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**ASSESSMENT OF THE KNOWLEDGE ON PRE CONCEPTION  
CARE AMONG WOMEN OF REPRODUCTIVE AGE IN RUIRU  
SUB-COUNTY, KIAMBU COUNTY, KENYA**

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## ASSESSMENT OF THE KNOWLEDGE ON PRE CONCEPTION CARE AMONG WOMEN OF REPRODUCTIVE AGE IN RUIRU SUB-COUNTY, KIAMBU COUNTY, KENYA

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### Abstract

**Purpose:** The study aimed at determining the knowledge on pre conception care among women of reproductive age in Ruiru Sub-County, Kiambu County.

**Materials and methods:** 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.

**Results:** 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.

**Recommendations:** 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.

**Keywords:** *Utilization, Para, Preconception care, Woman of reproductive age*

## 1.0 INTRODUCTION

### 1.1 Background to the Study

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 includes 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 greatly valued and practiced in the ancient days and it clearly indicates

that even before the birth of Christ, pre conception 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 haemorrhage, hypertensive disorders, 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 pre-conception care.

The Core preconception care services include; 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. Specifically this study aimed at determining the knowledge on pre conception care among women of reproductive age in Ruiru Sub-County, Kiambu County.

### **1.3 Research objective**

To determine the knowledge on pre conception care among women of reproductive age in Ruiru Sub-County, Kiambu County

## **2.0 LITERATURE REVIEW**

### **2.1 Theoretical Review**

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 be 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)

Clinicians 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 the patient in identifying the most appropriate and effective method for her (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**

### **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 of 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 disease 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 Anti-retroviral 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 foetus 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 foetal 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 causes 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 are also 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 thoroughly cleaned. 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 counselling 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 counselling 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 counselling include Cystic fibrosis, Sickle-cell disease and Thalassamia among others (Gelman, 2017).

Genetic counselling 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 et al, 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 practitioners 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 et al, 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. 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 et al, 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 centres, and other specific service sites that target men. (MoPHS; MoMS, 2012).

In Kenya guidelines exists 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 women and partners on the various contraceptive methods and the importance of endeavouring for a safe pregnancy, healthy new born 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 counselling, regardless of their intentions of becoming pregnant. Preconception counselling 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).

### **3.0 METHODOLOGY**

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 allows for the description and reporting of things the way they are. 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). 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 Mwhoko 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 in each ward. 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. Assumed to be 50%.

$$q = 1 - p$$

d= the level of statistical significance test

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

$$= 384$$

## 4.0 RESEARCH FINDINGS AND DISCUSSIONS

### 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 1 below shows the socio-demographic distribution of participants.

**Table 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
	<b>TOTAL</b>	<b>384</b>	<b>100%</b>
Level of education	Not schooled	15	3.9
	Primary	81	21.1
	Secondary	177	46.1
	Tertiary	111	28.9
	<b>TOTAL</b>	<b>384</b>	<b>100%</b>
Religion	Christians	369	96.1

	Muslims	15	3.9
	<b>TOTAL</b>	<b>384</b>	<b>100%</b>
Marital Status	Single	113	29.4
	Married	271	70.6
	<b>TOTAL</b>	<b>384</b>	<b>100%</b>
Occupation	Employed	74	19.3
	Self employed	270	70.3
	Unemployed	40	10.4
	<b>TOTAL</b>	<b>384</b>	<b>100%</b>
Residence	Rural	109	28.4
	Urban	275	71.6
	<b>TOTAL</b>	<b>384</b>	<b>100%</b>

## 4.2 Knowledge on Pre-conception Care

Knowledge level about the services may influence an individual to utilize the service, the study's 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 2 below.

**Table 2: Knowledge level on Preconception care**

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

### 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 3 shows the findings on the sources of information on preconception care.

**Table 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 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: 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 5 shows the results where the knowledge level on preconception was significantly associated is age ( $\chi^2=10.976$ ,  $P<0.05$ ,  $df=1$ ).

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

## 5.0 DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

### 5.1 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 among women of reproductive age in Ruiru Sub-County, Kiambu County.

### 5.2 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 et al, 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 et al, 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)

### **5.3 Conclusions**

The following conclusions were made from the study. There was 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.

### **5.4 Recommendations**

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.

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