote itakayokusanywa italindwa vilivyo kabla na baada ya utafiti. Washiriki hawatalipwa fidia kwa kushiriki kwao.

Ikiwa una swali lolote kuhusu utafiti huu ama kushiriki kwako, unaweza kuwasiliana na:

1. Joyce Chepngetich (Mtafiti) simu: 0725 408 702
2. Prof. Margaret Keraka simu : 0721 817 521
3. Dkt. Joan Njagi simu: 0722 359 391

Au sekta ya sayansi ya afya chuoni Kenyatta.

“ Nimesoma habari hiyo ilivyo, mahitaji, madhara na manufaa ya utafiti huu nimeelezwa, ninajua madhara yanayohusika na ninaelewa ya kwamba nina uhuru wa kutoendelea kushiriki wakati wowote bila kuadhibiwa au kupoteza faida zangu. Ninatia sahihi fomu hii ya ruhusa bila kulengeza malalamizi yoyote rasmi, haki na ukarabati.

Mshiriki

Sahihi..... Tarehe

“ninakubali nimemweleza mshiriki umbo na maana, faida zilizoko na madhara yanayotarajiwa katika kushiriki utafiti huu. Nimejibu maswali yote yaliyoulizwa na nimeshuhudia sahihi iliyo hapo juu” “ nimempatia mshiriki nakala ya fomu hii iliyotiwa sahihi”

Mtafiti: Joyce Chepngetich

Sahihi Tarehe

Appendix II: Study Questionnaire**INSTRUCTIONS**

- **Do not write your name anywhere on the questionnaire**
- **Confidentiality of the information given will be maintained**
- **Tick where appropriate and write where you are required to write**
- **Please answer all questions**

Part I: Socio-demographic data**1. Age in completed years**

- a. 15-24
- b. 25-34
- c. 35-44
- d. 44 and above

2. Highest level of education completed

- a. Primary
- b. Secondary
- c. Tertiary
- d. Not schooled
- e. Others (specify)

3. **Religion**

- a. Christian
- b. Muslim
- c. Hindu
- d. Atheist
- e. Others (specify)

4. **Marital Status**

- a. Single
- b. Married

5. **Occupation**

- a. Employed
- b. Self- employed
- c. Unemployed

6. **Area of residence**

- a. Rural
- b. Urban

Part II: Knowledge on pre-conception care

1. Have you ever heard about pre-conception care?

- a. Yes
- b. No

2. If yes, where did you hear about preconception care?

- a. In community
- b. Hospital
- c. Place of worship
- d. Mass media e.g. radio, television
- e. Others specify

3. **Tick the components of pre conception care that you know.**

Component	Tick
Family planning	
Vaccination e.g. rubella, tetanus	
Screening for medical conditions e.g. BP, diabetes , epilepsy, asthma etc	
Use of environmental toxins e.g. alcohol stoppage, smoking cessation	
Lifestyle changes e.g. healthy weight, folic acid supplementation, nutrition	
Screening for genetic diseases e.g. sickle-cell anaemia	
Screening for infectious diseases e.g. syphilis, HIV, gonorrhoea	

4. Knowledge level statements

	Knowledge statements	Yes	No
1.	Have you ever heard about preconception care?		
2.	Do you know that a woman should be on a family planning method during preconception period?		
3.	Do you know that a woman should be vaccinated against Tetanus and Rubella before she conceives?		
4.	Do you know that a woman should be screened for medical conditions e.g. blood pressure, anaemia, Diabetes e.t.c?		
5.	Do you know that a woman should stop using alcohol and smoking cigarette before conception?		
6.	Do you know that a woman should undergo weight monitoring and use folic acid before conception?		
7.	Do you know that a woman should be screened for familial diseases such as hemophilia, sickle cell anaemia before conception?		
8.	Do you know that a woman should be screened for infectious diseases such as syphilis, HIV, gonorrhoea before conception?		

Part III: Utilization of preconception care services in the previous pregnancy

1. How many pregnancies have you had?

a. 1-2 b. 3-4 c. 5 and above

2. Have you ever planned for any of your pregnancies?

a. Yes b. No

3. If yes in (2 above) did you seek for preconception care from the health facility?

a. Yes b. No

4. Were you on any family planning method before conception?

a. Yes b. No

5. Were you immunized against tetanus before conception?

a. Yes b. No

6. Were you screened for any medical condition during preconception period?

a. Yes b. No

7. In the table below, tick the medical conditions you were screened for before conception?

Medical condition	Tick
Blood pressure	
Diabetes	
Tuberculosis	
HIV	
VDRL (Syphilis)	
Anemia	
Epilepsy	
Asthma	

8. Were you advised on the effects of alcohol and cigarette smoking on pregnancy before conception?

- a. Yes b. No

9. Were you using the following substances before conception?

- i. Alcohol a. Yes b. No

- ii. Cigarette smoking a. Yes a. No

10. If yes above (no. 9), when did you stop?

i. Alcohol

a. Less than 1 month before conception b. 1 month after conception c. Never

ii. Cigarette smoking

a. One month before conception b. One month after conception c. Never

11. How many months before conception did you start using folic acid?

a. 1 month b. 2-3 months c. 3 months and above d. Never

12. Was your weight monitored before conception?

a. Yes b. No

Part IV: Factors influencing utilization of preconception care services

1. Did you have to seek permission from your partner to seek preconception care?

a. Yes b. No

2. Tick the type of support your partner offered during preconception

Type of support	Tick
Accompanying to the clinic	
Financial support	
Psychological support	
Spiritual support	
Others (specify)	

3. Have you ever had any obstetric problems in your previous pregnancies?
 a. Yes (indicate the condition)..... b. No

4. If yes (no.3) above, did it influence you to seek preconception care?
 a. Yes b. No

5. Do you pay in order to receive preconception care?
 a. Yes b. No

6. If yes (no.5) above, how affordable is this to you?
 a. Expensive b. Fair c. Cheap d. Free

7. When you wanted to start preconception care, was each of the following a problem or not? please tick

Factor	Problem	Not a problem
Transport money		
Long distance		
Perception of being low risk		
Obtaining permission		
Availability of health care providers		

8. Are there any preconception related traditional beliefs related to preconception?
 a. Yes b. No

9. If yes in (no.9) above, please give examples.....

10. In your own view, rate the following factors as to what extent it will affect the utilization of preconception services. Tick as appropriate

	Disagree	Agree	Don't know
Health education on preconception care during hospital visits			
Subsidized costs for preconception services			
Increase insurance coverage to include preconception care			
Health education on preconception care in schools			
Male partner involvement and education			

What recommendations would you give concerning pre-conception care in Kenya

.....

.....

.....

.....

Thank you for your participation.

Appendix III: Focused Group Discussion Guide

In groups of 4-6 women.

Please give your honest contributions in the following questions

1. What do you understand by preconception care?
2. What factors make women to utilize preconception care services?
3. What challenges/ factors limits women aged 15-49 years to use these services?
4. What suggestions/ recommendations would you give concerning preconception care services in Kenya?

THANK YOU.

Appendix IV: Kenyatta University Ethics Committee Approval



KENYATTA UNIVERSITY
ETHICS REVIEW COMMITTEE

Email: chairman.kuerc@ku.ac.ke
secretary.kuerc@ku.ac.ke
ercku2008@gmail.com
Website: www.ku.ac.ke

P. O. Box 43844 - 00100 Nairobi
Tel: 8710901/12
Fax: 8711242/8711575

Our Ref: KU/R/COMM/51/711

Date: 23rd May, 2016

Chepngetich Joyce
Kenyatta University,
P.O Box 43844,
Nairobi

Dear Joyce,

RE APPLICATION PKU/473/1 573- "UTILIZATION OF PRECONCEPTION CARE SERVICES AMONG WOMEN OF REPRODUCTIVE AGE IN RUIRU SUB-COUNTY, KENYA."- VERSION 2

1. IDENTIFICATION OF PROTOCOL

The application before the committee is with a research topic "Utilization of preconception care services among women of reproductive age in Ruiru Sub-County, Kenya." – Version 2

2. APPLICANT

Chepngetich Joyce

3. STUDY SITE

Ruiru Sub-County, Kenya

4. DECISION

The committee has considered the research protocol in accordance with the Kenyatta University Research Policy (section 7.2.1.3) and the Kenyatta University Ethics Review Committee Guidelines AND APPROVED that the research may proceed for a period of ONE year from 23rd May, 2016.

5. ADVICE/CONDITIONS

- i. Progress reports are submitted to the KU-ERC every six months and a full report is submitted at the end of the study.
- ii. Serious and unexpected adverse events related to the conduct of the study are reported to this board immediately they occur.
- iii. Notify the Kenyatta University Ethics Committee of any amendments to the protocol.
- iv. Submit an electronic copy of the protocol to KUERC.

When replying, kindly quote the application number above.

If you accept the decision reached and advice and conditions given please sign in the space provided below and return to KU-ERC a copy of the letter.

Titus Kahiga

DR. TITUS KAHIGA
CHAIRMAN ETHICS REVIEW COMMITTEE



I, CHEPNGETICH JOYCE.....accept the advice given and will fulfill the conditions therein.

Signature.....*Joyce*..... Dated this day of.....30th.....may..... 2016.

cc. Vice-Chancellor
DVC-Research Innovation and outreach

Appendix V: National Commission for Science and Technology Approval



NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471,
2241349, 3310571, 2219420
Fax: +254-20-318245, 318249
Email: dg@nacosti.go.ke
Website: www.nacosti.go.ke
when replying please quote

9th Floor, Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

Ref. No.

Date:

NACOSTI/P/16/87810/11701

20th July, 2016

Chepngetich Joyce
Kenyatta University
P.O. Box 43844-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on "*Utilization of preconception care services among women of reproductive age in Ruiru Sub-County, Kenya,*" I am pleased to inform you that you have been authorized to undertake research in **Kiambu County** for the period ending **19th July, 2017.**

You are advised to report to **the County Commissioner and the County Director of Education, Kiambu County** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.


BONIFACE WANYAMA
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Kiambu County.

The County Director of Education
Kiambu County.

Appendix VI: County Commissioner of Kiambu County approval

OFFICE OF THE PRESIDENT

MINISTRY OF INTERIOR AND CO-ORDINATION OF NATIONAL GOVERNMENT
COUNTY COMMISSIONER, KIAMBU

Telephone: 066-2022709
 Fax: 066-2022644
 E-mail: countycommkiambu@yahoo.com
 When replying please quote



County Commissioner
 Kiambu County
 P.O. Box 32-00900
KIAMBU

Ref.No: **ED.12/1/VOL.IV/59**

1st August, 2016

✓ Chepngetich Joyce
 Kenyatta University
 P.O Box 43844-00100
NAIROBI

RE: RESEARCH AUTHORIZATION

Reference is made to National Commission for Science, Technology and Innovation letter Ref No. **NACOSTI/P/16/87810/11701** of **20th July, 2016**.

You have been authorized to conduct research on "*Utilization of preconception care service among women of reproductive age in Ruiru Sub County, Kiambu County, Kenya*". The data collection will be carried out in *Ruiru Sub County for a period ending 19th July, 2017*.

You are requested to share your findings with the County Education Office upon completion of your research.


J. A. RATEMO
 FOR: COUNTY COMMISSIONER
KIAMBU COUNTY

Cc County Director of Education
KIAMBU COUNTY

National Commission for Science, Technology and Innovation
 P.O. Box 30623-00100
NAIROBI

Deputy County Commissioners (For information and record purposes)
RUIRU SUB-COUNTY

Appendix VII: County Director of Education of Kiambu Approval

**MINISTRY OF EDUCATION SCIENCE & TECHNOLOGY
State Department of Education**

Telephone: Kiambu (office) 020-2044686
FAX NO. 020-2090948
Email: directoreducationkiambu@yahoo.com
When replying please quote
KBU/CDE/HR/4/11/ (115)



COUNTY DIRECTOR OF EDUCATION
KIAMBU COUNTY
P. O. Box 2300
KIAMBU
1st August, 2016

Chepngetich Joyce
Kenyatta University
P.O. Box 43844-01000
NAIROBI

RE: RESEARCH AUTHORIZATION

Reference is made to the National Commission for Science, Technology and Innovation letter Ref. No. NACOSTI/P/16/87810/11701 dated 20th July, 2016.

Authority has been granted to you to do research on "*utilization of preconception care services among women of reproductive age*" for a period ending 19th July, 2017.

Please accord him the necessary assistance.

COUNTY DIRECTOR OF EDUCATION
KIAMBU COUNTY

P.O. BOX 2300 00900 KBU.
TEL: 020-2044686
FAX: 020-2090948

LEAH ROIKO
FOR: COUNTY DIRECTOR OF EDUCATION
KIAMBU COUNTY

Appendix VIII: Map Of The Study Area

