

**AN ANALYSIS OF THE DETERMINANTS OF FERTILITY IN  
MATUGA DIVISION, MATUGA SUB-COUNTY, KWALE  
COUNTY, KENYA**

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## DECLARATION

I hereby declare that this thesis is my own work and that it has not previously been submitted for assessment to any other university for academic credit.

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## **DEDICATION**

This thesis is dedicated to the Mwatondo Family.

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## **ABBREVIATIONS AND ACRONMYS**

**AIDS:** Acquired Immunodeficiency Syndrome

**ASFR:** Age Specific Fertility Rate

**CEB:** Children Ever Born

**DDP:** District Development Plan

**DTT:** Demographic Transition Theory

**C<sub>i</sub>:** Index of postpartum insusceptibility

**C<sub>x</sub>:** Index of women sexuality

**C<sub>p</sub>:** Index of sterility

**C<sub>u</sub>:** Index of contraceptive use

**FGD:** Focus Group Discussion

**ROK:** Republic of Kenya

**HIV:** Human Immunodeficiency Virus

**IMR:** Infant Mortality rate

**IUDs:** Intra-Uterine Devices

**KDHS:** Kenya Demographic and Health Survey

**KNBS:** Kenya National Bureau of Statistics

**LAM:** Lactational Amenorrhea

**PPA:** Post-Partum Amenorrhea

**PPI:** Post-Partum Insusceptibility

**SSA:** Sub-Saharan Africa

**TFR:** Total Fertility Rate

## OPERATIONAL DEFINITIONS

**Age-specific fertility rate (ASFR):** The number of births per 1000 women of a specific age (group).

**Conception:** An act of becoming pregnant

**Contraceptives:** Any measure used by a couple to avoid conception excluding voluntary abstinence.

**Children ever born (CEB):** Total number of children a woman has ever given birth to.

**Demographic factor:** Age of the respondents was used as a demographic factor to bring forward an understanding of the ages of the respondents.

**Fecundity:** Physiological capacity to conceive.

**Fertility:** Manifestation of fecundity through giving birth.

**High birth rate:** When the number of births exceeds 5.0 births per woman

**Infecund:** Lack of physiological capacity to give birth.

**Non-proximate:** These are determinants of fertility that do not directly influence the level of fertility such as education, area of residence, religion and so on.

**Polygyny:** A state of one man having more than one wife.

**Postpartum amenorrhea:** Refers to the time period when a woman is not able to become pregnant after giving birth

**Proximate determinants:** Factors which directly affect the fertility process such as contraceptive use, abortion, sterility, women sexuality and post-partum insusceptibility.

**Reproductive age:** It refers to the period when a woman can give birth. It usually it ranges between 15 to 49 years of age.

**Total fertility rate:** Number of children a woman will have if she lives through all the reproductive ages and follows the age- specific fertility rates of a given time.

**Primary sterility:** Inability of a woman who is not using contraceptives to conceive at all.

**Sociocultural factors:** These are the religious and the ideal number of children a woman would wish to have; and their impact on fertility behaviour.

**Socioeconomic factors:** Education and employment status formed the socioeconomic factors. The study analysed their impact on fertility behaviour of women in Matuga.

**Secondary sterility:** Inability of woman who had previously conceived to conceive for the past five years despite being sexually active and not using any method of contraception.

**Tertiary education:** post- secondary education including: polytechnic, university, mid-level college education

## ABSTRACT

The world total fertility rate has dropped from 4.95 births per woman to 2.36 births per woman in the last 50 years. In developing countries the total fertility rate has dropped from 6.0 births per woman in the 1960s to 2.9 births per woman in 2005 and was expected to have dropped even further in 2015. Kenya's fertility has declined from 7.8 births per woman in 1979 to 4.6 births per woman in 2009 (KNBS, 2010). Despite the general drop in fertility, there are differentials where some regions have higher fertility rates than others. Fertility in Kwale County still remains high at 6.0 births per woman (DDP, 2008-2012). The objective of this study was to analyse the direct and indirect determinants of fertility among women aged 15 – 49 in Matuga division. The specific objectives were to; examine if socio-economic, demographic, socio-cultural and proximate determinants affect the fertility in the division. Analysis of the proximate determinants of fertility was done using an adopted model from Stover 1998. The model divided the determinants into direct determinants including: women sexuality, contraceptive use, women sterility and postpartum insusceptibility. Indirect determinants included: age of the respondents, education level, religion, number of children and employment status. A sample size of 214 women was randomly selected. Primary data was collected from the field in October 2013. Secondary data was acquired from the 2009 census report, Kenya Demographic Health Survey reports (1989, 1998, 2004 and 2010) and Kwale District Development Plan (2008-2012). The tools used to collect data included a questionnaire and a key informant interview guide to supplement the data. The methods of analysis used include: calculation of percentages, mean and median and use of the proximate determinants model. Results revealed that the fertility rate of Matuga Division is 5.8 births per woman. Furthermore, it also indicated that of the proximate determinants of fertility, post-partum insusceptibility at 0.72 had the most inhibiting effect on fertility while contraceptive use at 0.98 had the least depressing effect on fertility. Other measurements included women sexuality and sterility with inhibiting effects of 0.73 and 0.81 respectively. On the non- proximate determinants, 48.1% of the women interviewed were not using any method of contraception despite being aware of at least one. A very small percentage of just 2.4 % were using condom as a method of contraception. 63.3% of the women interviewed breastfed up to at least 21 months. The mean age at first sexual intercourse was estimated to be at 16 years and 9 months. The study found out that only 20.4% of the women in the study were experiencing secondary sterility. Consequently, the government should embark on community sensitisation on the importance of contraceptive use to the community's welfare. Organisations should also make condoms readily available in the community by putting them up in dispensers at boda boda stages, market places and public toilets.

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Background of the study**

Most countries in the world underwent a marked fertility decline during the 20th century (United Nations, 2007). The world total fertility rate dropped from 4.95 between the years 1950-1955 and was expected to have dropped further by 2015 (United Nations, 2010). This aspect of fertility decline is a common phenomenon across cultures and religions. In the early half of the 20th century, many countries in the developing world experienced declining fertility followed by 50 years of declining mortality (Coale, 1973). The average fertility in more developed countries declined from 2.8 to 1.6 births per woman between 1960s to 2.7 births per woman in 2000-05 (United Nations, 2010). This fertility decline has been linked to modernization and increased uptake of family planning methods. A positive progress or socio economic determinants are also usually seen as the main drivers of the fertility decline.

Despite this decline in fertility rates, sub-Saharan Africa registered a total fertility rate of 4.95 births per woman in 2010. This is comparatively higher compared to other developing regions. Fertility was high (more than 5.0 births per woman) in the 1950s in all countries of Sub-Saharan Africa. In East Africa, for example, the birth rate is recorded at 5.1 children per woman (UN, 2009). Makinwa (2001) groups African countries' fertility decline into three categories: category 1 comprises countries with a significant fertility decline from the peak. Countries in this category include: Cote D' Ivor, Ghana, Nigeria, Rwanda, Botswana, Zambia, Zimbabwe, Egypt, Kenya, Morocco and Tunisia. Category 2 is made up of countries with a slower rate of total fertility

decline (between 0.5 and 0.9 every ten years). This group includes: Benin, Mauritania, Senegal, Cameroon, Central African Republic, Malawi, Tanzania and Swaziland. Category 3 includes countries which have stabilized at the peak and have not started declining (TFR is at 6.0 births per woman). Countries in this category are: Burkina Faso, Liberia, Mali, Togo, Burundi, Ethiopia, Madagascar, Mozambique and Uganda. The decline has not been uniform as indicated by differentials in the fertility rates of different regions in sub-Saharan Africa.

Different theories have been proposed over time regarding the determinants attributed to differential fertility. The socio-cultural theories for example have focused on attitudes and motivational factors at community level that explain reproductive behaviour (Nanda, 2005). On the other hand, economic theories focus on the financial implication related to fertility.

At the national level, Kenya's total fertility rate (TFR) has declined from 7.8 births per woman between 1969 and 1979 to 4.6 in 2009 (Kenya National Bureau of Statistics, 2010). This fertility decline nevertheless stalled in its transition in the 1990s. Bongaart (2006) confirms that Kenya is one among seven countries where fertility had stalled in mid-transition in the 1990s. The stall in fertility was attributed to a change in reproductive behaviour, socio-economic and institutional factors (Cetorelli and Leon, 2012). However it declined to fewer than 5.0 births per woman in the early or mid-1990s before coming to a standstill (KNBS, 2010).

Generally, Kenya's fertility has been declining. However, there are substantial differentials between regions. Fertility was lowest in Nairobi region with 2.8 births per

woman, followed by Central region at 3.4 births per woman. On the other hand, Nyanza region registered at 5.4 births per woman, while Eastern region recorded 4.4 births per woman. Other statistics indicated that Western and Rift valley regions had each 4.7 births per woman; Coast region had a fertility rate of 4.8 births per woman; and North Eastern region which had the highest fertility rate registered at 5.9 births per woman. These differentials are closely associated with disparities in educational levels and knowledge and the use of family planning methods (KNBS, 2010).

Normally, fertility is considered to be high if it is above 5.0 births per woman. According to the District Development Plan (2008-2012), the fertility of Kwale County was registered at 6.0 births per woman. This made Kwale County's fertility rate one of the highest in Kenya. Other counties that have recorded high fertility are found in Western, Nyanza, North-Eastern and other areas of the Coast region. These districts with higher fertility rates are mostly found in areas where levels of poverty, illiteracy and dependency ratios are high.

This study examined the influence of socio-economic, socio-cultural, demographic and proximate determinants to the high fertility in Matuga division. These determinants included: age of respondents, education levels, employment status, area of residence, religion, women's sexuality, contraceptive use, women's secondary sterility and post-partum insusceptibility. The proximate determinants were analysed using Stover's proximate determinants model.

## **1.2 Statement of the problem**

Matuga sub-county remains one of the areas experiencing high fertility rates in Kenya. Among the divisions in this sub-county, Matuga division has experienced a rise in population from 72,377 in 1999 to 91,194 in 2009 (Republic of Kenya, 2010). This population projected to reach 108,841 in 2012 (Kwale District Development Plan, 2008-2012). The fertility rate of Kwale County was registered at 6.0 births per woman compared to 4.6 births per woman nationally (KNBS, 2010). The high fertility rates have resulted into poor child and maternal health. Child schooling especially for the girls was greatly affected by high fertility rate. Other effects resulting from the high fertility rate include slow economic growth and destruction of the natural environment.

There is inadequate information on the contributors to this high total fertility rate which is well documented on the socio economic and cultural, demographic and the proximate determinants. The sub-county also experiences a dependency ratio of 76 people per 100 with 53% of its population living in absolute poverty (DDP, 2008-2012: 17). Despite the implementation of the family planning strategies by the government and non-governmental organisation, the fertility rate has remained remarkably high hence the need to examine the factors responsible for the high fertility rate.

## **1.3 Objectives of the study**

The general objective of the study was to analyse the determinants of fertility in Matuga Division in Matuga sub-county, Kwale County, Kenya.

### **1.3.1 Specific objectives for the study:**

1. To examine the role of socio-economic factors influencing the fertility levels in Matuga Division, Matuga sub-county, Kenya.

2. To determine the role of demographic factors influencing the fertility levels in Matuga Division, Matuga sub-county, Kenya.
3. To determine the role of socio-cultural factors influencing fertility in Matuga Division, Matuga sub-county, Kenya.
4. To examine the role of the proximate determinants affecting fertility in Matuga Division, Matuga sub-county, Kenya.

#### **1.4 Research questions**

The study analysed the causes of high fertility in Matuga division. Through the following research questions:

1. What is the relationship between the socioeconomic factors and fertility in Matuga Division, Matuga sub-county, Kenya?
2. How do demographic factors affect fertility in Matuga Division, Matuga sub-county, Kenya?
3. What is the relationship between sociocultural factors and fertility of Matuga Division, Matuga sub-county, Kenya?
4. How do the proximate determinants affect fertility in Matuga Division, Matuga sub-county, Kenya?

#### **1.5 Justification and significance of the study**

East Africa lags behind other regions in terms of economic development and fertility decline, and demographic transition. There are various explanations to outline why human fertility varies from one society to another and among different groups of people. Sessional paper number 3 of 2012 on Kenya's population policy for national

development notes that for Kenya to move to a middle income country, the fertility rate needed to be reduced from 4.6 births per woman in 2009 to 3.4 births per woman by 2020. It acknowledges that knowledge and information on issues related to fertility are integral in regulating fertility. Therefore, conducting this study was well-justified to focus on the examination of these explanations as pertains to Matuga Division. This study employed a different perspective that involved both qualitative and quantitative techniques. The study aimed at identifying the most important factors responsible for Matuga's high fertility rate. The findings of the study can help the government formulate effective policies that would boost the on-going awareness on contraceptives use. Finally, it is anticipated that by making the findings available to the community, it will hopefully enable couples have a rational approach to family planning.

### **1.6 Scope and limitations of the study**

The study analysed both direct and indirect proximate determinants of fertility in Matuga division including: contraceptive use, women sexuality, post-partum insusceptibility and women sterility as the direct determinants and religion, ideal number of children preferred, education level, employment status and age of the respondents as the indirect determinants. Two main limitations of the study included illiteracy and presentation of incorrect information by the respondents due to this illiteracy. These limitations were overcome by using a research assistant well versed in the local language and able to correctly fill in the questionnaires.

## **CHAPTER TWO**

### **2 LITERATURE REVIEW**

#### **2.1 Introduction**

This study uses various in depth analyses to examine the relationship between the proximate and non-proximate determinants of fertility. Several perspectives of fertility were examined to shed light on the role of demographic, socio-economic and cultural factors in reproductive behaviour. Works of Davis and Blake (1956), Bongaarts (1978 and 1982) and Stover (1998) on determinants of fertility will also be discussed to enhance the understanding of the proximate determinants of fertility. The study adopted the framework used by Stover (1998) to study the proximate determinants of fertility in Matuga Division.

#### **2.2 Determinants of fertility**

Since ancient time's man has been concerned about issues relate to fertility. It is however rather puzzling that no single theory has been developed which fully describes the concept of fertility. Some scholars overtime have equated the explanation of determination of fertility to an evolving story consisting of different disciplinary orientations. Disciplines such as economics, history, anthropology, biology, psychology and sociology have all contributed greatly to understanding determinants of human fertility. For the purpose of this study, the researcher discussed specific non proximate determinants of fertility including: socio economic and cultural factors, demographic factors followed by an evaluation of the proximate determinants as done by Davis & Blake 1956, Bongaart 1978, 1982 and Stover 1998.

## **2.2.1 Non-proximate determinants of fertility**

### **2.2.1.1 Socio-economic determinants of fertility**

#### **2.2.1.1.1 Education levels**

Education of all socio-economic factors influencing fertility has been used by many demographers due to its strong effects on fertility behavior. The length of education is normally associated with the onset of exposure to conception. Mason (2000) noted that communities with women who had moderately higher education had higher decision making power and more freedom of movement thus tended to have low fertility, greater use of contraception and less desire of many children. Jejeebhoy (1995) established that of the two genders, the effect of wife's education was statistically significant and more powerful compared to the effects of the husband's education. On the other hand, Bongaart (2003) while discussing the effects of educational differences in fertility transition showed that education levels in six countries from Africa, South America, and Asia had an impact on fertility, where more educated women generally had lower fertility rates.

Fertility of women with no schooling is expected to remain above two births per woman even as countries move from being underdeveloped to being developed. Empirical evidence from both developed and developing countries unambiguously show that female education is associated with reduction of fertility. The relationship between women's education and fertility is negative. This hypothesis has been proved by both economists and sociologists. The longer women stay in school, the longer they defer child bearing thus reducing the chances of having many children. (Bbaate & Mpuga, 2011)

Caldwell, 1980 as quoted by (Lloyd et al, 2000:483) hypothesized that fertility decline in developing countries would be achieved if mass school of children is done. Mekonnen (2010) noted that with an increase in education, contraceptives use and knowledge increased thus negatively affecting fertility. While studying fertility in East Africa countries he found out that women's gross primary school enrollment variables negatively correlated with the total fertility rate. The fertility rate of women in Kenya in 2010 who had secondary education and above was at 3.1 births per woman. On the other hand, the fertility of women who had not completed primary education was registered at 6.7 births per woman (KNBS, 2010).

#### **2.2.1.1.2 Employment status**

Occupational and environmental exposure in many countries affects fecundity. Tsegaye (2011) established that in Ethiopia, education level of women determine both actual and desired number of children. Those women who had attained some level of education had less and desired a lesser number of children. He noted that when explanatory variables were controlled, women who were working in Ethiopia reduced their number of births by 0.06 compared to the non-working women.

A study conducted in South Africa using the Kaplan Meier curve of time to pregnancy (TTP) by employment established that women who were employed prior to pregnancy had a significantly longer time to pregnancy than those who were not. The study noted that TTP distribution of a community represents its degree of biological fertility (Bello et al, 2009). The study focused on the relationship between child birth and work in women. This is determined by complex relationship of social and economic institution

within a certain society (Beguy, 2009). The conflict between child bearing and work arises from the separation between home and work place, the nature of employment and social norms regarding the roles of both men and women. It is believed that there exists in many societies an inverse relationship between employment and childbearing. When talking of employment, it refers to both formal and informal self-employment.

It is worth noting that some forms of work do not have an influence in fertility. Beguy (2009) while studying the effects of female employment and fertility in Segal noted that women occupied in agriculture and those working at home are to a large extent able to combine working and playing their roles as mothers. It is paramount to note that not all the time does employment negatively affects fertility. Apriany (2009) while studying the determinants of fertility in West Sumatra province established that empowered women including those employed did breastfeed for a short period compared to the unemployed women thus exposing them to pregnancies if all other factors are held constant.

The relationship between women and employment and fertility varies from one socio-economic and cultural context to another. While comparing the relationship between women employment and childbearing in three different countries in china, Shuzhuo et al, 1997 established that in Jiang (a more developed county), a negative relationship was found. On the other hand a positive relationship was found in Luochuan (a less developed county) while no relationship was found in Xiaoyi (a medium developed area).

## **2.2.1.2 Sociocultural determinants of fertility**

### **2.2.1.1.3 Religion**

Religion has overtime largely been seen as a barrier to fertility decline in many parts of the world. Mc Quillan (2004) put forward 3 predictions necessary for religion to influence fertility. That religion affects fertility if: It can articulate norms relevant to fertility, it can communicate these values and promote compliance and if it is central to the social identity of its followers.

Matuga division is a predominantly Muslim population thus this study focused more on the role of Islam in fertility outcomes.

Morgan et al (2002) noted that Asian Muslims had pro-natalist attitudes than their Christian counterparts. Studies done in West Africa found that Muslims in areas where they form majority of the population had lower fertility compared to areas where they were the majority religion on the other hand, Muslims in low income areas have higher fertility levels (Johnson-Hanks, 2006).

Agadjanian (2001) established that among the Christians in Mozambique, mission protestant and Catholics in urban areas were more likely to have used or had conversation around modern family planning than their counterpart from more evangelical churches.

Yeatman & Trinitapoli (2008) while studying religious affiliation and fertility in rural Malawi established that of all religions, Muslim comprised the minority user of modern family planning methods. Many studies have agreed to tell fact that intensive religious practice will influence fertility only if the religion in focus has a pro-natalist ideology.

A more natural explanation is that there is a positive relationship between religiosity and fertility, that the more religious parents are more likely to have more children.

Four principal hypotheses have been proposed in literature on religious studies regarding fertility to explain these fertility differentials namely, (1) the particularized theology hypothesis, (2) the characteristic hypothesis, (3) the minority status hypothesis, (4) the social interaction hypothesis (Mc Quillan, 2004). The particularized theology hypothesis sees fertility differentials as a result of specific doctrinal differences among religions for example, that religious groups whose values are against contraception and abortion and favor large family sizes should have higher fertility. The characteristics hypothesis on the other hand stems from a point of view that fertility differential among religious groups are caused by demographic and socioeconomic differentials with members of religious groups and not religious doctrines. Thirdly, the minority group's perspective argues that insecurity of minority group's status plays a role in depressing fertility of minority religious groups below that of the majority.

The prerequisites for the normal status mechanism to operate includes: socio economic mobility, lack of pro-natalist ideology and acculturation. The hypothesis adds race and ethnic groups on top of the differentials among religious groups .The socio interaction hypothesis examines the role of social interaction and their effect on reproductive behaviour. It argues that religious centers act as socio exposure points through which its members are influenced towards certain fertility behaviour.

#### **2.2.1.1.4 Ideal number of children**

While acknowledging that biological factors such as: women sexuality, contraceptive use, women sterility and post-partum insusceptibility directly affect fertility, cultural traits come in handy in determining human fertility levels. Socio cultural theories of fertility have focused on the attitudes and motivational factors at the community level in explaining reproductive behaviour.

Many ethnic groups especially in sub Saharan Africa consider having many children for several reason including: the desire to see children have their peers within the home stead, desire for certain combination of children and to enhance survival chances due to the high mortality rates (Faweett,1977). These values attributed to the number of children one would wish to have varied from one society to another. Socio economic status at times plays an important role when couples wish to have a certain number of children.

This phenomenon is clearly seen from Fawcett's theory of the value and cost of children. In this theory, Fawcett attaches certain values and cost that help couples determine the ideal number of children they wish to have.

Caldwell's wealth flow theory also outlines the role played by health in determining the number of children one could prefer having. The theory generally states that fertility decisions in all societies are economically rational response to a family's wealth flow (Caldwell, 1976). Societies where wealth flows from the younger generation to the older generation tend to have many children. Children in these communicates are seen

as source of wealth. The children here provide wealth through dowry, they provides security in old age and social political well-being.

Freedman (1963) noted that cultural norm related to family size tend to be crucial matters for families and societies where they belong. That cultural norm determines family sizes, marriages, timing of intercourse and even abortion (Freedman, 1963). He argues that a couples reproductive decision are highly influenced by family size norms embedded in their society due to the rewards and penalties attached to the number of children they have.

A study done in Ethiopia among the Suri ethnic group noted that parents (both men and women) intended to have as many children as possible. In this community boys were shepherds, providers of security and extra hands in mining gold and cattle raiding. Girls fetched up to 30 cattle and one AK-47 rifle as dowry to the parents thus a need to have many children. (Eyayoo and Zerihun, 2004)

### **2.2.1.3 Demographic factor of fertility**

#### **2.2.1.1.5 Age of the respondents**

Age is an essential factor when studying the demography of a population. Ameyaw (2012) noted that, the population structure of a population in terms of age is a basic consideration when studying a population. Studies conducted in many countries have shown that generally fertility, follow a normal age specific curve which depicts low fertility and younger age groups after which fertility increases to a Maximus in mid-twenties and then declines as women grow old.

Blacker 1967 as quoted by Apriany (2009) identified 3 stages of child bearing in women. These included: sub fecundity, full fecundity and decline fecundity. The ability of women to conceive is lower in the first and third stages of reproduction. These two stages are at the beginning of menarche and a period when a woman approaches menopause. Women are generally at the pick of their sexual activities in their twenties if all other factors are held constant.

### **2.2.2 Proximate determinants of fertility**

Henry (1953) developed a concept of natural fertility where he defined it as fertility that existed in the absence of deliberate control through abortion or contraceptive use. Reproductive in the natural set up is not dependent on the number of children a couple have but on age at menarche, fecundability; time period for gestation, intra uterine mortality and post-partum amenorrhea. This concept of natural fertility has evolved overtime.

Kingsly Davis and Judith Blake (1956) provided an enormous contribution with the development of the first analytical frame work on the proximate determinate of fertility. De Bruijn (2006) noted that these determinants either affected the exposure to intercourse or the exposure to conception, gestation and successful parturition. Davis and Blake (1956) identified a set of 11 intermediate variables that directly affected fertility from the three categories:

- A. Factors affecting exposure to intercourse
  - 1. Age of entry into sexual unions

2. Permanent celibacy: proportion of women never entering into sexual unions
3. Amount of reproductive periods spent after or between unions
  - I. When union are broken by divorce, separation or desertion
  - II. When unions are broken by the death of the husband.
4. Voluntary abstinence
5. Involuntary abstinence (from impotence, illness, temporary separation)
6. Coital frequency (excluding periods of abstinence)
- B. Factors affecting exposure to conception
7. Fecundity or infecundity affected by involuntary causes
8. Use or non-use of contraceptives
9. Fecundity or infecundity, as affected by voluntary causes
- C. Factors affecting gestation and successful parturition
10. Foetal mortality from involuntary causes
11. Foetal mortality from voluntary causes

Bongaarts (1978, 1982) refined the work of Davis and Blake and collapsed them into 7 direct (proximate) determinants, to understand variations in fertility. This resulted to a simple but powerful model for analyzing how fertility changes overtime or differs from one group to another (de Bruijn, 2006). The 7 determinants included:

- I. Proportion of married women among all women of reproductive age
- II. Contraceptive use and effectiveness
- III. Duration of postpartum infecundability (insusceptibility)
- IV. Induced abortion
- V. Fecundability (including frequency and timing of intercourse)
- VI. Prevalence of permanent sterility
- VII. Spontaneous intrauterine mortality

From the 7 proximate determinants, Bongaarts 1982 showed that 4 determinants were most important in affecting fertility. These were: - proportion married, contraceptive use, abortion and post-partum infecundability. The model thus suggested that the total fertility rate could be described as

$$TFR = C(m) * C(c) * C(a) * C(i) * TF$$

Where:-

C (m) - Index of proportion married

C (c) - Index of contraceptive

C (a) - Index of induced abortion

C (i) - Index of lactational infecundability

TF - the potential of total fertility at its births per woman.

This model has been widely used in fertility studies all over the world. Stover (1998) noted that since the publication of Bongaarts first paper on the framework for analyzing fertility, more than 100 publications had appeared in different countries and regions using it to understand fertility differentials. He noted that the frame work was integral in:

- a) Decomposing the contribution of each of the determinants to the attainment of the total fertility rates.
- b) Analyzing the changes in contribution of the proximate determinants to the changes in TFR overtime
- c) Comparing fertility differentials between countries and regions considering the proximate determinants.
- d) Estimation of total abortion rates
- e) Projecting future levels of contraceptive use

Bongaarts proximate determinants model is theoretically strong. However there are several limitations that come into being following several hundreds of studies. Stover (1998) made key changes to the model to overcome the challenges that arose with the earlier model as started by Bongaarts (1978).

1. He advocated that for the use of proportion of women who are sexually active instead of proportion married since some women may not be married but are

sexually active. Similarly, some women may also be married but sexually inactive.

2. He added the index of pathological sterility following evidence that data from sub-Saharan Africa which showed that the index of pathological sterility was responsible for large differentials in fertility levels.
3. An overlap between contraceptive use and infecundability was taken into account.
4. An overlap between contraceptive use and post-partum amenorrhea is adjusted.

This study employed Stover 1998 model to analyze the proximate and non-proximate determinants of fertility in Matuga division as discussed next.

### **2.3 Theoretical framework for the study**

This model has been widely used over time and is one of the most widely used tools in fertility analysis (Stover, 1998). Awes (2014) notes that this model of fertility analysis has been used in hundreds of analysis thus influencing greatly the collection and reporting of data related to fertility all over the world. The model is used in demographic studies to identify and analyse the main factors behind fertility changes.

This model assumes that the natural reproductive capacity of women is nearly the same for all women, but their actual productivity is determined by four proximate determinants including: women's sexuality, contraceptive use, post-partum insusceptibility and women sterility which have not been used in this study. Stover's

model uses an index range of between 0-1 for the proximate determinants where the nearer a value is to 0 the higher the inhibiting effect the determinant has on the natural reproductive capacity and vice versa.

Muturi and Hinde (2001) while studying fertility trends during the years 1967-1999, in Tanzania, found out that three factors played a key role in inhibiting fertility. These factors included contraceptive use, marital status, and post-partum insusceptibility.

### **2.3.1 Index of Women sexuality**

This index commonly uses data of women aged between 15-49 years who are sexually active (they had sex in the last four weeks or pregnant or abstaining post-partum). The formula for women sexuality is:

$$C_x = S$$

Where,

S = the proportion of women sexually active

### **2.3.2 Index of Post- partum insusceptibility**

Post-partum insusceptibility as an index includes both the duration of post-partum abstinence and lactational amenorrhea. It attempts to show the effects extended periods of post- partum insusceptibility on fertility. Without lactation, a typical average birth interval can be estimated to be 20 months, made up of 1.5 months of non - lactation infecundity, an average of 7.5 months waiting time to conception, 2 months added by intrauterine mortality and 9 months gestation. With lactation, it equals the average total duration of infecundable period plus 18.5 months (7.5+2+9). The ratio of the average

birth intervals without and with lactation is the one called the index of lactation infecundability ( $C_i$ ).

The formula is as follows:

$$C_i = 20 / (18.5 + i)$$

Where,

$i$  - Mean duration in months of post-partum insusceptibility

20 = the average birth interval in the absence of breast feeding and  $(18.5 + i)$  is the average length of the interval when breastfeeding takes place.

### 2.3.3 Index of Women sterility

The third proximate determinant in Stover's model is women sterility. Onsongo (2012) noted that female sterility refers to the measure of the fertility inability effect of infecundability of women. Data on women sterility is acquired through women reporting that they have been sexually active and have not been using any form of contraceptive for the last five years but they have not managed to conceive. The index is attained through the use of the formula:

$$C_s = 1 - f$$

Where:

$f$  - The proportion of sexually active women who are infecund.

### 2.3.4 Index of Contraceptive use

The fourth proximate determinant is contraceptive use. This is used to measure the depressing effect of contraceptive use on fertility. The contraceptive use is depicted by the formula

$$C_c = 1 - u * e$$

Where,

$u$  - The proportion of sexually active fecund women aged 15-49 using contraceptives and who do not overlap with those experiencing amenorrhea

$e$  - The average effectiveness of contraception.

Stover (1998) emphasized that reproductive age is between 15 to 49 years. This means that there are 35 years of reproduction. Because infecundability is now put together with sterility, the new value of total fecundity is 21. This is achieved by:

$$TF = (35 \text{ years} \times 12 \text{ months}) / 20 \text{ months}$$

Where

TF = Total fecundity

Note that, 20 Months is the average birth interval

$$TF = (35 \times 12) / 20$$

$$TF = 21$$

The range of total fecundity according to Stover's revision is between 18 to 24 months

After acquiring the total fecundity, the total fertility rate can be calculated by multiplying the figures of; the number of women who are sexually active ( $C_x$ ), the index of post-partum infecundability ( $C_i$ ), the index of contraceptive use ( $C_u$ ), index of sterility ( $C_f$ ) and the total fecundity (TF).

Overall Stover's model is as follows:

$$\text{TFR} = (C_x \times C_i \times C_f \times C_u \times \text{TF})$$

Uswatun, 2009 while studying the factors influencing fertility in East Nusa Tenggara province in Indonesia using this model found out that PPI had the most fertility reducing effect compared to other proximate determinants of fertility.

On the other hand, Getu and Worku (2009) used the model in Ethiopia and established the PPI also had the highest inhibiting effect on fertility. Ekisa and Hinde (2005) used the model to establish that between 1989 and 1993, contraceptive use had the highest impact in regulating fertility in Kenya while Lubaale et al (2007) noted that indirect factors of fertility such as education, religion and employment status worked through the direct determinants to affect fertility among women in the urban areas of Uganda.

#### **2.4 Non-proximate determinants of fertility**

Non- proximate determinants are factors that affect fertility through the proximate determinants. These factors are attributed to socio-economic and cultural factors within a society. Lucas et al. (2003) stated that several indirect variables affect fertility through the proximate determinants. These factors include socio economic structures, socio economic and cultural characteristics, and biosocial characteristics. Other factors

include attitudes related to family size structure and formation, environment, and knowledge of contraception and attitudes towards contraceptive use.

Education level is an important indirect variable when dealing with fertility. Empirical evidence in the developed and developing countries unambiguously reveals that female education is associated with fertility decrease (Sackey, 2005). This indicates that the relationship between women schooling and fertility is negative. A woman's level of education determines her fertility rate. More educated woman gets less number of children due to the length of time she spent in school. Lesser educated women, on the other hand, are likely to register high fertility due high exposure to fertility. Askew et al (2009) noted that women in Kenya with secondary or higher education continued to experience a decline in fertility.

Education level also affects breastfeeding period where higher education levels lowered breastfeeding period as noted by (Giashuddin and Kabir, 2003). The more educated women spend a lot of time at their work places as compared to their homes. This reduces the amount of time a child is expected to breastfeed and therefore negatively impacting the breastfeeding period.

The employment status of ever married women is an indirect determinant of fertility. Housewives for instance tend to have higher fertility compared to women who are employed or self-employed. This is due to the fact that the latter have too many commitments at their work places. In the urban areas of East Africa, young women who are educated delay child bearing to get jobs. Beguy (2009) confirmed this phenomena.

The study found out that in Lome women involved in employment delayed the time of giving birth.

Religion as a variable tries to give an answer to the following questions:

- i. Are there any religious differences in fertility behaviour between people of different religions?
- ii. Does the concept of religiousness affect fertility?

Heineck (2006) while studying the relationship between religion and fertility in Austria established that women who are “strong Catholic believers” had more children compared to non-believers. Another study that confirms this impact of religion on fertility is that of Freijka and Westoff (2006). These researchers found out that in Europe and USA, the more religious women had a higher fertility compared to the more liberal women. In the Kenyan context, Opiyo (2004:51-62) noted that Muslims in Coast province, had low fertility compared to Muslims in North Eastern province.

Studies have shown that married couples in the developed countries have fewer children compared to their counterparts in the developing countries. The reasons relating to this phenomenon are related with socio-economic and cultural factors. Lucas et al. (2003:44-54) identified that the ideal number of children is an essential variable in comparing societies with small and large family norms. He concluded that generally younger generation women prefer one or two children fewer compared to their older counter parts. Data from demographic health survey (DHS) shows that the mean desired number of children in high fertility African countries ranges from 4.0 to 6.0 (Westoff, 2010). A study in 14 African countries including Kenya found out that less than one-

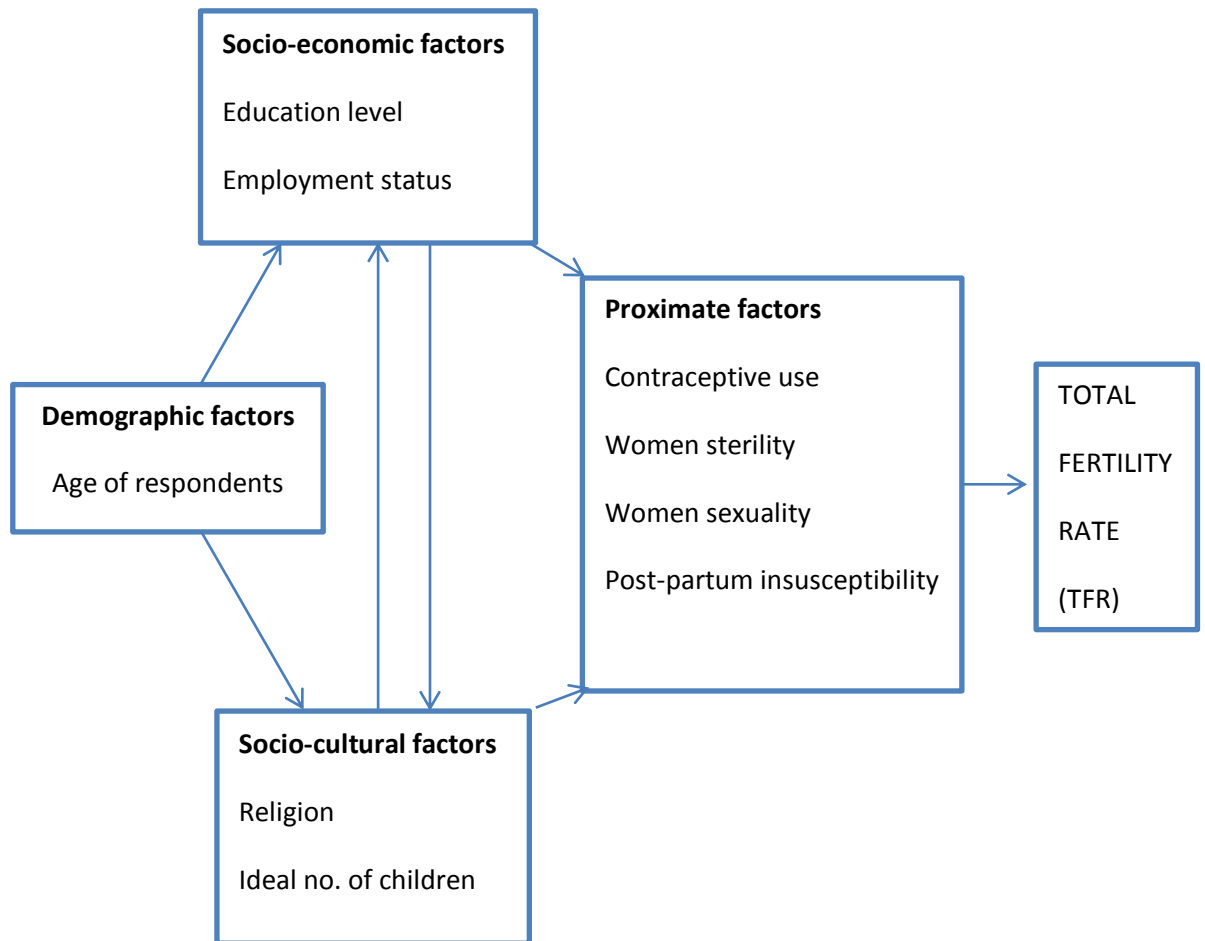
fourth of the couples agree on the ideal number of children. A greater proportion of husbands than wives consider more children to be ideal (Gebreselassie, 2008).

## **2.5 Conceptual framework**

From the literature above, the conclusion is that the existing theories seem to be constructed to explain how the different variables influence reproductive behaviors. The discussion has helped this researcher to develop a conceptual framework appropriate for analysing the determinants of high fertility in Matuga Division. The framework is a modification of Stover's 1998 reformulation of Bongaart's model.

The framework illustrates how the indirect determinants including: socio-economic, socio-cultural, and demographic factors may indirectly affect the fertility levels through the four proximate determinants of contraceptive use, women's sexuality, women sterility and post-partum insusceptibility. The socio-economic factors consist of education levels and employment status while the socio-cultural factors consist of religion and ideal number of children. Age of respondents is the demographic factor picked for this study.

Fig. 2.1 proposed framework for this study



Source: Modified from Stover (1998)

Several factors influenced the researcher to choose these variables. The age of the respondents is an important factor since the age at which one starts to engage in coitus may influence the number of children she is bound to have. The employment status indirectly determines their fertility rate where women who are employed tend to have fewer children compared to their unemployed colleagues. Uswatum (2007:29) noted that the relationship between education and fertility is strong and consistent. More educated women prefer to have fewer children so that they can focus on their careers as compared to the less or uneducated women.

Pandey et. al (2012) while studying the socio-economic and cultural factors affecting fertility in Nainital district of rural India found out that majority of the large sized families came from the middle and low income earning communities. As a result of this the study assumed that the variable ideal number of children may be having an impact on the fertility of the division. Religion was picked for this study since the population of Matuga division is largely composed of Muslims leading to the assumption that it may be indirectly affecting the fertility of the area.

## **2.6 Gaps in literature review**

From the literature review above, there is no study that has been done in Matuga division on the determinants of fertility despite the fertility of this area being high. This study therefore helped to make clear the effects of the above mentioned determinants of fertility. It examines how the direct and indirect determinants interact to influence the fertility levels in the division.

## **2.7 Summary**

This chapter discussed the major approaches related to fertility, giving explanations to factors that lead to an individual deciding to have a certain number of children in a union. It also gave a description of the various determinants of fertility, both the direct and indirect ones and showed how the indirect determinants of fertility act through the direct determinants to influence fertility. A conceptual framework was then developed from the discussion which was used in the study.

## **CHAPTER THREE**

### **3 RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter gives an account of the research design used and the variables employed in the study. It establishes how the sample size of 214 was arrived at from a population of 17815 households. The study also outlines the methods of data collection used including the use of questionnaires and key informant interview. In addition, it also shows how the research instruments were developed, how testing for validity and reliability was done, and how analysis was done using SPSS (V.17).

#### **3.2 Research design**

This study used a descriptive survey method using both qualitative and quantitative techniques. This type of survey entails the collection of data by using a questionnaire to know the opinions of a population based on the sample of the population (Creswell, 2009). It is a research technique in which responses are collected through a structured instrument from a sample of a population. The data collected is measured, analysed and leads to generalised findings. Quantitative data for this study was collected using questionnaires, while qualitative data was collected using key informant interviews. Probability sampling was used in this study. Primary data was collected using the questionnaires while secondary data to supplement the primary data was collected from the Demographic Health Survey reports (DHS) 1989, 1998, 2004, and 2010. District Development Plan (DDP) 2008-2012 and the Internet were also used. The data collected was analysed using measures of central tendency (mean and median) and percentages.

### **3.3 Study variables**

These are the measurable characteristics that were used for the study. The dependent variable for the study was the Total Fertility Rate (TFR). The independent variables included the following indirect determinants: age of the respondents; number of children they have; education level, employment status; religion and ideal number of children. Direct determinants included the following: women's sexuality, contraceptives use, post-partum insusceptibility, and women sterility. It is worth noting that abortion is one of the direct determinants of fertility. This variable was however not used in this study since it is difficult to get accurate information on it due to the cultural indecency attached to the practice. Another reason is the fact that abortion is still illegal in Kenya.

The variables under study were defined as below:

#### **A. Dependent variable**

1. Total Fertility Rate (TFR): the total number of children a woman would have if she survives up to the end of her child bearing age (49years). The TFR for Kwale County was 6.0 births per woman.

#### **B. Independent variables**

##### **Indirect determinants**

1. Education level: the highest attained education level by a woman aged 15 – 49 years.
2. Employment status: whether the woman aged between 15 – 49 years is working or not.
3. Religion: the religious affiliation of the women aged 15 – 49 years.
4. Age of respondent: the age of the respondents.

5. Number of children: the number of children that a woman had by mid-year in the year of study.

#### **Direct/proximate determinants**

1. Post-partum insusceptibility: the combined effect of breastfeeding and post-partum sexual abstinence.
2. Contraceptive use: whether the woman aged 15 – 49 years uses any contraceptive method.
3. Women sexuality: women who have been sexually active in the last four weeks.
4. Women secondary sterility: this study used the term as the inability of woman who had previously conceived to conceive for the past five years despite being sexually active and not using any method of contraception.

### **3.4 Study Area**

The study was conducted in Matuga Division of Kwale County. The division is located to the south of Mombasa with its headquarters at Kwale town, about 30km from Mombasa Island. It borders Likoni sub-County to the North, the Indian Ocean to the East, Kubo division to the West, and Msambweni sub-county to the South.

The physical characteristics consist of a coastal plain with narrow belt that varies in width from 3km to 20km. The coastal plain lies below 30m above sea level and extends 10kms inland. It experiences tropical climatic condition and a rainfall that ranges from 600mm per year to 1200 mm per year which falls in two seasons (April-May and October-November). The average relative humidity is 60 percent with wind speed ranging from 4.8-10.9 km/hr. The highest point is Tsimba at 350m above sea level.

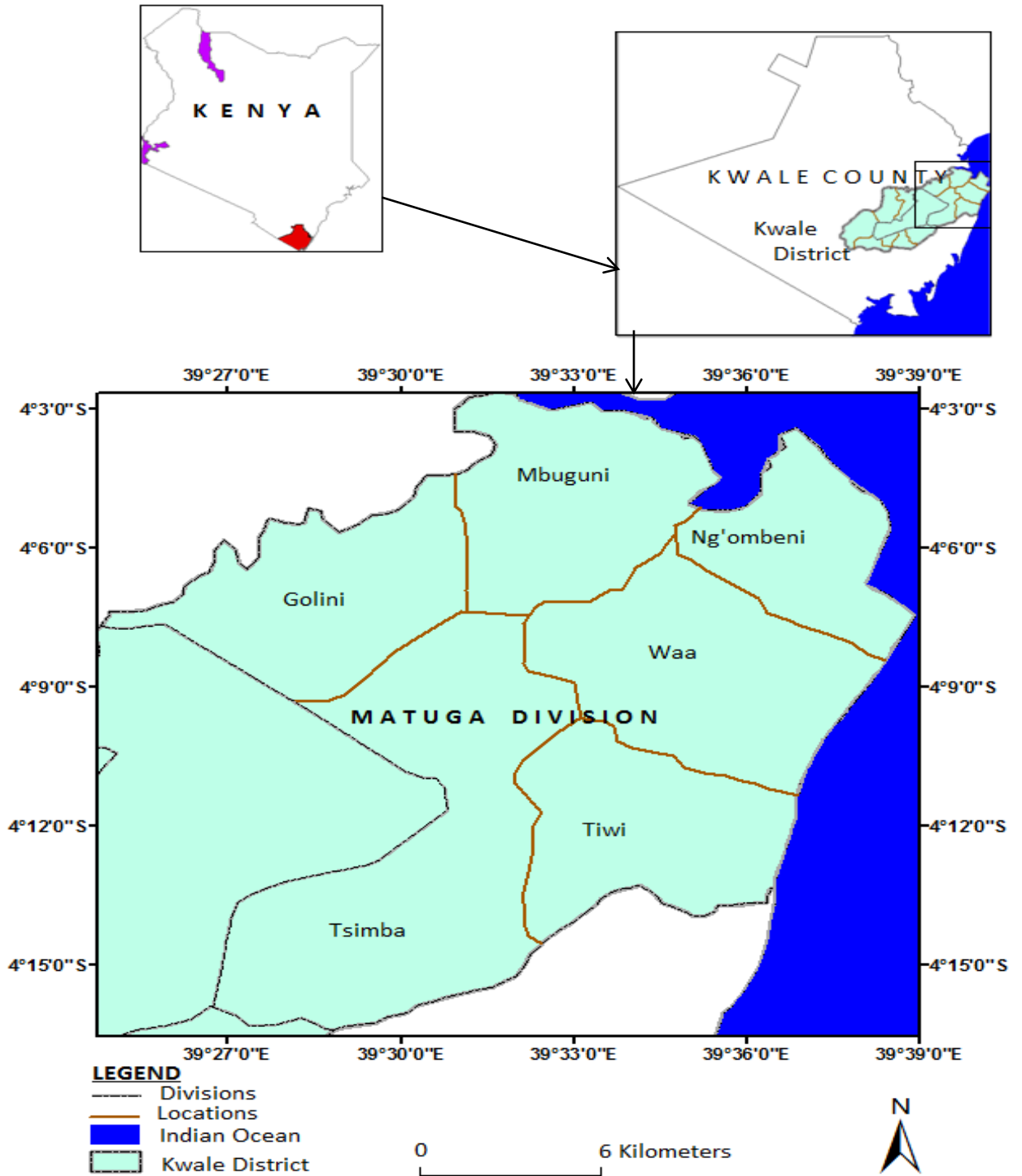
The socio economic characteristics of the division consist of 6 locations namely: Golini, Mbuguni, Ngombeni, Tsimba, Tiwi and Waa Locations. The inhabitants of the area include the Digo and Duruma who are the natives. Other communities living in the area include the Kikuyu, Kamba and Somali among others. The most popular religion in the division is Islam followed by Christianity. A small group of people especially the elderly practice African Traditional Religion.

Kwale town is the most populous region in the division. Livelihood activities in the division include: agriculture specifically mixed farming of crops such as maize, cashew nuts, cassava and animals including: cows, goats, and sheep. Poultry farming is also practiced in the division. Small scale fishing using dhows is done in the areas bordering the Indian Ocean. Matuga division is home to several tourist attraction sites such beach hotels namely Amani and Hill park hotels, Shimba Hills and Mwaluganje elephant sanctuary. The division had a population of 91,194 according to the 2009 census report and a total of 17815 households (table 3.1).

The division had a population density of 108,841 and 299 persons per km<sup>2</sup> respectively (DDP, 08-12). The infant mortality rate stood at 92 deaths per 1000 while the child mortality rate was 149 per 1000. The crude death rate was at 14 deaths per year per 1000 people. The average life expectancy for the division was 53 years. The sex ratio was projected to be at 96 male per 100 females.

Fig 3.1: A map of Matuga Division.

**A MAP SHOWING THE POSITION OF MATUGA DIVISION**



Source: District Development Plan 2008-2012.

**Table 3.1: Matuga division population by sex and administrative locations**

<b>MATUGA DIVISION POPULATION BY SEX AND ADMINISTRATIVE LOCATIONS</b>					
<b>AREA</b>	<b>MALE</b>	<b>FEMALE</b>	<b>TOTAL</b>	<b>HOUSEHOLDS</b>	<b>AREA IN SQ.KM</b>
<b>Golini location</b>	6866	7208	14074	3054	51.9
<b>Mbuguni location</b>	2782	2968	5750	1006	56.8
<b>Ngombeni location</b>	9530	9189	18719	3548	49
Kiteje	1833	1706	3539	701	19.1
Ngombeni	5466	5331	10797	2032	23.6
Pungu	2231	2152	4383	815	6.3
<b>Tsimba location</b>	6805	7373	14178	2510	70.1
Kundutsi	3997	4375	8372	1511	38.6
Mazumalume	2808	2998	5806	999	31.5
<b>Tiwi location</b>	9607	9802	19064	3916	49.4
Mkoyo	4347	4426	8773	1822	17.2
Simkumbe	5260	5376	10636	2094	32.2
<b>Waa location</b>	9328	9736	19064	3781	65
Kitivo	2847	2950	5797	1242	15.7
Kombani	2219	2198	4417	892	14
Matuga	4262	4588	8850	1647	35.4
<b>Matuga division</b>	<b>44918</b>	<b>44276</b>	<b>91194</b>	<b>17815</b>	<b>342.1</b>

Source: KNBS (2010)

### **3.5 Sampling techniques and sample size**

The study used a simple random sampling procedure. The unit of analysis is women aged between 15-49 years. All locations and sub-locations in the division were equitably and fairly represented based on the number of household in each location and sub-location. The number of households per sub-location was computed with respect to the sample size of 214 as shown below;

$$\text{Sample size} = n / \{1 + (n / \text{population})\}$$

Where;

$$n = Z \times Z \{P(1-P) / (D \times D)\}$$

NB:

1. The expected frequency of the factor under study = 10%
2. The worst acceptable frequency = 14%
3. P = expected frequency value (10%)
4. D = (expected frequency - worst acceptable)

$$= 14\% - 10\%$$

$$= 4\%$$

5. Z = 1.96 at 95% confidence level
6. Population of Matuga division is 17815

Thus:

$$n = 1.96 \times 1.96 \{0.10(1-0.10) / (0.04 \times 0.04)\}$$

$$n = 216.09$$

Hence:

$$\text{Sample size} = n / \{1 + (n / \text{population})\}$$

$$S = 216.09 / \{1 + (216.09 / 17815)\}$$

$$S = 214.$$

In each household, one woman in her reproductive age was picked for the study. In cases where there were more than one woman in a household, the researcher devised a lottery with ‘yes’ and ‘no’ options to pick the respondents.

The sample size per location was attained by cross multiplying the total sample size with the number of household per location over the total number of households in the division.

For example:

Sample size per location = (total sample size × number of households per sub-location)/  
(total household in the division)

Golini Sub-location= (214×3054)/17815

= 37

### **3.6 Selection criteria**

The participants for the study involved women in their reproductive ages (15-49 years) regardless of their marital status, tribe and religion. Consent was first asked before the data collection process was conducted. The women must have lived in the area for a period of not less than 12 months prior to the date of the study.

**Table 3.2: Sample size per location and sub-location of Matuga division****SAMPLE SIZE PER LOCATION AND SUB-LOCATION**

SAMPLE SIZE PER LOCATION AND SUB-LOCATION					
Division Household	Location Household	Location sample	Sub-location	Sub-location Household	Sub-location sample
Matuga Division 17815	Golini Location 3054	36.7	Golini	3054	37
	Mbuguni Location 1006	12.1	Mbuguni	1006	12
	Ngombeni Location 3548	42.6	Kiteje	701	8
			Ngombeni	2032	24
			Pungu	815	10
	Tsimba Location 2510	30.2	Kundutsi	1511	18
			Mazumalume	999	12
	Tiwi Location 3916	47.0	Mkoyo	1822	22
			Simkumbe	2094	25
	Waa Location 3781	45.4	Kitivo	1242	15
			Kombani	892	11
			Matuga	1647	20
	<b>TOTAL</b>		<b>214</b>		

Source: Adopted and modified from KNBS 2010

### 3.7 Data collection tools

The research instruments used in the study included: a structured questionnaire and an interview guide.

### **3.7.1 Questionnaire**

The questionnaire had both closed and open ended questions. Closed ended questions were accompanied by a list of suitable answers. These types of questions were used because they were easily quantifiable, easier to administer, and time bound while open ended questions did not have answers instead they allowed the respondents give more information related to the question. The questionnaires were administered to women aged between 15 and 49 years in their respective households. They were administered in English (and where necessary) translated to Kiswahili for illiterate respondents to ensure accuracy of responses.

The questionnaire was divided into several sections, section 1 had questions related to demographic, socio economic, socio cultural and environmental factors influencing fertility. Section 2 entailed questions on the proximate determinants of fertility including; women sexuality, women sterility, post-partum insusceptibility and contraceptive use.

### **3.7.2 Focus group discussion**

This was a set of guiding questions prepared to cover topic such as: education, employment, ideal number of children, religion, contraceptive use, women sexuality and post-partum insusceptibility. The aim of the focus group discussions (FDG) was to supplement the quantitative data. Two focus group discussions were done, each comprising of 10 participants. One comprised of men and the other comprising women. The discussion took place a Kwale baraza park.

### **3.7.3 Data collection**

Data collection was done in October 2013, where out of 216 questionnaires, 210 were returned properly filled. The research assistants were picked with the help of the district statistics officer from enumerators who conducted the census survey in 2009. The assistants were trained in one day and daily meetings were conducted to ensure smooth running of the data collection process. Chiefs and village elders were informed prior to the visits for logistical preparations. Each morning the enumerators assembled at the middle of the village guided by a village elder. A pen was tossed and the households in the direction pointed by the nib were sampled until the required number of house hold was attained.

### **3.8 Pilot study and testing for validity and reliability**

Before the actual data collection was done a pilot study was conducted to test for validity (the extent to which a tool measures what it was supposed to measure) and reliability (the degree to which a tool consistently measures whatever it measures) of the tools to be used in collecting data. 20 questionnaires were administered in the different sub locations and necessary changes were made on the tools to ensure the data collected was accurate.

### **3.9 Data management and analysis**

Data collected by questionnaires was coded, spot checked for error, and entered into an SPSS (V.17) data base where calculation of measures of central tendency (mean and median) and percentages was done. Qualitative data from the key informant interview was summarized and organized manually based on the thematic areas of concern in the relevant sections. To analyse the quantitative data; the mean and median were used in

several areas such as to draw a comparison between post-partum amenorrhea and breast feeding, it was also used to establish the duration of post-partum abstinence among women in the division. Percentages were used to show the age distribution of secondary sterile women, to show the percentages of contraceptive use by age groups among other areas. The proximate determinant model as modified by Stover (1998) was further used in the analysis to measure the depressing effect of the proximate determinants. The revised model included women's sexuality, it uses data on the proportion of women 15-49 years who are sexually active in the last 30 days. It intended to show the reduction in fertility effect caused by the fact that women are not sexually active throughout the entire period of reproduction. The other proximate determinants that were analysed using the model included: women sterility, post-partum insusceptibility and contraceptive use. The analysed data was then presented in tables and a discussion followed in chapter four.

### **3.10 Ethical consideration**

Authorisation to carry out the study research was acquired from the Kenyatta University and the National Council for Science and Technology. Community entry for the data collection was done through the County Director of Education, District Commissioner, District Officers, area Chiefs, Sub Chiefs and village chairmen. Participation in the study was on voluntary basis and anonymity was assured; consent was asked before the data collection sessions were done.

## CHAPTER FOUR

### 4 RESULTS AND DISCUSSION ON THE PROXIMATE AND NON- PROXIMATE DETERMINANTS OF FERTILITY

#### 4.1 Introduction

This chapter presents the findings and carries out a discussion based on them. To start with, the demographic characteristics of the respondents are explained. This is followed by an analysis on the inhibiting effects of the proximate determinants of fertility after which the computation of the total fertility rate of the division was done. A result based discussion on the relationship between the proximate and non-proximate determinants of fertility was then carried out.

#### 4.2 Demographic characteristics of the respondents

**Table 4.1: Demographic characteristics of the respondents in Matuga Division**

<b>Demographic characteristics of the respondents in Matuga Division 2013</b>		
Variable	Number of respondents	Percentage
Age groups	No.	%
15-19	12	5.71
20-24	58	27.62
25-29	58	27.62
30-34	36	17.14
35-39	21	10
40-44	16	7.62
45-49	9	4.29

From the table above, more than half of the respondents making up 116 of the 210 women interviewed were of the aged between 20-29 years. The age cohorts 20-24 and 25-29 years each had 27.6% of the respondents. Only 4.29% (9) of the women interviewed were of the age group 45-49 years.

### 4.3 Application of the proximate determinant model

This section shows the application and findings of Stover's proximate determinants model as it was used in this study. The model's main objective was to establish the reducing effect of the four proximate determinants consisting of women's sexuality, contraceptive use, post-partum insusceptibility and sterility on the fertility rate. It helped bring out the proximate determinants with the highest and lowest inhibiting effect on fertility. The model also enabled the researcher calculate the total fertility rate of the area under study. The application of the model was as shown below where the inhibiting effects of contraceptive use, women sexuality, women sterility and post-partum insusceptibility were calculated as shown next.

The index of women's sexuality ( $C_x$ ) was measured to determine the inhibiting effect of women's sexuality on fertility. A woman was considered sexually active if she had had sex in the last four week preceding the survey, women who were pregnant or abstaining post-partum were also considered to be sexually active. .

$$C_x = S$$

Where:

S= the proportion of women aged 15-49 years old sexually active where sexually active means they had sex in the last four weeks or pregnant or abstaining post-partum.

Data collected from the field revealed that 68.1% of the women interviewed were sexually active while 4.7% were either pregnant or abstaining post-partum. This meant

that a total of 72.8% of 210 women interviewed were sexually active. This gives the index of women sexuality as approximately 0.73.

Thus:  $C_x = 0.73$ .

The second proximate determinant of fertility used in the study was post-partum insusceptibility. Its inhibiting effect on fertility was computed as follows:

$$C_i = 20 / (18.5 + i)$$

Where:

$i$  is the average duration of post-partum amenorrhea and post-partum abstinence

$$C_i = 20 / (18.5 + i)$$

$$C_i = 20 / (18.5 + (2.59 + 6.9))$$

$$C_i = 20 / (18.5 + 9.49)$$

$$C_i = 20 / 27.99$$

$$C_i = 0.72$$

This means that post-partum insusceptibility has a depressing effect of 0.72 on the fertility of Matuga division.

The index of women's sterility as a proximate determinant of fertility used in this study was calculated as follows:

$$C_s = I-f$$

Where:

f- the proportion of sexually active women who are sterile

$$C_i = I-f$$

The first step is to determine the proportion of women who were sexually active but reported sterility. Data collected from the field established that 38 out of the 210 women aged between 15-49 years who were interviewed were experiencing sterility. Thus the proportion of women who reported sterility was calculated as shown below:

$$f = 38/210$$

$$f = 0.19$$

Having attained the value of the proportion of women who reported sterility, the index of women's sterility was then arrived at by subtracting the value (f) from 1 thus giving a value of 0.81 as the inhibiting effect of women sterility.

$$C_s = I- 0.19$$

$$=0.81$$

The fourth proximate determinant of fertility used in the study is contraceptive use. This index was intended to measure the fertility inhibiting effect of contraceptive use.

The effect of contraceptive use was calculated as follows:

$$C_u = 1 - 1.08 * u * e$$

Where:

$u$  = Contraceptive prevalence among married women aged between 15-49 years.

$e$  = the average effectiveness of contraception by use and method

An adjustment factor of 1.08 is used; it is designed to remove infecund women from the equation. If the contraception is perfect, then effectiveness is complete and the value of  $e$  is equal to 1 and vice versa.

The first step in attaining the index of contraceptive use is to calculate for the values of contraceptive prevalence ( $u$ ) and the average effectiveness of each method of contraception ( $e$ ).

Where:

$$e = \frac{u(m) \times e(m)}{e(m)}$$

Where:

$u(m)$  = proportion of women using a given method

$e(m)$  = effectiveness of a method

Data collected from the field by the researcher established that the value of average effectiveness of the methods of contraceptive ( $e$ ) was 0.053 while the proportion of women using a certain method of contraception ( $u$ ) was 0.32

Thus:

$$C_u = 1 - 1.08 * u * e$$

$$u = 0.32$$

$$e = 0.053$$

$$C_u = 1 - 1.08 * (0.32 * 0.053)$$

$$= 1 - (1.08 * 0.017)$$

$$= 1 - 0.01836$$

$$= 0.98164$$

From the above computation, the index of contraceptive use was found to have an inhibiting effect of 0.98 on the fertility of women aged between 15-49 years in Matuga division.

**Table 4.2: Inhibiting effects of the proximate determinants of fertility among women in Matuga division**

<b>Proximate Determinant</b>	<b>Individual Effect</b>
Contraceptive use	0.98
Post-partum insusceptibility	0.72
Women sexuality	0.73
Sterility	0.81

The results range between 0 and 1. From among the proximate determinants, the nearer the results is to 1, the lesser the inhibiting effect it has on fertility and vice versa.

The variable of women's sexuality is one of the proximate determinants of fertility. This variable used to be referred to as 'married women' in the former proximate determinants models. This change became necessary following the realization that women can be sexually active even when not married and some can be married but sexually inactive. Sexual activities in the four weeks preceding the survey were used to define a woman's sexual activity. Women who had sex within four weeks before the study were considered sexually active.

**Table 4.3: Time period since last intercourse among women in Matuga division**

Period	Percent	Frequency
<1 Month	68.1	143
1 Month +	26.2	55
Abstaining Post-partum	4.7	10
Don't Know	0.95	2

From the table it's clear that 68.1% of women were sexually active in the last four weeks before the survey. If the proportion of abstaining post-partum is added, it gives a total of  $C_x = 72.8\%$  which translates to 0.73. This means that women's sexuality has an inhibiting effect on fertility of 0.73. KNBS (2010) found out that 50% of women had intercourse in the last four week preceding the survey. Chauhan (2014) while comparing the effects of women's sexuality on the fertility of women in Madhya Prandesh in India found out that the inhibiting effect of women sexual activity on fertility was 0.6.

On the index of post- partum insusceptibility, Onsongo (2012) found out that the inhibiting effect of post- partum insusceptibility on fertility among the Abagusii women was at 0.63. That figure compares to 0.72 of Matuga division indicating that PPI has a slightly lower effect on fertility of women in Matuga compared to their counterparts in Kisii. According to Bongaart's model, the lower the value of the index, the higher the depressing effect of the determinant on the fertility of an area. Apriany (2009) established that from a scale of 100 percent, PPI had an inhibiting effect on 27% among women in West Sumatra Province in Indonesia.

Stover (1998) modified Bongaart's model and proposed sterility as one of the proximate determinants of fertility. He suggested that sterility should be measured as the proportion of sexually active women who are childless. Primary sterility refers to a situation where a woman is unable to even once become pregnant despite being sexually active and not using birth control methods. Secondary sterility on the other hand, refers a state where the woman who had been able to get pregnant at least once, but is currently unable to conceive despite being sexually active and not using any method of contraception. For this study, women who were sexually active but had not given birth in the last five years were considered to be sterile; even if they had given birth earlier. Data from the field showed that sterility had a depressing effect of 0.81 on fertility among women in Matuga division. This means that sterility has a very low inhibiting effect on fertility compared to other proximate determinants. It is worth noting that  $C_f$  (sterility) includes both primary and secondary sterility. Uswatun (2007)

noted that sterility had an inhibiting effect of 0.5 % among women in East Nusa Tenggara.

Contraceptive use is another direct determinant of fertility. It was used to check the depressing effect of contraceptive use on fertility. The value of 0.98 indicates that contraceptive use has the lowest inhibiting effect on fertility of women in child bearing ages in Matuga Division. This is attributed to the low literacy levels in the area, where most of these women have only completed primary school. It is also as a result of the fact that majority of the residence of this area are Muslims. Muslims generally prefer not to use contraceptives especially the modern methods since they have a wrong notion that the use of contraceptive is similar to killing the baby in the womb. Muslims also associates the use of modern methods of contraceptives as equating oneself to God where one determines who lives and who does not.

Having computed the inhibiting effect of the in individual proximate determinants, the total fertility rate for Matuga division was calculated using Stover's 1998 model as shown below.

Where:

$$\text{TFR} = (C_x \times C_i \times C_f \times C_u \times \text{TF})$$

Where:

$(C_x)$  is the index of women who are sexually active

$(C_i)$  is the index of post-partum infecundability

$(C_u)$  is the index of contraceptive use

$(C_f)$  is index of sterility

$(\text{TF})$  is the total fecundity (15.3)

Thus:

$$\text{TFR} = (0.98 * 0.72 * 0.73 * 0.81 * 15.3)$$

$$\text{TFR} = 6.383$$

The total fertility rate of Matuga division was therefore approximately 6.4 births per woman which is considerably higher than that of Kwale County at 6.0 births per woman and 4.8 births per woman nationally (KNBS, 2010).

#### **4.4 Relationship between proximate and non- proximate determinants**

While the proximate determinants are the direct determinants of fertility, contextual factors have overtime played a vital background role in influencing fertility outcomes of many regions in the world. Bongaart (2015:536) noted that it is through the indirect determinants that the proximate determinants work to affect fertility. This implies that the proximate determinants cannot be looked at in isolation. This study included the non- proximate determinants of fertility to help the researcher get a better understanding of the dynamics of high fertility in Matuga division. The non- proximate determinants in this study consisted of: age of respondents, education level, religion, ideal number of children and employment status.

##### **4.4.1 Contraceptive use**

Family planning initiatives have been in existence since the 1950's when the family planning association of Nairobi and Mombasa were formed (Onsongo, 2012). The associations were aimed at creating awareness and providing modern contraceptive services. The National Family Planning Program was established in 1967. This followed after a realization that the population of Kenya was growing at a fast rate. As a result of this, the government of Kenya of 1984 drafted sessional paper N0. 4 which made Kenya the first sub-Saharan country to adopt a national family planning program.

This has resulted to 95% of all women being aware of at least one method of contraception (KNBS, 2004). Generally, in Kenya, the proportion of women's knowledge of methods of contraception is high. This has been on the rise since 1989 to 2003 with the figures registered at 90% and 98% respectively.

**Table 4.4: Knowledge of methods of contraception among women in Matuga division**

Method	1989 KDHS	1998 KDHS	2003 KDHS	Kisii 2007	2008 KDHS	Matuga 2013
At least one method	90	96.8	94.6	98.6	94.6	94.8
Pill	84.4	92.6	89.5	93	87.9	79
Condom	53.4	91.5	90.6	90	89.2	84
Injectables	76.3	89.7	88.9	97	88.5	85
Implants	-	48.7	63.7	-	-	59
Female sterilization	68.2	81.8	73.9	90	66.8	2.3
Male sterilization	19.8	47.7	47.2	50	38.1	7.6
Withdrawal	16.8	36.9	41.4	80	47.6	80

From the table 4.4, women in Matuga have a generally low knowledge of contraception compared with other women across Kenya. This indicates that knowledge of contraceptive use varies by regions. Biney (2011) observed that lack of knowledge about contraceptives among Ghanaian women led to failure of contraceptive use which in turn led to unintended pregnancies and induced abortions. Onsongo (2012) found out that 98.6% of women aged between 15-49 years in Kisii had knowledge of at least one

method of contraception. The current study found out that about 95% of women aged 15-49 years in Matuga division are aware of at least one method of contraception. During the focus group discussions, majority of the participants knew at least one method of contraception. A number of them noted that their knowledge of the methods of contraception was acquired from the hospital after their first pregnancy, others attributed their knowledge on contraceptive from interaction with their peers.

Comparing the different methods of contraception; injectables, pills, and implants recorded the highest percentage in terms of awareness. This awareness was measured at 90 %, 85 %, 79 %, and 59 % respectively. Apart from knowledge of contraceptive use, other factors that affect contraceptive use include education level and wealth status. In terms of regions, Eastern, Nairobi, Central and Coast provinces have relatively higher knowledge of contraceptive use compared to Nyanza, Rift valley and Western (KNBS, 2010:57-78).

Among the currently married women in Matuga division (n=149) as shown on table 4.6 next page only 38% are currently using any method of contraception. Overall, 51.4 % of all women aged between 15-49 years in Matuga use at least one method of contraception, with 48.6 % not using any method. KNBS (2010) found out that in Kenya, 32 % of all women interviewed use at least one method of contraception. Saira (2014) noted that 62.46 % of currently married women in Kenya were using at least one method of contraception.

**Table 4.5: Contraceptive use by marital status among women in Matuga division**

<b>Marital status</b>	<b>Number</b>	<b>% using contraceptive</b>
Divorced	3	2.7
Married	35	32.4
Not married and not living with partner	20	18.9
Not married but living with partner	42	38.9
Separated	3	2.7
Widowed	5	4.6
<b>Total</b>	<b>108</b>	<b>51.4</b>

A survey by KNBS (2010) found that 46% of currently married women use a specific method of contraception. This is higher by 13.6% when compared to the total number of currently married women in Matuga using any method of contraceptive. The most alarming aspect of these results is the high number of women interviewed at 48.1% of those not using contraceptives. Musau (2010) established that in the former Makueni District, an estimated 60% of unmarried people do not use contraceptives consistently or correctly.

**Table 4.6: Contraceptive use levels among women in Matuga division**

<b>Method</b>	<b>Percentage (%)</b>	<b>Number</b>
Implants	20.0	42
Injectables	19.5	41
Pills	3.3	7
Condoms	2.4	5
IUD(s)	1.0	2
Rhythm	0.5	1
Withdrawal	0.5	1
Did not state	4.8	10
Not using	48.1	101
<b>Total</b>	<b>100</b>	<b>210</b>

On the use of contraceptives in Matuga, the most common method of contraception is implant with 20% of all women aged 15-49 using it. This is closely followed by injection (Depo-Provera) at 19.5%. The least commonly used modern method is the intra uterine device (IUD) at just 1%.

This was in line with the findings of the FGDs where six out of twelve participants preferred to use injection, as a method of contraception. They attributed their choice to it being easy to administer, others noted that injection was good because it enable them use it without their husbands noticing as some of them did not want their wives to use contraceptives. Generally, the most commonly used method of contraception in Kisii is

injection, which agrees with the findings of KNBS (2010). When asked on the choice of the specific method of contraception in this study, most respondents felt that the method they picked for use was the best and had no side effects on them. For example, respondents who used implants and injection favored these methods because their administration was not frequent and required fewer trips to medical centers.

**Table 4.7: Contraceptive use by age groups among women in Matuga division**

Respondents		Types of contraceptive used (%)							
Age	No.	Imp	Inj	Pills	Mc	IUDs	Fc	Ryth+	With
15-19	8	16.7	25.0	-	-	8.3	16.7		
20-24	31	24.1	22.4	5.2	1.7				
25-29	27	13.8	27.6	1.7	1.7			1.7	
30-34	22	38.9	11.1						
35-39	8	14.3	14.3		4.8				4.8
40-44	2	6.3	6.3						
45-49	2		11.1						
<b>Total</b>	<b>100</b>	<b>42</b>	<b>41</b>	<b>7</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>

**Key:**

Imp - Implants

Inj -Injection

Mc- Male condoms

Fc - Female condoms

Rhyt - Rhythm

With-Withdrawal

Age is widely considered to be an influential aspect that determines contraceptive use (Onsongo1992; Musalia 2000). Table 4.7 above shows contraceptive use by different age groups. In the youngest age group (15-19), injection is the dominant method used

followed by implant and female condom respectively. In the next age group (20-24), the predominant method of contraception is implants. In this age group, the table shows pills and male condoms starting to be used.

The age cohorts of 15-19, 20-24, 25-29 and 30 -34, clearly indicate the period when most women are sexually active and are using any method of contraception. It is noted that as the age of women increases past the age group 30-34, the number of women using a specific method of contraception declines. This is attributed to the fact that once women attain 35 years, sexual activities start to decline sharply with most women concentrating on upbringing the children already born.

Generally, a large proportion of women is still not using contraceptives in Matuga Division. One respondent noted that “*she would give birth until all the eggs are depleted*”. The said respondent had already nine children and was in the age group of 35-39 years.

Education by all standards affects negatively the fertility of women, and has a major influence in the use of modern contraceptives (Ayiemba, 1988; Weeks, 1999). Mekonnen (2009) noted that education gives women opportunities to make independent decisions on marriage, work, and fertility. Education provides information on pregnancy prevention and postponement of child bearing. KNBS (2010) found out that the percentage of women using contraceptives increase with an increase in the levels of education. This study further found out that 59.8% of all currently married women with secondary and tertiary education use at least one method of contraception. In contrast,

only 14.1% of all married women with no education were using any method of contraception.

**Table 4.8: Contraceptive use on the basis of education level among women in Matuga**

Contraceptive method	Education Level			
	None	Primary	Secondary	Tertiary
<b>Condoms (female)</b>	50(1)	-	50.0 (1)	-
<b>Implants</b>	21.4 (9)	45.2 (19)	23.8 (10)	9.5 (4)
<b>Injectables</b>	56.1 (23)	26.8 (11)	9.8 (4)	7.3 (3)
<b>IUD (s)</b>	-	100 (2)	-	-
<b>Condoms (male)</b>	-	33.3 (1)	66.7 (2)	-
<b>Pills</b>	28.6 (2)	42.6 (3)	28.6 (2)	-
<b>Rhythm Method</b>	-	-	100 (1)	-
<b>Withdrawal</b>	-	-	100 (1)	-
<b>Total</b>	35	36	21	7

Table 4.8 shows that there is positive relationship between the levels of education and contraceptive use. The number for respondents with formal education using contraceptives is higher compared to those with no formal education. Women with formal education understand more the importance of contraceptive use compared to those less educated. From the FGDs, this latter group was often blinded by myths and cultures that discourage contraceptives use. Some of the myths, for instance, that less

educated women believe in include the fact that contraceptives cause impotence, that contraceptives have no effect, and that they cause cancer. Some even noted that if you use coil as a method of contraception, on giving birth the baby will have a small coil like tail attached on its back and this would bring shame to the mother.

According to Onsongo (2012), both pills and injection have low use levels among the women with no education in Kisii. Interestingly, these two methods are the preferred methods in Matuga. Education makes women want to have fewer children to enable them provide good health and better education to their children. Saira (2014) while studying religious affiliation and contraceptive use in Kenya established that 90% of the population with no education was not using contraceptives.

**Table 4.9: Contraceptive use as per the religion of women in Matuga division**

Contraceptive method	Religion			
	Catholic Christian	Protestant Christian	Muslim	Others
<b>Condoms (Female)</b>	-	-	100 (2)	
<b>Implants</b>	4.8 (2)	28.6 (12)	64.3 (27)	2.3 (1)
<b>Injectables</b>	4.9 (2)	19.5 (8)	75.6 (31)	
<b>IUD (s)</b>	-	50.0 (1)	50.0 (1)	
<b>Condoms (male)</b>	-	33.3 (1)	66.7 (2)	
<b>Pills</b>	-	14.3 (1)	85.7 (6)	
<b>Rhythm Method</b>	-	-	100 (1)	
<b>Withdrawal</b>	-	-	100 (1)	

From the table 4.9 above, 71.7% of those using any method of contraceptive are Muslims. This group is then followed by protestant Christian and catholic Christians at 23.2% and 4.04% respectively. There has been a misconception that Muslims are not allowed in their religion to use contraceptives. This notion is misunderstood. Sheikh Omar ( a pseudo name) in an interview noted that two main factors are used in Islam to guide decisions regarding contraceptive use. He put it forward that intention (niyyah) is the first thing to be considered. Secondly, Muslims have to consider whether the use of a method will be harmful to them or not.

Contraceptives in Islamic faith can be used for health purposes of the mother and child or for birth spacing. If excessive fertility may cause a proven health risk for mothers and children, economic hardship or inability by parents to raise their children properly, then, they are allowed to regulate fertility. Muslim scholars argue that there is relationship between ability to provide and the number of children one has.

According to Islam, a particular method of contraceptive is not allowed, if it harms the user (Farzaneh, 2004). Proponents of family planning cite equally varied arguments, from the idea that spacing births prevents human suffering to the fact that the Prophet Muhammad used coitus interruptus, or withdrawal, as a method of birth control, setting a permissive precedent (Roudi-Fahimi, 2004). During the FGD, it was noted that Catholic Christians and Muslims were not allowed to use contraceptives. They believed that they were sent to the world to “multiply and fill the earth, that children were heritage and a gift from God.”

**Table 4.10: Religion and Children ever born among women in Matuga division.**

Religion	Number	Children ever born		
		1-3	4-5	6-9
<b>Muslim</b>	175(83.7%)	58.3 (102)	35.4 (62)	6.3 (11)
<b>Protestant Christian</b>	27 (12.9%)	92.5 (25)	7.4 (2)	-
<b>Catholic Christian</b>	6	100 (6)	-	-
<b>Others</b>	1	100 (1)		
<b>Total</b>	209	134	64	11

Table (4.10) shows the children ever born versus the religion of the mother. The table shows that the women with most children are Muslims with 83.7% of the total number of children, followed by Protestant Christians with 12.9%. This is attributed to the low uptake of contraceptives among married Muslim women. During the FGD, Muslim women noted that their religion prohibited the use of contraceptives. They believed from their religion that every child comes with his/her sustenance from God, thus there should be not limit on child bearing.

#### **4.4.2 Post –partum insusceptibility (PPI).**

Post-partum insusceptibility is a term modified by Stover (1998). It is a combination of lactational amenorrhea and post-partum sexual abstinence. These two are a common practice in Sub-Saharan Africa as cultural methods of contraception (Onsongo, 2012).

A woman is not fecund immediately after birth. Furthermore, a woman who is breastfeeding may be insusceptible for longer periods.

The inhibiting effect of breastfeeding, however, progressively declines with longer durations since the child reduces the frequency of breastfeeding as she or he grows. Another component of PPI is Lactational Amenorrhea (LAM). Lactational amenorrhea is widely considered to be effective under the condition that full breast feeding is done within a six month period (Kennedy et al, 1989). This method, however, becomes increasingly unreliable with time.

Post-partum sexual abstinence is a taboo in most African societies. This period of abstinence is usually one month and ten days. Within this period, a woman does not engage in coitus with her partner. This method is one of the traditional methods of contraception. Other methods include withdrawal and rhythm methods.

Jain and Bongaart (1981) noted that after the two months of insusceptibility following the birth of a child, each additional month of breastfeeding increased the birth interval by 0.4 months. Lack of sufficient breastfeeding reduces the length of post-partum Amenorrhea (PPA) by between 1.5 to 2 months.

In Kenya, the PPA in the early 1980's was approximately 19 months compared to 9.7 in 2003 and 8.7 in 2008/2009 (KNBS, 2010). This may be attributed to higher levels of education and employment status, which keep women away from their children due to work related commitments.

**Table 4.11: Comparison between breast feeding and post-partum amenorrhea in Matuga division**

Study	Amenorrhea period		Breastfeeding Period	
	Mean	Median	Mean	Median
KDHS(98)	-	8.9	-	20.0
KDHS(03)	11.7	9.7	20.7	20.0
KISII (07)	9.78	8.0	25.57	18.0
KDHS(09)	10.7	8.9	20.7	21.0
Matuga (13)	6.35	6.00	22.44	24.00

From table 4.11, the difference in the Amenorrhea period between KNBS (2010) and Matuga (2013) is about 4 months. This indicates that after childbirth, women in Matuga are exposed to the risk of conception earlier by 4 months compared to other areas in Kenya. Post-partum insusceptibility has been noted by KNBS (2010) to be the most important proximate determinant of fertility in Kenya. The effect of PP1 is however generally on the decline.

**Table 4.12: Duration of amenorrhea among women in Matuga division**

<b>Duration of amenorrhea</b>	<b>Percentage</b>	<b>Number</b>
0-4	54.5	92
5-9	40.6	28
10-14	22.8	36
15-19	16.4	13
20-24	3.0	27
25-29	2.0	2
30-35	0.0	4
<b>Total</b>	100.0	202

The duration of post-partum abstinence (PPA) in Matuga is more or less similar to that of other parts of the country. Before 5 months after birth, the percentage of women who are amenorrhoeic is 54.5% in Matuga compared to 57.5% across Kenya (KNBS, 2010). From the focus group discussions, majority of the women were amenorrhoeic for the first six months after child birth. They noted that they choose the said period to allow for proper healing to take place. Interestingly, some of the participants noted that pressure from their partners led to them having very low post-partum abstinence periods, as low as one and a half to two months. The proportion of women who are amenorrhoeic decreases with time such that after 19 months it stands at approximately 1.3% in Kisii (Onsongo, 2012) and 15.5% in Kenya. (KNBS, 2010)

In terms of breastfeeding, the mean length of breastfeeding in Matuga is 22.44 months. The women attributed this period allowed their children to acquire nutrients and boost their immunity. It also allowed the children to bond with their mothers. This is lower compared to that of the Abagusii women who have a mean length of breastfeeding of 25.57 months (Onsongo, 2012). The table below shows the length of breastfeeding in 5 months subdivision in Matuga division.

**Table 4.13: Duration of breast feeding among women in Matuga division**

<b>Duration in months</b>	<b>Percentage</b>	<b>Number</b>
<b>0-5</b>	2.9	6
<b>6-10</b>	3.3	7
<b>11-15</b>	8.1	17
<b>16-20</b>	15.2	32
<b>21-25</b>	63.3	133
<b>More than 25</b>	7.1	15
<b>Total</b>	100	210

From the table above, only 2.9% of the respondents' breast fed for less than 5 months, this group attributed the short time of breast feeding to work related commitments. This is higher compared to Kisii where Onsongo (2012) found out that no woman breast fed for less than 6 months. On the other hand, majority of the children born in Matuga breastfed for more than 20 months after birth; where 63.3% of women did breastfeed their children for between 21 and 25 months after birth. This indicates that the

percentage of women not breastfeeding is 36.7%. This percentage is comparatively higher compared to other parts of the country and can be attributed to lower nutritional levels among women in Matuga.

**Table 4.14: Effects of employment on breastfeeding among the women in Matuga division**

<b>Effect of employment</b>	<b>Percentage</b>	<b>Number</b>
<b>Yes</b>	10.5	22
<b>No</b>	65.2	137
<b>No response</b>	24.3	51
<b>Total</b>	100	210

When asked about the effects of employment on breastfeeding, 65.2% of the women noted that employment did not affect breastfeeding. On the other hand, 10% claimed they were affected. The latter group argued that employment keeps women away from their children for long thus reducing the frequency of breastfeeding. The percentage of those who said employment had no effect is high since most of them are unemployed and unaware that employment interferes with breastfeeding.

Post-partum abstinence is a term used to refer to the period of voluntary sexual abstinence after childbirth. During this period the woman is not at risk of conception. Van de Walle (1993) noted that for every 2.5 months of sexual abstinence prolonged, it protects the woman from getting pregnant by one month.

**Table 4.15: Months of abstaining since last birth among women in Matuga division**

<b>Months</b>	<b>Percentage</b>	<b>Number</b>
<b>1</b>	11.4	23
<b>2</b>	54.0	109
<b>3</b>	17.3	35
<b>4</b>	3.5	7
<b>5</b>	2.0	4
<b>6</b>	2.0	4
<b>7</b>	0.5	1
<b>8</b>	0.5	1
<b>9</b>	1.5	3
<b>10 and above</b>	7.4	7
<b>Total</b>	<b>100</b>	<b>202</b>

From the table 4.16, the mean duration of abstinence in Matuga is very low at 2.59 months compared to Kenya's 6.6 (KNBS, 2010) and 3.58 (Onsongo, 2012). This means that most women are insusceptible to pregnancy in the first 2 and half months after childbirth. After this period, most of the women get exposed to the risk of conception. In Matuga, where the Digos are the dominant tribe, the women stay for 1 month and 10 days in post-partum abstinence. This is in line with the official duration of post-partum abstinence. During the FGD, some women attributed the low duration of abstinence to pressure from their partners and fear that their partners may cheat on them.

**Table 4.16: Duration of post-partum abstinence among women in Matuga division**

Data source	Post-partum Abstinence	
	Mean	Median
KDHS(2003)	6.9	2.9
KDHS(2008/09)	6.6	3.1
Kisii (2012)	3.58	2.0
Matuga(2013)	2.59	2.0

#### 4.4.3 Women's Sexuality

Sexual intercourse exposes a woman to the risk of pregnancy. In Kenya, the median age at first intercourse has risen slightly over time. This currently ranges from a median of 17.7 years for women aged 45-49 to about 18.2 years for women aged 20-24 (KNBS, 2010). In Matuga, up to 81% of all women have their first intercourse before reaching 19 years. This generally implies that most women in Matuga start engaging in sexual intercourse before marriage.

**Table 4.17: Age at first intercourse among women in Matuga division**

Age	Percentage (%)	Number (n =210)
Less than 12	1.4	3
12-15	28.6	60
16-19	51	107
20-23	15.7	33
More than 23	3.3	7

Onsongo (2012) established that in the year 2007, 79 % of the respondents in Kisii had their first sexual intercourse by 19 years old. From the table above, it is also clear that the age cohort 16 -19 years is where most women (51%) have their first sexual intercourse. This is a clear indication of adolescent sexuality. From the focus group discussions, the women pinned the trend to peer pressure, attending night village discos during adolescent and low education levels.

These findings are in line with Kenya's median age at first intercourse which is 19 years.

**Table 4.18: First intercourse at certain ages among women in Matuga division**

Current age (n)		Age of first intercourse.				
		Less than 12 years	13-15 years	16 -19 years	20 -23 years	More than 23 years
<b>15 -19</b>	12	-	58.3 (7)	41.7 (5)	–	–
<b>20 -24</b>	58	1.7 (1)	27.6 (16)	58.6 (34)	8.6 (5)	3.4(2)
<b>25 -29</b>	58	1.7 (1)	27.6 (16)	48.3 (28)	19 (11)	3.4 (2)
<b>30 -34</b>	36	-	19.4(7)	55.6 (20)	19.4 (7)	5.6 (2)
<b>35 -39</b>	21	-	38.1(8)	42.9(9)	19 (4)	
<b>40 -44</b>	16	6.2 (1)	18.8 (3)	43.8 (7)	31.2(5)	
<b>45 49</b>	9	–	33.3 (3)	44.4(4)	11.1(1)	11.1(1)
<b>Total</b>	<b>210</b>	<b>1.4(3)</b>	<b>28.6 (60)</b>	<b>51 (107)</b>	<b>15.7 (33)</b>	<b>3.3 (7)</b>

From the table 4.18, only 1.4 % of the women in Matuga had sexual intercourse by age 12 years old. This figure rose to 28.6% at age group 13 -15 years. By the end of adolescence, only 19 % of the women were still sexually inactive. It is also visible that younger women in Matuga are having intercourse at an earlier age compared to older women. For example, for women who are currently at the age cohort 45-49, 77.7% had their first sexual intercourse by 19 years while in the age group 20 -24 , 86.2% had had intercourse by 19 years old . This new trend is born out of the fact that the current communities no longer emphasize virginity as was the case in the past.

**Table 4.19: Age at first intercourse by education level completed in Matuga division**

Level of education		Age at first intercourse				
	No.	<12	12-15	16 -19	20 -23	24>
<b>None</b>	91	3.3 (3)	45.1 (41)	34.1 (31)	14.3 (13)	3.3 (3)
<b>Primary</b>	78	-	16.7 (13)	71.8 (56 )	9.0 (7)	2.6 (2)
<b>Secondary</b>	30	-	20 (6)	50 (15)	26.7 (8)	3.3 (1)
<b>Tertiary</b>	11			45.5 (5)	45.5(5)	9.1 (1)
<b>Total</b>	<b>210</b>	<b>1.4(3)</b>	<b>28.6 (60)</b>	<b>51.0 (33)</b>	<b>15.7 (33)</b>	<b>3.3 (7)</b>

The table 4.19 shows education levels with age at first intercourse from which, women who have tertiary education have their first intercourse at a much later period compared to those with lesser levels of education. For example, 45.5% have their first sexual

intercourse in the age group 16 to 19 years. This compares to those with no formal education having their first sexual intercourse as early as 12 years and below. The table also shows that in the age group 12 to 15 years, more women with no formal education engaged in sex (45.1%). This compares to 16.7% and 20.6% for those with primary and secondary education respectively. Following the FGD, women who had tertiary education, delayed having sexual relations for several reasons; some were constantly reminded by their parents on the importance of completing college before engaging in coitus, others were afraid of getting pregnant while undertaking their studies as that would lead to them being expelled from schools while others were fearful of losing their scholarships.

**Table 4.20: Frequency of coitus and marital status among women in Matuga division**

<b>Marital status</b>	<b>Number</b>	<b>0 years</b>	<b>Less than 5 years</b>	<b>5 years</b>	<b>6-10 years</b>	<b>11-15 years</b>	<b>16 years and above</b>
<b>Divorced</b>	7	42.9(3)	28.6(2)	28.6(2)			
<b>Married</b>	92	3.3(3)	27.2(25)	45.7(42)	20.7(19)	2.2(2)	1.1(1)
<b>Not married and not living with partner</b>	27	-	7.4(2)	33.3(9)	29.6(8)	3.7(1)	-
<b>Not married but living with partner</b>	66	-	4.5(3)	24.2(16)	37.9(25)	16.7(11)	3.0(2)
<b>Separated</b>	11	9.1(1)	9.1(1)	27.3(3)	54.5(6)	-	-
<b>Widowed</b>	7	28.6(2)	-	28.6(2)	-	-	-
<b>Total</b>	210	14.(9)	15.7(33)	35.2(74)	27.6(58)	6.7(14)	1.4(3)

In the past it was expected that coital frequency among the married would be higher compared to the unmarried. However, that is no longer the case today. The table 4.20 shows that the difference in coitus between the married and unmarried women. The women living with their partners (cohabitants) are neglected since their significance is minimal. This lays emphasis that women's sexuality rather than women married is a better proximate determinant of fertility.

It can be observed that widowed, separated, and divorced women have lower coitus frequencies compared to women in the other categories. Women who are not married but are living with partners (cohabitants) have relatively higher frequency of coitus compared even to married women. The table indicates that 19.7% of the cohabitants have sexual intercourse about 11 times more in a month, compared to 3.3% of the women who are married. This phenomenon establishes the approach of using women's sexuality instead of women's marriage as a proximate determinant of fertility.

**Table 4.21: Change in coital frequency after birth of children in Matuga division**

<b>Point of frequency changes</b>	<b>Percentages %</b>	<b>Number</b>
<b>After 1st birth</b>	4.3	9
<b>After 2nd birth</b>	23.8	50
<b>After 3rd birth</b>	26.2	55
<b>After 4th birth</b>	12.3	26
<b>Not applicable</b>	28.6	60
<b>No response</b>	2.3	5
<b>Total</b>	<b>100</b>	<b>210</b>

From the table 4.21, it is noted that the frequency of intercourse decreases with the increase in the number of children. Generally, the frequency of intercourse decreases as a woman grows old. Onsongo (2012) attributes this decline to responsibilities including: babysitting increased household chores, and sourcing for food among others. One of the respondents during the FGD pointed out that attending to various domestic chores during the day made her tired and hence reduced her coital frequency. On further probing, she noted that a stressful life of raising the children lowered her libido for intercourse. From the above table, 28.6% of the women interviewed had not registered any change in coital frequency. This group accounts for the highest percentage. This may be the reason why fertility is high in the Matuga area.

On communication with their partners about sex, 81.99 of the women carry out discussions with their partners on sex issues. About 14.3% of the women in the study indicated that they do not talk with their partners on sexual matters. Most of the women in this group are those with less education. Nyang'era (1999) noted that traditionally, attempts by women to openly talk about sex carries the risk of her being returned to her parents. According to Onsongo (2012), negotiating coital frequency may lead to the man in the union suspecting that the woman is cheating.

Among the Digo tribe (the predominant residents of Matuga), communication between the woman and the man on sexual matters was encouraged by tradition. Still, there existed some practices such as arranged marriages that hindered communication between partners. This forced marriages, obviously, led to a strained communication between the partners. This study focused on woman aged between 15-49 years.

**Table 4.22: Satisfaction with the first pregnancy among women in Matuga division**

<b>Satisfied with first pregnancy</b>	<b>Percentage</b>	<b>Number</b>
<b>Yes</b>	57.1	120
<b>No</b>	42.9	90
<b>Total</b>	100	210

To further understand women's sexuality the respondents were asked about their first pregnancies. From the table above, 57.1% of the respondents were ready to conceive and satisfied with their first pregnancy while 42.9% were not. It is worth noting that majority of those that were not ready to conceive were the younger generation. This group said during the interviews that they got pregnant while at home, in school or even during wedding ceremonies. Most of the women who are in their late 30's and 40's conceived their first pregnancy after marriage.

**Table 4.23: Reasons for not being prepared for first pregnancy among women in Matuga division**

<b>Reason</b>	<b>Percentage (%)</b>	<b>Number</b>
Need More time to plan	55.4	51
Was too young	16.3	15
Wanted to develop a career First	13	12
Others	2.2	2
No Response	13	12
<b>Total</b>	<b>100</b>	<b>92</b>

When asked why they were not prepared to conceive, 55.4% of the respondents pointed out that they needed more time to plan for child bearing. At the same time, 16.3% acknowledged that they were still too young to start being mothers, while 15% wanted to develop their careers first.

**Table 4.24: Place of first sexual intercourse among women in Matuga division**

<b>Place</b>	<b>Percentage</b>	<b>Number</b>
<b>At home</b>	78.6	165
<b>At school</b>	10.0	21
<b>In a lodge</b>	4.8	10
<b>Others</b>	6.7	14
<b>Total</b>	<b>100</b>	<b>210</b>

From the table 4.24, 78.6% of the respondents had their first sexual intercourse at home. Home refers to both the woman's home, the partners home and even a friend to the partner's home. The table shows the place of first sexual intercourse. About 10% of the women broke their virginity in school. This simply means that some of them would drop out of school as a result of a possible pregnancy. The 6.7% of other places encompasses those women who had their first sexual intercourse in the bush, in farms or during relatives wedding ceremonies.

#### **4.4.4 Women's sterility**

In clinical medicine, secondary sterility is usually defined as the inability to conceive despite exposure to pregnancy between one to two years after having conceived at least

once. This is different from primary sterility where the person involved has not been able to conceive even once despite being sexually active. In sub-Saharan Africa, the prevalence of secondary sterility is more than 30% (Dhont et al, 2011).

Secondary sterility is caused by several reasons. These include sexually transmitted infections (STI) and medical interventions under unhygienic conditions, especially during delivery or induced abortion. In Nigeria for example, induced abortion, postpartum infection, manual removal of the placenta and prolonged unsupervised labor were associated with secondary sterility (Dhont et al, 2011).

The common type of infertility in Africa is of the secondary type. Larson (2004) noted that primary infertility affects less than 3% of the population in almost two thirds of the nations, while majority of the countries have secondary infertility prevalence of up to 15% and above. This study uses a conceptual definition of secondary sterility. That secondary sterility is the inability of a woman aged between 15-49 years who had previously conceived but has not given birth in the last 5 years preceding the study. The woman should also be sexually active and not using any method of contraception. This definition was arrived at on the basis that at times women may not conceive for one or two years but mostly conceive before the end of 5 years.

**Table 4.25: Secondary sterility among women in Matuga division**

<b>Sterility status</b>	<b>Percentage</b>	<b>Number</b>
<b>Secondary sterile</b>	20.4	38
<b>Not sterile</b>	79.6	148
<b>Total</b>	<b>100</b>	<b>186</b>

From table 4.25, 20.4% of the women aged 15-49 years who had previously conceived are suffering from secondary sterility. These are women who are sexually active and not under any method of contraception whether traditional or modern. Onsongo (2012) found out that 20% of the Abagusii women were experiencing secondary sterility.

**Table 4.26: Conditions under which women reported sterility in Matuga division**

<b>Time not given birth</b>	<b>Percentage</b>	<b>Number</b>
<b>0 – 5 years</b>	79.6	148
<b>6-10 years</b>	15.1	28
<b>More than 10 years</b>	5.4	10
<b>Total</b>	<b>100</b>	<b>186</b>

On conditions under which the women reported secondary sterility, 79.6% of the women had not given birth from between zero to five years. About 15.1% of the women had not given birth between 6-10 years of being sexually active while 5.3% had not given birth in more than 10 years.

Most secondary infertile women are those nearing menopause. From the table below, 66.2% of the women experiencing secondary sterility are aged between 40 years and 49years old. The degree of sterility decreases as the age decreases where only 3.4% of the women aged between 24years and below are experiencing secondary sterility.

**Table 4.27: Age distribution of the secondary sterile women in Matuga division**

Age group	Percentage	Number (38)
15-19	0	0
20-24	3.4	1
25-29	8.1	3
30-34	8.1	3
35-39	14.2	5
40-44	33.1	13
45-49	33.1	13

Larsen (2004) as quoted by Onsongo (2012) conducted an extensive survey in 23 African countries. According to his findings, women who reported sterility by age 34 ranged between 11 percent in Burundi to 20 percent in Cameroon. This is relatively similar to Matuga division which is at 19.6 percent.

#### **4.5 Summary**

This chapter has discussed the proximate determinants model as modified by Stover. From the discussion the following was established: contraceptive use had an inhibiting effect of 0.98; post-partum insusceptibility had a depressing effect of 0.72; women sexuality had a reducing effect of 0.73, and fertility had 0.81 as its inhibiting effect. From these findings, contraceptive use has the least contribution towards fertility reduction while post-partum insusceptibility had the greatest contribution on fertility reduction. As noted earlier though, abortion as a proximate determinant was not used.

## CHAPTER FIVE

### 5 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Summary

The main objective of this study was to analyse the effect of proximate determinants (women sexuality, post-partum insusceptibility, women's sterility and contraceptive use) on fertility. The study used Stover's indirect proximate determinants model of measuring fertility in areas where it is difficult to acquire data on fertility. The study also looked at how the non- proximate determents work through proximate determinants to influence fertility.

#### 5.2 Conclusion

##### 5.2.1 Effects of the proximate determinants on fertility

The literature review for this study focused on Stover's (1998) model. The model is structured around five proximate determinants including: women's sexuality, post-partum insusceptibility, induced abortion, women's senility and contraceptive use. Each of the variables was computed separately and post-partum insusceptibility at 0.72 was found to have the highest inhibiting effect on fertility. This was followed by women's sexuality at 0.73. Women sterility, on the other hand, had a moderate effect at 0.81 while contraceptive use had the least depressing effect at 0.98. This is in line with the KNBS (2010) findings which indicated that contraceptive prevalence in the district was one of the lowest in Kenya.

##### 5.2.2 Relationship between the proximate determinants and non-proximate determinants

This study established that although awareness regarding contraceptive use is registered at a high of 94.8%, the use of contraceptives still remains a concern. For instance,

48.1% of women with children are still not using contraceptives. The findings also revealed that only 2.4% of these women use condoms. The study further revealed that the traditional methods of contraception including rhythm and withdrawal were the least used methods of contraception at 1% each.

The study also found out that unmarried women who were living with their partners used contraceptives on higher levels compared to those currently married. The figures for the two groups were registered at 38.9% and 32.4% respectively. This phenomenon is attributed to the fact that the former group is often unsure if the relationship will end up in a marriage and thus opt for contraceptives.

One interesting finding of the study is the effect of education on contraceptive use. The findings revealed that by simply exposing women to education, the level of contraceptive use increased. Table 4.8 showed this relationship between exposure to education and contraceptive use.

Another interesting fact of the finding was the high number of Muslim women at 71.7% that use contraceptives in Matuga compared to other regions in the country with a predominantly Muslim population. Further studies need to be done on this aspect to shed more light on the disparity in contraceptive use between Muslims in Matuga and other regions. Interestingly, even between Muslim women in Matuga and those of other parts of Coast province, where Matuga Division is based, the same pattern repeats. Table 4.11 shows that most of the women with 4 children and above are Muslims this amounts to 34.9% of all the women with children.

The study's findings also revealed that majority of the women in Matuga (63.3%) breastfed up to between 21-25 months. This is a good implication on the effort by the mother to ensure the health of their children is guaranteed. It is worth noting that, according to the study, majority of the women in Matuga (65.2%) do not think that employment affects breastfeed. As stated earlier, this is logically explained by the fact that majority of these women are housewives and those who work engage in home based businesses. Obviously, women engaged in these types of businesses do not have a problem breastfeeding their children and may naturally argue so. This is the main proximate determinant that depresses fertility in Matuga division.

Generally women in developing countries with relatively high levels of education and income prefer fewer children. These women reduce the rate of nuptuality, often divorce, and prefer cohabiting. Women in Matuga start having intercourse at an adolescent age. With the mean age at first intercourse of 16.83 years, it implies that women are already sexually active before being adult. It also means that for those in school, they are exposed to pregnancy at a time when they are attending their secondary school. This contributes greatly to the high dropout rate experienced at the secondary school level. The findings also indicated that the age at first intercourse increases with the increase in education levels. As Table 4.21 showed that, women without formal education start having intercourse as early as below 12 years of age. On the other hand, those with tertiary education start having intercourse at between ages 16-19.

The study found out that on sterility, 79.6% of the women were not sterile while 20.4% of the respondents experienced secondary sterility. At the same time, the results

indicated that about 66.2% of the women affected by secondary sterility were in their 40s and approaching menopause. This is expected since majority of women become less sexually active as they grow older due to the fact they focus on raising the children already born.

### **5.3 Recommendations**

From the study, several recommendations were arrived at. They included:

- i. The government should embark on sensitizing the people of Matuga on the importance of using contraceptives.
- ii. Stakeholders should make condoms readily available to the community putting up condom boxes in public places such as public toilets and in village cinema halls.
- iii. The government should also work to eliminate the myth that condoms cause infertility in men through sensitisation workshops with village representatives and through meetings initiated by the local chiefs.
- iv. The government (both at the national and county level) should collaborate to improve retention levels of girls in school for the longest time possible. This will reduce the cases of early entry into sexual unions in turn reduce the chances of teenage pregnancy.

### **5.4 An area for further research**

Further research needs to be conducted especially on men's contribution on contraceptive use in the area. This will help shed more light on the low usage of contraceptives so that can be attained of boosting contraceptive use in the area.

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**APPENDICES**

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## Appendix A 2: Household questionnaire

### Participant information consent form.

Hi! I am a student pursuing my masters' degree in population geography at Kenyatta University, Nairobi. I am conducting a household survey in Matuga Division. My research topic is on the determinants of fertility among women of child bearing age. Participation in the study is voluntary and on anonymous basis.

I would like to ask you some questions relating to fertility.

May I begin now? Yes

No

### General Information.

District ..... Division .....

Location ..... Sub-location .....

Household code

Name of enumerator .....

Date of interview .....

### Section I

#### Demographic factors.

#### Age of respondents

1. How old are you?

15-19

20-24

25-29

30-34

35-39

40-44

45-49

**Number of children** (write figures)

2. How many children have you born alive?

3. How many were boys?

4. How many were girls?

At times people die, its God's will.

1. How many children have since died?

2. How many boys have died?

3. How many girls have died?

9. When was your last live birth?

## Section 2

**Non-proximate determinants.**

**Socio-economic factors.**

**Education level.** (Tick where appropriate)

10. What is the school attendance status?

At school/learning institution

Left school/learning institution

Never went to school/learning institution

11. What is your highest level of education reached?

Non

Primary school

Secondary school

Tertiary college

12. What is the highest level of education completed?

Non	<input type="text"/>
Primary school	<input type="text"/>
Secondary school	<input type="text"/>
Tertiary level	<input type="text"/>

13. What is your spouse's/husbands level of education?

Non	<input type="text"/>
Primary school	<input type="text"/>
Secondary school	<input type="text"/>
Tertiary/college	<input type="text"/>

14. a) How many children? .....

b) How many of them are attending school?

Boys	<input type="text"/>
Girls	<input type="text"/>

c) How many are not?

Boys	<input type="text"/>
Girls	<input type="text"/>

For those not attending, give reason

They have finished school	<input type="text"/>
They are still below school attendance	<input type="text"/>
I have financial constrains	<input type="text"/>
Education is not important	<input type="text"/>

If they are attending school, who meets the costs?

Self	<input type="text"/>
Partner alone	<input type="text"/>
	<input type="text"/>

Both self and partner

Parents

Others (specify)

**Employment status** (tick were appropriate)

15. What is your employment status?

Employed

Self-employed

Not-employed

16. What is the importance of your job compared to childbearing?

High

Medium

Low

17. What is your level of income?

Less than K.sh 10,000

K.sh 10,000-20,000

K.sh 20,000-40,000

K.sh 40,000-Ksh 80,000

K.sh 80,000-Ksh 160,000

K.sh 160,000 above

18. Apart from your current employment if any, what are the other sources of income?

None

Business

Farm produce

(If other specify)

19. Who owns the residential building in which you live?

Father

Husband

Own

Relative

Rented

(If other specify)

**Socio-cultural factors.**

**Ethnicity**

20. What is your ethnicity?

Duruma

Kamba

Digo

(If other specify)

21. What is the nature of the home you were raised in?

One parent family

Two parent family

(If other specify)

**Religion**

22. What is your religion? (Tick where appropriate)

Traditional

Muslim

Protestant Christian

Catholic Christian

(If others specify)

23. How many times in a week do you visit your place of worship? .....

**Ideal number of children.**

24. If I may ask you, how many children would you like to have? (Tick where appropriate)

2

3

4

5

6 and above

25. Of the children you would like to have, how many boys and girls would you like to have?

Boys

Girls

26. Did you aim to have a specific no of children in the union?

Yes

No

27. What birth interval in between your children would you prefer?

(Months) .....

28. Why?  
.....

29. What has been the spacing for the children you have?  
(Months).....

30. Did you attend pre –natal care before giving birth to your children?

Yes   
No

If yes, where?

Private clinic   
Government   
Community clinic   
(If other specify

31. What is the importance of children in the community’s social status?

Pride   
Provide labor   
Financial support in old age   
(If other specify).....

**Environmental factors**

**Area of residence**

32. Your area of residence is rural or urban?

Rural   
Urban (to include town centers)

### Proximate Determinants

#### Knowledge of and use of contraceptives.

I would like to ask you about family planning.

33. Do you know of any method(s) of contraception?

Yes

No

If yes, which one (s) (tick the one(s) you know)

1. Female sterilisation
2. Male sterilization
3. Pills
4. IUD (s)
5. Injectables
6. Implants
7. Condoms
  - Male
  - Female
8. Lactational Amenorrhea method (LAM)
9. Rhythm Method (menstrual cycle)
10. Withdrawal

32. Which one(s) of these methods have you ever used? (Tick the one you have ever used)

1. Female sterilization
2. Male sterilization
3. Pills
4. IUD(s)
5. Injectables
6. Implants
7. Condoms
  - Male condom
  - Female condoms
8. Lactational amenorrhea method (LAM)
9. Rhythm Method (menstrual cycle)
10. Withdrawal

33. Are you currently using any of the methods of contraceptives?

No	<input type="checkbox"/>
Yes	<input type="checkbox"/>

If yes, which one(s) are you currently using?

1. Female sterilization
2. Male sterilization
3. Pills
4. IUD(s)
5. Injectables
6. Implants
7. Condoms male
8. Condoms female
9. Lactational amenorrhea method (LAM)
10. Rhythm Method
11. Withdrawal

34. Why the specific method(s) of contraceptive

.....  
...

35. At what age did you start using contraceptives?

Age.....

36. What was the source of the contraceptive method you use?

Govt. hospital	<input type="checkbox"/>
Private hospital	<input type="checkbox"/>
Pharmacy	<input type="checkbox"/>
Friend/relative	<input type="checkbox"/>

(If other specify).....

37. Where did you get the advice on how to use the method?

Govt. doctor	<input type="checkbox"/>
--------------	--------------------------

Nurse

Pharmacist

Friend/relative

(If other specify).....

38. In your own opinion, should women use family planning methods?  
.....  
....

39. How many times did you /do you breast feed in a day?

(No of times) .....

40. For how long did you breast feed after giving birth?

(In months) .....

41. For how long did you take before you started giving solid food to you children?

(In months)

42. Do you think your work affects breastfeeding?

Yes

No

If yes, why?

Work far from home

It is tedious and cumbersome

Lack of time

43. After birth how long did you take before having intercourse?

(months) .....

44. At what stage of the menstrual cycle does a woman have the greatest chance of becoming pregnant?

During period

After her period

At any time   
Immediately after period   
(If other specify).....

45. After giving birth as you breastfeeding, how long did it take to get periods?  
(In months) .....

46. After giving birth how long did you take to conceive again?  
(Duration in months).....

47. Does breast feeding influence birth interval?  
Yes   
No

**Women's sexuality.**

48. What is your marital status?  
Widowed   
Married   
Separated   
Divorced   
Cohabitant   
Not married and not living with partner

If married, at what age did you get married?  
(In years).....

49. What was the frequency of coitus per month at the start of your marriage?  
5 times   
6-10times   
11-15 times   
More than 15 times   
(If other specify).....

50. Has the frequency changed?  
Yes

No

If yes, when did it decline?

After first birth

After second birth

After third birth

After fourth birth

(If other specify).....

51. What is the present frequency of intercourse per month?

5 times

6-10times

11-15 times

More than 15 times

52. Do you talk about issues of sexuality with your partner?

Yes

No

If no, why?

Against the culture

Partner may think I know too much

Against my religion

(If other specify).....

53. How long did it take you to get pregnant after entering into a union?

(In months) .....

54. Was the pregnancy planned?

Yes

No

If no, why?

Was too young

Need more time to plan

Wanted to develop a career first

Was forced

(If other specify) .....

55. At what age did you get married?

(In years).....

56. Are you currently living with your partner?

Yes

No

If no, why?

Works far away

Currently separated

(If other specify) .....

57. Are you currently in a stable relationship?

Yes

No

To a more personal question but which is important for the study.

58. How old were you when you had sexual intercourse for the very first time?

(Write age in years).....

59. Where did it take place?

At home

In a lodge

At school

(If other specify).....

60. How often if I may ask did/do you have sexual intercourse after the first sexual intercourse? (Tick were appropriate)

Daily

Weekly

Monthly

Yearly

## **APPENDIX 3**

### **Focus Group Discussion Guide**

#### **Education**

1. Is education related to childbearing?
2. Can you compare the well-educated and less educated in terms of child bearing?

#### **Employment status**

1. Is employment key before giving birth?
2. Does employment affect child bearing?
3. How do you manage employment and childbearing?

#### **Religion**

1. What do your religions say about child bearing?
2. Are there any regulations on child bearing?
3. Does your religion allow contraceptive use?

#### **Ideal number of children**

1. Does your tribe allow you to speculate on the number of children you would wish to have?
2. Do you have an idea on the number of children you would wish to have?
3. Is there any reason for that specific number of children?
4. Of the number of children you wish to have, how many boys and girls would you wish to have?

#### **Contraceptive use**

1. Engaging in sexual relations may lead to pregnancy. How would you prevent yourselves from getting pregnant?
2. What are the most common methods of contraceptive used and why?
3. How do you access contraceptives within your community?
4. What challenges do you face in getting them?

#### **Post-partum insusceptibility**

1. After giving birth we are supposed to breastfeed. What is the importance of breast feeding?
2. On average how long do you normally breastfeed and why?

3. After giving birth, how long do you take before having sexual intercourse again with your spouse? Why?

**Women sexuality**

1. What is the average age at first sexual intercourse?
2. How do you know you are ready to get involved in sexual intercourse?
3. How often do you get engaged in sexual intercourse? Why?
4. For those who have more than one child, has the frequency changed? Why?