"THE EFFECT OF SEX COMPOSITION ON CONTRACEPTIVE USE"

BY:

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DECLARATION

This project is my original work and has not been presented before any other university for the award of a degree.

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This project has been submitted for examination with our approval as University supervisors

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DEDICATION

I dedicate this piece of work to my parents, sisters and brother. They were always there for me.

ABSTRACT

This study used the 1998 Kenya Demographic and Health Survey (KDHS) data to establish the effect of sex composition on contraceptive use. Specifically, the study sought to: Determine women's preferred sex composition of their children; Determine the association between sex composition of living children and contraceptive use; and make policy recommendations.

Results yielded by cross tabulations and the chi-square test ($\chi 2$) showed that there was a significant association between sex composition of living children and contraceptive use. Precisely, the χ^2 value = 126.635 at 20 degrees of freedom and α=0.01. This resulted to the rejection of the null hypothesis, H_0, stating, there is no significant association between sex composition of living children and contraceptive use. By implication, the alternative hypothesis, H_1, was accepted. That is, there is a significant association between sex composition of living children and contraceptive use.

Arnold's model was used to determine the existing sex preference and its effect on contraceptive use. The assumption of the model is that women who are most satisfied with the sex compositions of their living children will most likely use contraceptives. Overall, an existing preference by women to have a balanced number of boys and girls was reflected. Besides, there was a slight preference for sons over daughters. Results indicated that in absence of sex composition preference, contraceptive use would increase by approximately 6.1 percent.

Further analysis showed that regions were coupled with sex preference variations. Central, Coast, Western and Rift Valley provinces were characterized by sex preferences

of at least one child of each sex although the preference was slight in Central province. Apart from Central, the other three provinces had moderate preferences for boys over girls. Eastern province on the other hand was marked by a desire for a balanced number of boys and girls as well as a mild preference for boys over girls. As for Nyanza province, strong sex preferences of boys over girls were witnessed. In all the regions, absence of sex preferences would have seen an increase in the proportion of women who did not want more children by a range of between 7.7 – 22.4 percent.

Educational variations in sex preference and the effect on contraceptive use were also considered. Sex preferences witnessed among women who reported to have had no educational attainment as well as those with primary education were characterized by a preference for at least one child of each sex. Son preference was also visible though moderate. Contraceptive use in absence of the sex composition preferences would have risen by 8.1 and 8.4 percent for those with no education and primary education respectively. Among secondary and higher education holders, a preference for an equal number of girls and boys was observed in tandem with a slight son preference. Within this category, the highest contraceptors were those with a balanced or a near balance number of boys and girls. Although there were traces of son preference, the differences in one-sex compositions within a parity were not large. In absence of these preferences, contraceptive use would have risen by 4.7 percentage points.

Recommendations made were categorized into two: (i) Policy recommendations and (ii) recommendations for further research. For the former, educational campaigns should be

introduced to encourage couples to be satisfied with the sex composition of their children. Besides, women's education should be promoted since it helps them counter with social and cultural values that may discriminate against use of contraceptives.

On the other hand, recommendations for further research were: Replicating the study in an urban situation so as to determine the existing sex preferences and the effect on contraceptive use; carrying out a similar study among men to determine their sex preferences and the effect on contraceptive use; conducting a qualitative research to establish the causes of sex preferences and the reasons for the variations; and to test the significance of the differences between actual contraceptive use and use in absence of sex preference.

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LIST OF ACRONYMS

CBS – Central Bureau of Statistics

CHAK – Christian Health Association of Kenya

CPR – Contraceptive Prevalence Rate

FPAK – Family Planning Association of Kenya

FPPS – Family Planning Private Sector

ILO – International Labour Organization

IUD – Intra Uterine Devices

KDHS – Kenya Demographic and Health Survey

MI – Macro International

MYWO – Maendeleo Ya Wanawake Organization

NASSEP – National Sample Survey Evaluation Programme

NCPD – National Council for Population and Development

NGO – Non-Governmental Organization

TFR – Total Fertility Rate

USA – United States of America

USAID – U.S. Agency for International Development

CHAPTER ONE

BACKGROUND OF THE STUDY AND PROBLEM STATEMENT

1.1 Introduction

Chapter one gives a background of the study, highlighting the fertility trends in Kenya over the past years and the prime factors behind the observed trends. It also gives the problem statement, research questions, study objectives, study justification and the scope and limitation of the study.

1.2 Background of the study

Until the 1950s, population growth in most developing countries remained low. Although population records were incomplete, partial counts and limited censuses that were available revealed that the first half of the 20th century was marked by high fertility rates but the growth rate was kept low by high rates of mortality due to disease and war hence resulting to low growth rate. The rationale behind high fertility rates was to replace those dying.

Kenya, in particular, has experienced a phenomenal demographic transition over the last few decades. A time series analysis of census results has revealed that the population has been growing rapidly. A growth of the national population from 5.4 million in 1948 to 28.7 million in 1999 has been witnessed (CBS, 2001). The results also indicate the trend in growth rate from 2.5 per cent in 1948 to a peak of 3.8 per cent in 1979, decreasing to 2.9 per cent in 1999. While the increase in the national population size in the earlier decades was largely as a result of rising fertility levels and a decline in mortality levels due to improved health and socio-economic status,

the decline in the growth rate has been attributed to fertility decline. Total Fertility Rate (TFR) declined from 8.1 births per woman in 1979 to 4.7 in 1998. The drop has been observed throughout the country although differentials exist among women as a result of regional, residential and educational aspects among others.

An explanation of the fertility is complex because no single factor is responsible. The primary proximate determinant fueling this decline in fertility is the rapid increase in contraceptive use that has been documented in many countries (Robey et al., 1992; Weinberger, 1991; Boongaarts, 1986; Berelson, Mauldin, and Segal, 1980). This striking increase in contraceptive use and the associated fertility decline has been referred to as a 'reproductive revolution' that is spreading throughout the developing world. There is an established, near universal linear relationship between the level of contraceptive prevalence in a population and its current fertility (Ross and Frakenberg, 1993). Little dispute is found on this point, but considerable debate has risen about the causes of the increase in contraceptive prevalence.

Being a desire by individuals to space or limit births, contraceptive use is shaped by the surrounding social, economic, cultural, and policy environment. Determinants of contraception can be broadly classified as: "supply-side" and "demand-side" factors. The former refers to supply of contraceptives to individuals, as determined by the geographical accessibility of family planning services and the cost and quality of those services. The "demand-side" on the other hand encompasses all factors that affect the demand for contraception. First and foremost, among these factors is desire

to avoid pregnancy. Demand-side factors also include social, psychic and cultural variables that either encourage or discourage contraceptive use.

Kenya is renowned to have been the first country in Sub-Saharan Africa to adopt a national population policy in 1967. This was initiated through the realization of the government that the prevailing population growth had detrimental effects on the development process of the country and that there was a need to bring the growing population numbers under control. To meet their objective, they initiated a family planning programme. The family planning programme is managed within the Ministry of Health, under the Division of Primary Health Care. Within the private sector, the Family Planning Association of Kenya (FPAK), which was registered in 1962 as a non-governmental organization, is the lead service provider of contraceptives. Other major NGOs that provide family planning services are: Family Planning Private Sector (FPPS), Christian Health Association of Kenya (CHAK), and Maendeleo ya Wanawake Organization (MYWO). With both the private and public sectors committing themselves to provide family planning services, the National Council for Population and Development's (NCPD) was established, in 1982, to formulate population policies and strategies and to coordinate family planning activities.

The consequence of these family planning efforts has been a nearly universal level of knowledge of contraceptive methods. General awareness stands at 97-98 percent among men and women in the reproductive age (NCPD, CBS and MI, 1999). However, this has not been consequently translated into contraceptive practice and

contraceptive use in Kenya remains well below that observed in other developed countries. As revealed by the Demographic and Health Surveys conducted in 1989, 1993 and 1998, Kenya's contraceptive prevalence rate (CPR) increased from 27 percent to 33 percent and then 39 percent, respectively. Although it is among the highest in sub-Saharan Africa, considerable increases are still required if Kenya's fertility projections are to be realized.

Numerous studies have revealed that a number of socio-economic and demographic factors as educational attainment, socio-economic status, place of residence, region of residence, age, number of living children, and availability / accessibility of services are important in the use or non-use of contraceptives in sub-Saharan Africa (Kiragu and Zabin, 1995; Kyalo, 1996; Tuoane, 1999). In a comparative study done by Nair and Smith (1984) in three Asian and three American countries on reasons for non-use of contraceptives, among the socio-economic and demographic aspects considered, age of the women, number of living children, and ever use of family planning methods came out strongly as the main reasons for non-use. These background characteristics act on satisfaction levels of couples hence determining their fertility decisions.

1.3 Problem Statement

Number of living children that a couple has, has been identified as one of the most powerful discriminators of the main reason for non-use of contraceptives (Nair and Smith, 1984; Kiragu and Zabin, 1995; Kyalo, 1996; Tuoane, 1999). When considering number of living children as a factor that affects contraceptive use, the heterogeneity and specifically the sex composition of the children is often ignored.

This is an important aspect, which may influence contraceptive use, and especially where there are values and disvalues attached to a particular sex, implying a sex preference. These values and disvalues are often influenced by previous childbearing experiences.

In Kenya, various studies have attempted to determine existing sex composition preferences and varying results have been gathered. Results from the ILO/University of Nairobi survey conducted in 1970 revealed that a higher percentage of Kenyan wives had either a preference for a balanced number of girls and boys or no preference at all. Preference for a particular sex was minimal with very little preference for boys over girls. Dow (1967) also found that there was very little difference in desire for sons and daughters in Kenya. In a more recent study, Arnold (1992), using the 1989 Kenya Demographic and Health Survey data found a preference for a balanced number of sons and daughters in tandem with a preference for sons. A study by Machera (1997), which attempted to determine the social, economic and cultural barriers to family planning among rural women in Kenya showed that majority of women interviewed preferred sons. Studies in several other countries in the world have generally indicated preference for sons over daughters (Freedman and Coombs, 1974; Williamson, 1976; Cleland, Verrall, and Vaessen, 1981; Arnold and Kuo, 1984).

The argument has often been that the prevalence of sex preference is likely to blunt the success of family planning programmes and especially where there is a preference for a particular sex composition. According to this argument, couples that have an

abiding preference for a particular sex composition of sons and daughters will continue childbearing until they have achieved their desired sex composition. Thus, demand for contraception will be low and consequently fertility will rise above the level that would be observed in the absence of any sex preference. Conversely, researchers as Bulatao and Fawcett (1981); Freedman and Coombs (1974) have argued that the risk of acquiring a less desirable sex composition by a couple may be great enough to influence contraception. From these arguments, the effect of sex composition on contraceptive use, which implies sex preference, has not been established in the Kenyan context. Thus, this study focused on this issue with a view to establish the association and effect of sex composition on contraceptive behaviour. The study sought to answer the following questions:

(i) Which particular sex composition of children do women prefer to have?

(ii) What is the association between sex composition and contraceptive use?

(iii) What would happen to the level of contraceptive use in the absence of sex composition preferences?

1.4 Study Objectives

The broad objective of the study was to determine the effect of sex composition on contraceptive use. The specific objectives were:

i. To determine women's preferred sex composition of their children;

ii. To determine the association between sex composition and contraceptive use;

iii. To establish the level of contraception in the absence of sex composition preferences; and

iv. Give recommendations

1.5 Study Justification

In Kenya, previous studies on fertility have been keen on establishing fertility preferences because of its close linkage to fertility outcomes. Demographic Health Surveys, for example, have focused on couple's family size preferences by asking questions on both desire for more children and the ideal family size. Further, couples are asked questions on the sex composition of their ideal families. Analyses for sex composition preferences have been limited and where they have been done, they do not show the effect on fertility-related behaviour. For academic purposes, this study adds to the existing body of knowledge the nature of sex preference (implied by sex composition preferences) in Kenya and its effect on contraceptive behaviour using the 1998 Demographic and Health Survey data.

Although there are previous studies that have focused on the aspect of sex preference in Kenya, ILO/University of Nairobi survey (1970), Dow (1967), Arnold (1992) and Machera (1997), the findings were based on data sets different from those that have been used in this study as well as different variables. Apart from Arnold who used variables on sex composition of surviving children, the others used variables on total and additional number of children desired and supplementary questions on the desired number of boys and girls. The latter measure of sex preference, both at the individual and aggregate level, has been found to be inadequate and cumbersome because it is based on a simple first choice and that issues of desired size and desired sex composition are confusing. The family desire subject to some extent may be biased since it is based on a rational decision. It may, therefore, fail to provide a good

estimate for wanted fertility. This particular study focused on sex composition of surviving children to establish its effect on contraceptive behaviour.

Studies on sex preference have been mainly a focus in Asia, North Africa and some parts of Middle East, where sex preference is a major issue. These countries are characterized by patriarchal, patrilineal and patrilocal family systems hence an overwhelming preference for sons over daughters. Parents often expect long-term economic returns from sons. Closely linked to these economic returns are security in old age and insurance against risk. With Kenya having similar familial systems, a study on sex preference would be welcome.

1.6 Scope and Limitation of the Study

This study utilized data from the 1998 Kenya Demographic Health Survey (KDHS) with a focus on married women, age 15 – 49 years. Specifically, the study was limited to women in the 15 rural districts that were believed to have reliable estimates due to over sampling. These are: Bungoma, Kakamega, Kericho, Kilifi, Kisii, Machakos, Meru, Murang'a, Nakuru, Nandi, Nyeri, Siaya, South Nyanza, Taita Taveta, and Uasin Gishu. The choice of these districts was for purposes of minimizing sampling errors that could have occurred. In addition, since the traditional customs, attitudes and beliefs tend to be strongly held among rural populations, a study on sex preference was more meaningful in such populations.

Limitations of this study were several: First, it used an indirect method to make inferences on sex preferences. Secondly, the exclusion of women in the reproductive

age who were not married at the time of the study is a limitation. The assumption here is that childbearing is strictly limited to married women and does not occur among the unmarried, widowed and divorced/separated. In addition, women aged over 49 years were not included in the survey. Finally, the exclusion of some districts meant that the populations in these places had no chance of being interviewed yet they have an impact on the demographic profile of the country. However, the excluded population comprises four (4) percent, a proportion not too large to cause significant errors.

1.7 Organization of the report

The report begins by examining the existing literature on contraceptive use, sex preference and how it influences contraceptive use. In addition, a review of theoretical explanations as well as the models is included (Chapter Two). Next a description of the study methodology is given, precisely, the data gathering and processing techniques (Chapter Three). Chapter Four describes selected background characteristics of the study population, provides a comparison of contraceptive knowledge and behavior. Furthermore, the relationship between sex composition of living children and contraceptive use is revealed. The main study findings constitute Chapter Five, which presents existing sex preferences and the effect on contraceptive use. This analysis is also done by regional and educational variables. Finally, Chapter Six contains the summary, conclusions and recommendations.

CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

This chapter comprises a review of existing literature on contraceptive use and its determinants, fertility desires as well as the nature of existing sex preferences and their effect on contraceptive behaviour. Besides, it features theoretical explanations, an analytical framework, hypotheses and definitions of concepts.

2.2 Contraceptive Use

Over the last thirty years the world has experienced a contraceptive revolution (Donaldson and Tsui, 1990). Contraceptive use is one of the key factors that determine fertility, as seen earlier, the other three being involvement in sexual union, postpartum nonsusceptibility and induced abortion (Bongaarts, 1978). Of the four, contraception has the greatest effect on fertility in most developing countries (Donaldson and Tsui, 1990).

Due to the changes in contraceptive use over time, a number of studies have been commissioned in attempt to identify factors associated with the changes in demand for and use of contraception (Berelson et. Al., 1980; Pebley and Brackett, 1982; DaVanzo et. al., 1988; Kiragu and Zabin, 1995; Kyalo, 1996; Tuoane, 1999). To trace the trends in contraceptive use, several variables have been used, namely: social, economic and demographic. Specifically, the variables include: educational attainment, socio-economic status, place of residence, region of residence, age of the women, type of marital union, number of living children, religion and

availability/accessibility of contraceptive services (Nair and Smith, 1984; Wamucii, 1991; Kiragu and Zabin, 1995; Kyalo, 1996 and Tuoane, 1999).

Educational level of women is the single most consistent predictor of demographic behaviour in general and contraceptive behaviour in particular. A woman's education has a strong net positive effect on contraceptive use (Cochrane, 1979; John-Ascadi and Weinberger, 1980; Lesthaeghe et. al., 1983; Gomes, 1984 and Mason, 1985). Education is expected to increase receptivity to "new technologies" including awareness and use of contraception. Educated women may also desire fewer children than the less educated counterparts because of the incompatibility between formal-sector employment and child care (Oppong, 19983). It is also associated with lower rates of infant and child mortality (World Bank, 1994).

Women's employment in the skilled labour force is another determinant of contraceptive level. It is linked to fertility decline because of the competition between motherhood and participation in the labour force. This means that there is a conflict in the childrearing role and the participation in the labour force.

Contraceptive use is considerably higher in urban areas than rural areas. Analyses of the same by Lightbourne (1980) and Sathar and Chidambaram (1984) using the World Fertility Survey data revealed that modern contraceptive use remained essentially an urban and peri-urban phenomenon. Urban areas are often associated with higher education, better access to medical care and family planning and other

social services. Rural areas on the other hand are characterized by desire for large family sizes (CBS, 1980; NCPD and IRD, 1989).

Use of modern contraceptives varies markedly from one region of a country to another. Region of residence is a macro factor affecting contraceptive use in many less developed countries (Freedman et. al., 1981; Cleland, Casterline, Sighn, and Ashurst, 1984; Wamucii, 1991). A socio-economic hypothesis suggests that regions whose women have lower education, limited formal employment and limited access to health and family planning outlets are expected to have lower rates of contraceptive use. Greatest use of contraceptives is also observed in regions that are very urban. In Kenya, Nairobi and Central provinces the proportion of married women using modern contraceptives is at least ten (10) points higher than for the country as a whole (National Research Council, 1993). In addition, region of residence may be a proxy for ethnic and cultural boundaries that are related to acceptance of contraceptive methods (Van de Walle and Knodel, 1980).

The important mechanisms through which ethnicity may affect use of modern contraceptives are norms and customs affecting age at marriage, type of marital unions, postpartum abstinence, breastfeeding and resilience in the face of innovation (Clignet 1970; Murty and De Vos, 1984; Lesthaeghe, 1989). For example, ethnic groups whose cultural values promote or favour many children may view contraceptive use as socially or culturally unacceptable. In the Kenyan context, the expectation is that Nairobi, Central and Eastern provinces will have higher rates of contraception use than other regions because factors that favour contraceptive use

(less polygamy and better access to social and health services) have been more prevalent in these provinces than in the rest of the country (CBS, 1980).

Use of contraceptives generally increases then decreases with age. Among married women, contraceptive use is lowest among women aged 15-19, gradually increases, and then decreases again towards the end of the reproductive years (National Research Council, 1993). The peak somewhat varies from one region to the other.

An individual's religious affiliation is likely to affect his or her decision making on various issues. Religion is an important determinant of contraceptive practice. Certain religious groups like Catholics are opposed to the use of modern contraceptive methods and therefore advocate for natural methods. Besides, religious groups' position on ideal family sizes desires may also affect their contraceptive behavior.

There exists little dispute in the relationships discussed above, between contraceptive use and the variables. They have been reviewed over and over again in different situations and have been replicated in most cases. Childbearing experiences have also been considered as affecting contraceptive use and especially the number of living children. However, little attention has been paid to the effect of sex composition of living/earlier children on contraceptive use and where this has been done, there have been conflicting findings resulting to inconsistent conclusions. A basic assumption is that couples will contracept to realize their expressed desires, which are shaped by the economic, social, cultural and demographic environments.

2.3 The Desire for Children and Actual Family Size

Fertility outcome is closely related to fertility intentions. Several researchers have argued that fertility should be modeled as a progressive process (Namboodiri, 1972; Hout, 1978). They hypothesize that a couple's childbearing cannot be understood from a single-decision made early in marriage, but should instead be analyzed as a series of progressive decisions.

In single-decision perspective, a couple decides about the desired fertility as soon as they propose to marry and carry out that decision throughout regardless of circumstances. Initial decision is of primary interest. According to Easterlin (1978), demand for children is fixed at the start of childbearing and only the supply varies. A variant of this perspective would allow a couple's single decision to include planned reactions to various contingencies. Fertility intentions here are represented by demand for a total number of children.

On the other hand, in successive-decisions a couple does not make a commitment on the specific family size at the beginning of their marriage. Instead, decisions on each child are made one after the other. Desired family size is recalculated in each successive period. To such couples, demand for the next child is of prime interest.

Besides these two perspectives, there is an intermediate perspective that includes both extremes. A couple makes a rough decision on intended family size early in marriage but provides room for alterations in response to changing circumstances. The original

decision varies but may fairly provide rigid guidelines for couples' reactions to later events or may be very loose and easily overridden upon later consideration.

These distinctions are paralleled roughly in the distinction between measures of ideal family size and desire for another child. Ideal family size concerns preference for total number of children under certain "ideal" circumstances as, "if one could go back and start childbearing all over again." Desire for another child is derived from questions on whether one wants another child or about the number of additional children. These two measures are closely interrelated. Ryder and Westoff (1969) recognize that ideals should affect desires but it has been argued that even the reverse is possible (Kirk, 1972). Most likely, ideals and desires mutually reinforce each other.

Although couples have fertility intentions on both ideal family size and desire for another child, they are influenced by variables such as age and childbearing experience, socio-economic characteristics and values and disvalues attached to children (Bulatao and Fawcett, 1981; Namboodiri, 1983).

The sex composition of living children is one of the childbearing experiences that can have an effect on fertility intentions. Sex preference may lead to higher fertility among couples that have not achieved their desired number or balance of sons and daughters (Freedman and Coombs, 1974). Although son preference is more common than daughter preference, a preference for a balanced number of sons and daughters or a minimum number of each sex is more valued worldwide (Pullum, 1983). To McClelland (1979), the issue of the impact of sex preference on fertility decisions is

more complex than recognized. The base of this argument is that a couple must consider the probability of having sons or daughters and the cost they attach to having an additional child of the "wrong" sex. Thus in some circumstances, sex preference may result to fewer children than more children implying that contraceptive use rises.

Besides the costs and benefits of children, fertility intentions are also shaped by values and disvalues attached to children (Bulatao, 1981; Bulatao and Fawcett, 1983). Though some children may be more "useful" than others, what each child is "useful" for is either the parents' economic gain or the net psychological utility they enjoy. Parents anticipate different rewards from children, which could yield social, economic and emotional satisfaction. Values and disvalues are perceived satisfactions and costs of children. The effect of values and disvalues to fertility outcome is not very clear. For example, a couple may weigh the current costs against future gains and argue that old age security provided by children is worth a large amount of physical strain associated with childrearing. Similarly, childrearing responsibilities may be regarded as interfering with the mother's flexibility to do other things.

Values and disvalues vary across parities (Bulatao and Arnold, 1977; Fawcett, 1978; Hoffman, 1978; Callan, 1980; Townes et al., 1980; Bulatao, 1981b). However, studies have revealed that these do not show the relationship with fertility intentions and subsequent fertility.

2.4 Sex Preference and its Impact on Contraceptive Use

The question of existence of preferences about sex of children is important to demographers because of possible influence on the process of family formation and on completed family size.

The theme is gaining popularity in numerous analyses of family size preferences, given the prevailing societal norms, which dictate not only overall family size levels but also how families should be composed in terms of the sex of the children. Theoretically, parental preferences can take many possible forms with the more plausible ones being desire for at least one child of each sex, the desire for a minimum number of children of a particular sex (for instance, at least two sons) or for an approximately equal number of sons and daughters. The origins of such preferences are many and diversified and are particularly believed to have an economic rationale. Alternatively, the origins may be attributed to religious beliefs, systems of inheritance, lineage, bride-wealth or psychological needs.

Sex preferences in developing countries vary widely from the desire for a balanced-sex composition among Filipino women (Coombs, 1977; Stinner and Mader, 1975b) to very strong son preference in Korea (Park, 1978), Malaysia (Coombs and Fernandez, 1978) and a weak relationship in Thailand (Kamnuanslipa et al., 1982).

In Kenya, a myriad surveys on sex preferences have been conducted giving varying results. A study by Dow (1967) found that there was very little difference in desire for sons and daughters in Kenya. In another survey by ILO/University of Nairobi in

1970, results revealed that a higher percentage of Kenyan wives had either a preference for a balanced number of girls and boys or no preference at all. Preference for a particular sex was minimal with very little preference for boys over girls. Using data from demographic surveys for 27 countries, among them Kenya, Arnold (1987) concluded that, in most cases, the overall effects of sex preference on both attitudinal and behavioural measures of fertility and family planning are small. On average, contraceptive use would increase by 2.1 percentage points in absence of sex preference. Arnold (1992), in a study on Sex Preference and its Demographic and Health Implications using the 1989 Kenya Demographic and Health Survey data, also found a preference for a balanced number of sons and daughters in tandem with a preference for sons. He used sex composition of living children to determine the effect of sex preference on contraceptive use.

In a more recent study by Machera (1997) on social, economic and cultural barriers to family planning among rural women in Kenya, an overwhelming majority of women interviewed (94.4%) preferred to have a son. In the group discussions, some women disclosed that they did not practice family planning until they gave birth to a baby boy. In her study, she used a question on desired sex composition of the family to determine the existence of son preference and whether it acted as a barrier in family planning. The assumption is that since it is almost a cultural requirement that every couple gets a son for heirship in most African societies, it is likely to influence the use of family planning methods by most women.77 percent of the women who ever used contraceptives said that it is very important to have a son in the family and 59.6 percent of those who were using a method at the time of the study felt the same.

Reasons for sex preferences are varied and according to Molnos (1972), children in East Africa are socially, economically and culturally important to the family. To Anker (1982), the economic contribution of children to their parents is so important in fact it is frequently said to be a major reason for high fertility rates in developing countries. For example, from a very tender age, children make contributions in their families and when they become adults they support their ageing parents. Often, the roles played by men and women vary. According to Nagawa (2001), in every society the role of child bearing, rearing and ensuring continuity of both family and community falls upon women. On the other hand, the role of generating income, prospering and sustaining the family, community and developing the nation tends to fall on men. Where these roles have been strongly defined, parental attitudes and aspirations concerning the sex of their children may be triggered hence a preference for a particular sex of their children.

Son preference has been found to be more prevalent and is typically stronger among men than women. Evidence has shown that son preference is especially common in South Asia, East Asia, parts of Middle East and North Africa. Freedman (1963), Kirk (1966) and El-Hamamsy (1972) argued that preference for sons is because they are assumed to have greater net utilities in these societies than daughters for several sociological and economic reasons. There is little or no son preference in developed countries or Latin American countries where a preference for a balanced number of daughters and sons is more common.

There has been controversy on the effect of sex preference on fertility-related behavior. While some researchers have argued that sex preference has a negligible effect on fertility and related aspects, others contend that sex preference has kept fertility levels high and could be a hindrance to further declines. If there is a preference for a particular sex of children, within any parity, those who have attained the desired sex would be more likely to be currently using some method of family planning as compared to those who have not achieved the desired sex. Conversely, if the desire for a balanced sex composition affects fertility behaviour, then within a given parity, couples that have had either all sons or daughters would be less likely to use contraceptives as compared to those who have had both sexes.

Conflicting results have been observed in various studies on sex preferences and contraceptive behaviour and particularly in Asian countries. Repetto (1972) used data from sample surveys drawn from Bangladesh, India and Morocco, countries typified by strong son preference, and found a positive association between fertility (number of children ever born) and the proportion of sons in the family. To him, families that lack sons or that have a high proportion of daughters tend, other things being equal, to have fewer children. Families that have a high proportion of sons tend to have higher fertility on the other hand.

Studies in Bangladesh, India, Jordan, Nepal, and Pakistan found that the gender composition of surviving children did not systematically influence fertility behaviour (Cleland et al., 1983; De Tray, 1984; Mukherji, 1977). A weak non-significant positive association between the proportion of surviving sons in the family and

contraceptive use was observed in Bangladesh (Amin and Mariam, 1987; Bairagi and Langsten, 1986).

Excess fertility due to son preference was observed in Matlab, Bangladesh, but the impact was not substantial (Chowdhury and Bairagi, 1990). In Egypt, Gadalla et al., (1985) established that a strong prevalence for son preference existed among women from a study carried out in 38 rural villages. From the study, the willingness of women to use contraceptives was strongly influenced by the number of living sons. Most striking were the extremely low levels of use among women with large numbers of daughters but no sons.

In India, Das (1987) revealed that there was a strong negative effect of the number of sons on fertility. Similarly, Haughton and Haughton (1995) assessed the strength of son preference in Vietnam and found that it was strong but went hand in hand with a demand for relatively few children. Clearly, reproductive behaviour in Vietnam is consistent with families' desire to have one boy to maintain the lineage, but no special desire for many boys was apparent. Based on data from 27 countries throughout the world,

Although most studies conducted in Asian countries indicate a general preference for sons over daughters, several researchers have noted a co-existing preference for a daughter among couples with several sons. For example, Chowdhury and Bairagi (1990) found in Bangladesh among couples with three or four living children that, those with no living daughter were more likely to have an additional birth than those

who had a living daughter. Nag (1992) and Jerath and Malhi (1997) also noted a moderate preference for daughters in India.

Various hypotheses have been advanced to explain the relationships identified in these studies. Interpreting the positive relationships between sex preference and fertility, Repetto (1972) argued that if it is true that sons are a source of economic gain than daughters and impose less financial burden, families with sons perceive less pressure to limit their family size, other things equal, than those with a high proportion of daughters. Thus, the latter type of family may control fertility earlier than the former.

Similarly, several authors argued that there may be an offsetting effect, which is due to the inherent riskiness of fertility outcomes. According to McClelland (1979), Bulatao and Fawcett (1981), Freedman and Coombs (1974), some couples may avoid having more children in fear of having a child of the "wrong" sex. If that is the case, contraceptive use could potentially decline in absence of sex preference. De Tray (1984) put forward that the effect of strong preference for sons may not be observed for two reasons: First, parents may not necessarily translate their intentions to fertility behaviour, and second, appropriate means of fertility regulation may not be available in these societies. If fertility control is limited, commitment to translate fertility intentions to behaviour may be weak (Cain, 1985).

Although findings on sex preference and fertility regulation are not consistent across social settings, all interpretations of son preference as it influences fertility behaviour assume that couples regulate their fertility based on their gender preferences.

In Kenya, as seen earlier, existing sex preferences are surrounded by inconsistencies. To some researchers couples prefer a balanced number of sons and daughters, to others son preference is prevalent while others argue that there are no existing sex preferences. However, most of the findings indicate a preference for a balanced number of sons and daughters. This in itself is a sex preference, which could influence use of contraceptives, where the desired composition has not been achieved yet. In studies where the effect has been established, the actual effect in terms of magnitude has not been given. The purpose of this study was to provide a picture of the existing sex preferences considering the social, economic and cultural changes that have been taking place. Upon recognizing the existing sex preferences, the effect on contraceptive use was to be determined. The magnitude of the effect would be known and whether it is significant.

Despite the fact that contraceptive is affected by several factors, the study specifically focused on sex composition.

2.5 Theoretical Framework

Explanations of fertility and the variations have been occasioned by numerous controversies. Consequently, contraceptive behaviour as a proximate determinant of fertility has also been surrounded by these controversies. A basic assumption is that

fertility desires of couples are influenced by the economic, social, cultural and demographic environments and these determine their need to contracept.

One of the theories that has been used to explain human fertility is Easterlin's economic theory. This theory has, however, been controversial with opponents disputing economic explanations of fertility yet it is biological and sociological in nature. Proponents on the other hand have argued that fertility to some extent depends on parental preferences on children and the price of children.

In the framework, Easterlin (1975) postulated that supply of children (the number of children that parents would bear in absence of deliberate control), demand for children (the number of surviving children parents would like to have) and costs of fertility regulation (where "costs" are psychic, social and monetary) are the three proximate determinants of fertility. This was an improvement to the earlier works of Becker (1960) and Schultz (1973) who felt that fertility choices were determined by relative costs of children versus goods, a couple's income and their preferences for children versus competing forms of consumption.

He argued that if demand for children and the potential output falls short of demand, then there is no desire to limit fertility but if the potential output exceeds demand or 'excess supply' exists, then parents would be motivated to regulate their fertility (Easterlin, 1978).

Basically, this focuses on the benefits and costs of having children. Benefits in this case are viewed as contributions that children make (presently or future expectations), to the household work or for the happiness of parents. Offsetting these benefits are the costs of rearing them, which include: cost of food, clothing, shelter and time among others.

When considering costs and benefits, heterogeneity of children is very important. Child traits define parental preferences with one most common trait being sex of the child. Often, there are differential costs and benefits associated with boys and girls. Boy children are physically and culturally different from girl children for various reasons, as it has been established in many parts of the world. (Freedman and Coombs, 1974; Williamson, 1976; Coombs, 1977). For example in many societies, boy children contribute more to the family than the girl children and are relied more in old-age by parents. Boys may also eat more than girls and their education may consume more resources than the education of girl children. It is clear that whatever the costs accrued and benefits realized from boys and girls, they determine, to a large extent, the demand for children by parents.

Theoretical views have also been put forward by Ben-Porath and Welch (1976). If a preference for one sex over another is based on considerations of differential net price or cost rather than on tastes, couples burdened with children of more 'expensive' disfavoured sex are less able to afford extra children than those with children of the 'cheaper' gender.

It is also crucial to consider the Demographic Transition Theory in the adoption of family planning methods. According to the theory, social and economic development can lessen the dependence of local and familial systems, which have a great influence on fertility. Considering that Kenya is undergoing the transition, individual responses to social and economic progress have began to be felt and as such the concept of supply and demand should be viewed in this light.

2.6 Analytical Model

The purpose of this is to present a simple model on contraceptive behaviour based on sex and risk preferences. The assumption in this model is that households make sequential fertility decisions depending on the number and sex composition of living children. The model is based on McClelland (1983) decision-making model for sex preferences molded from the sex preference model of Coombs, Coombs and McClelland (1975) and the decision-making model of McClelland (1979).

If a couple has a current family composition (B, G), there are two fertility-related decisions to make. They can either stay with their current composition by deciding to have no more children or they can change their current composition by having another child. The first alternative can be achieved by contraception.

To find out the condition under which a couple would want another child, let us assume a value function v so that v(B, G) represents the value of the composition (B, G) to the couple. If they desire another child, the outcome of the composition will be either (B+1, G) if they have a boy or (B, G+1) if they have a girl. To know whether a

couple desires another child, a comparison is made on the value of the two outcomes against the value of the status quo (B, G). If $v(B+1, G)$ and $v(B, G+1)$ are both greater than $v(B, G)$, then the couple is most likely to have another child, implying no contraception, because they would be happier with a new family composition irrespective of the sex of the child. On the other hand, if $v(B+1, G)$ and $v(B, G+1)$ are both less than $v(B, G)$, then the couple is most likely not to have another child, because no matter what the sex of the next child they would be happier with the status quo.

Of interest now is the decision to be made when one, but not both, of the two values of having another child is greater than the value of the status quo family composition. That is, if: $v(B+1, G) > v(B, G) > v(B, G+1)$ or

$v(B, G+1) > v(B, G) > v(B+1, G)$

then a couple is confronted with a risky decision. "Risky" means "risky in relation to sex preferences." If they decide not to have another child, they are giving up the possibility of getting a wanted composition for fear of getting a composition that they do not want. Conversely, if they decide to have another child, then they are taking a gamble, that depending on the sex of the child they may win or lose. How then does a couple decide to accept the risk? A reasonable risk is to base the decision on the expected value (EV) of the gamble, which simply is the average of $v(B+1, G)$ and $v(B, G+1)$ because the probabilities of having a boy or a girl are approximately equal. That is,

$EV=[v(B+1, G) + v(B, G+1)]/2$

If the (EV) is greater than $\nu(B, G)$, the couple will be likely to take the risk (assuming they want to maximize EV) otherwise they will not take the risk. Thus the decision rule is:

If EV(have another child) > $\nu(B, G)$, then have a child;

If EV(have another child) < $\nu(B, G)$, then stop having children.

Relating this to contraceptive use, a couple will contracept if the EV is less than $\nu(B, G)$ and fail to use contraceptives if EV is greater than $\nu(B, G)$. Formally, this decision rule is:

$C_0 = [(EV < \nu(B, G)]$ and

$C_1 = [EV > \nu(B, G)]$,

Where: C_0 refers to contraceptive use and

C_1 refers to contraceptive non-use.

2.7 Conceptual Hypothesis

Contraceptive behaviour of couples is influenced by socioeconomic, cultural and demographic.

2.8 Operational Hypotheses

(i) Contraceptive use is influenced by the sex composition of living children

(ii) Educational attainment influences contraceptive use

(iii) Region of residence has an influence on contraceptive use

(iv) Ethnic background has an influence on contraceptive use

(v) Religious affiliation influences contraceptive use

(vi) Age of the women has an influence on contraceptive use

2.9 Definition of Key Concepts

Sex composition of living children is the number of surviving boys and girls that a couple has.

Sex composition preferences / Sex preference is the number of surviving boys and girls that a couple desire. This can be either children of the same sex or a combination of the two sexes.

Contraceptive use is the use of any of the birth control methods by married women at the time of the survey.

Educational attainment is the literacy level of women by various categories.

Region of residence refers to the province where the respondent was at the time of the survey. For this study, the regions were Central, Coast, Eastern, Nyanza, Rift Valley and Western.

Age is a demographic aspect, which refers to the number of complete years that a respondent has lived. It may be grouped into five-year age groups.

Ethnicity refers to the tribal classifications in this case listed as: Kalenjin, kamba, Kikuyu, Luo, Meru/Embu, Kisii, Luhya, Maasai, Mijikenda/Swahili, Taita/Taveta and others.

This chapter has given insights on previous studies on sex preferences and the effect on contraceptive use, with a focus of both Kenya and the rest of the world and particularly developing countries. It conceptualizes the sex preference component and relates it to contraceptive behaviour and other fertility-related aspects. It section paves way for chapter three which is a description of the study methodology.

CHAPTER THREE

DATA AND STUDY METHODOLOGY

3.1 Introduction

Chapter three basically describes the study methodology, which entails the data gathering and analysis processes. Specifically it defines: data source, sample design, study population, data collection technique, quality of data and data analysis.

3.2 Data Source

Data for this study will come from the 1998 KDHS. This was a nationally representative survey that covered 7,881 women in the age bracket 15 – 49 years and 3047 men in the age bracket 15 – 54 years. The survey was conducted by the National Council for Population and Development (NCPD) in collaboration with the Central Bureau of Statistics (CBS). Macro International Inc. (USA) provided technical and financial assistance through U.S. Agency for International Development.

3.3 Sample Design

The 1998 Kenya Demographic and Health Survey (KDHS) covered the entire country except Samburu and Turkana districts in the Rift Valley province, Isiolo and Marsabit in Eastern province and all districts in North Eastern province. Reasons for their exclusion were inaccessibility in relation to physical location, religion, culture and insecurity. However, these account for less than 4 percent of Kenya's population.

The sampling technique used was a two-stage stratified approach. The first stage involved a selection of sample points (clusters). Sample points were selected from a

national master sample called NASSEP-3. This sampling frame included all districts and was the same as the one used in the 1993 KDHS. The second was selection of households within the sampled clusters. This was done using the list compiled during the household listing exercise prior to the survey.

3.4 Study Population

The population under study comprises 3,064 married women in the age bracket, 15-49 in the 15 rural districts that were over sampled. The choice of this sample is for the purpose of getting reliable estimates.

3.5 Data Collection Technique

The 1998 KDHS utilized survey questionnaires for data collection. These questionnaires were of three types: the Household Questionnaire, the Women's Questionnaire, and the Men's Questionnaire. NCPD recruited approximately 120 interviewers to collect data. Intense training was done for enumerators and supervisors on the entire process of interviewing, supervising, field editing and returning of completed questionnaires.

3.6 Quality of Data

Both non-sampling and sampling errors are found to exist in any sample data sets. The 1998 KDHS is no exception and such errors were experienced in sampling clusters and households. Non-sampling errors arose from at the stage of observation, ascertainment and the processing of data. These errors could be as a result of faulty

planning or deficiencies and response errors. However, avoiding these errors completely is difficult and evaluating them statistically is not easy.

Sampling errors on the other hand resulted from taking only a sample of the population. They can be evaluated statistically. The sample selected is one of a thousand samples that can be selected. If different samples are selected repeatedly applying the same sampling technique and same population size, the differences in the parameters would be small and would reveal the errors. The way to avoid these types of errors is by complete enumeration. This though is an expensive exercise and extremely time consuming.

Overall, the data was of high quality considering the efforts made to ensure this. First, the sampling technique used ensured high quality data with minimal sampling errors. It guaranteed a sample that was unbiased hence one representative of the population. Second, the rigorous training provided to the fieldwork staff implies high quality data. Numerous checks were also undertaken to ensure maximum success. Data clerks also went through an induction for the data coding and entry exercises. Third, the response rates depict success hence reliable data. Apart from Nairobi, which recorded relatively lower rates than other provinces, responses can be generally termed to be good. At the household level, Nairobi recorded a response rate of 88 percent compared to 95-99 percent in the other provinces. At individual woman level, Nairobi once more had the lowest rate of 92 percent with central province; and other provinces had rates ranging from 93-98 percent. The low rates of response in Nairobi

resulted from the urban nature of the district. This meant that eligible persons were available for interviews.

3.7 Data Analysis

(i) Frequencies

Initial analyses were based on frequencies. The purpose was to provide the background characteristics of the study population by selected variables. The analysis also gave a view of the study population's fertility behaviour and intentions.

(ii) Cross Tabulations and Chi-square test

Cross-tabulations are contingency tables in which observed frequencies occupy rows and columns. In this study the table was expected to yield percentages of women using contraceptives by parity and sex composition of their living children. These frequencies occupied cells of the contingency table. A comparison between contraceptive knowledge and behaviour was also done.

The purpose of the chi-square (χ^2) is to measure the discrepancy between the observed frequencies (contraceptive use by sex composition of living children) and theoretical (expected) frequencies, under certain assumptions based on the proportions. The measure is:

$$\chi^2 = \frac{\Sigma(O_i - E_i)^2}{E_i}$$

Where; symbols O_i and E_i represent observed and expected frequencies respectively.

To test the association, expected frequencies are computed on the basis of a null hypothesis, H_0. An alternative hypothesis, H_1, counters the null.

H_0: There is no significant association between contraceptive use and sex composition of living children.

H_1: There is a significant association between contraceptive use and sex composition of living children.

The result of the hypothesis test is that the null hypothesis is either rejected or not. If the computed value of χ^2 is greater than some critical value (such as $\chi^2_{.095}$ or $\chi^2_{.099}$, which are the critical values at the 0.05 and 0.01 respectively), the conclusion will be that observed frequencies differ significantly from expected frequencies and hence reject H_0 at the corresponding level of significance. Otherwise, it is not rejected.

In addition, cross-tabulations were used to present contraceptive use levels, both actual and in absence of sex preference. Inferences on preferred sex composition were then made in relation to the contraceptive use. Given the limited time to work on the study, the sex preferences were computed for the overall sample, by region and educational attainment differentials only. The choice of these two variables was because they are less controversial in their relationship with fertility and other related aspects.

(iii) Arnold's Model

Sex preference was analyzed by examining the current use of contraception by sex and number of living children. The application of Arnold's (1985) model was to determine the extent to which overall contraceptive use rate would vary in the absence of sex preference. An overall analysis of sex preference and its effect on contraceptive use was done as well as the regional and educational variations of the

same. This technique assumes that in the complete absence of sex preferences, at any parity, all the couples would behave in a similar manner as those who are most satisfied with their existing sex composition, that is, at the maximum rate within that parity. This means that the sex of the children would no longer be important. In general, the measure is defined as:

$$\Sigma C^*_i P_i / \Sigma P_i.$$

Where; C^*_i equals the maximum rate of contraceptive use at each parity i, and P_i equals the number of women at each parity.

The difference between the observed rate of contraceptive prevalence and the expected rate is the overall impact of sex preference on contraceptive use. The greater the difference between these two rates, the greater the impact of sex preference on contraceptive use.

The measure has the following advantages:

i. The measure is fairly flexible and can handle any type of sex preference (boy preference, girl preference, balance preference or desire for at least one child of each sex). Besides, it does not assume a linear relationship between sex preference and fertility unlike other measures that have been used, which do not quantify the effect but rather assumes a linear relationship between the two variables.

ii. The method can be used with a number of behavioural and attitudinal measures related to fertility and family planning. In addition to contraceptive measures, it can be applied with parity progression, percentage of individuals

who do not want more children, the number of additional children wanted, and expected completed family size.

iii. The method takes into account the number of women at each parity and sex composition of children and, hence it, contains implicit weights that are used in thee calculations.

iv. The data needed to calculate this measure are readily available because data is required on only the number of living children by sex plus any fertility-related dependent variable.

However, the model also has several limitations:

i. Few demographic surveys include male respondents and reliance on female respondents for attitudinal data may bias the results because a preference for boys is usually stronger among men than women (Williamson, 1978). But, since actual fertility and contraceptive use are characteristics shared by both husband and wife, results of the study will not be affected because of using behavioural data on fertility and family planning rather than attitudinal data.

ii. It is relevant in cases where sex preference is homogenous. For example, where a preference for sons is widespread. When sex preferences are heterogeneous, individual differences in the sex preferences may cancel each other out when data are aggregated (McClelland, 1979). That effect may artificially depress differences in family planning among couples at the same parity with different numbers of daughters and sons.

iii. The necessary input data are not always available in the most desirable form. All combinations of the sex composition of living children in the family may

not be included or they may not show the number of respondents in each cell. In the study, all combinations were accounted for although some were grouped. In this case, the combinations of five or more children were grouped together. Although one cannot make conclusions on specific combinations an overall conclusion can still be made.

iv. This measure covers all parities and sex combinations of children, the number of cases in certain cells may be quite small, particularly if the overall sample size is not large. This was remedied by combining adjacent cells with a small number of cases.

The methodology gave an understanding of how the objectives were achieved. The sequence of meeting the study objectives was well outlined in terms of data gathering and analysis procedures. Ultimately, the findings are contained in the chapters, four and five, that follow.

CHAPTER FOUR

RESPONDENTS' CHARACTERICTICS, CONTRACEPTIVE KNOWLEDGE AND BEHAVIOUR AND THE RELATIONSHIP BETWEEN SEX COMPOSITION AND CONTRACEPTIVE USE

4.1 Introduction

This chapter presents the preliminary analyses yielding frequencies for selected background characteristics of the study population, its contraceptive knowledge and behaviour. Results of the cross-tabulations and the chi-square test are also discussed

4.2 Background characteristics of the Study Population

The study is based on 3,064 married women from the fifteen (15) rural districts that were over sampled. The women under study had varying characteristics Specifically, respondents current region of residence, educational attainment, religion, ethnicity and occupational aspects were considered. The importance of these differences is that they often influence individuals' lives and the decisions they make concerning their lives. Table 4.1 below gives a summary of the background characteristics of the respondents by selected variables.

Table 4.1 Percentage distribution of the study population by selected characteristics

Variable	Number of Cases (N)	Valid %
Region		
Rift Valley	847	27.6
Nyanza	581	19.0
Western	483	15.8
Eastern	456	14.9
Coast	383	12.5
Central	314	10.2
Total	**3064**	**100.0**
Educational Attainment		
Primary	1895	61.8
Secondary	628	20.5
No education	502	16.4
Higher	39	1.3
Total	**3064**	**100.0**
Age of Respondents in 5-year Age Groups		
15-19	161	5.3
20-24	564	18.4
25-29	638	20.8
30-34	495	16.2
35-39	543	17.7
40-44	371	12.1
45-49	292	9.5
Total	**3064**	**100.0**
Ethnicity		
Kalenjin	609	19.9
Luhya	528	17.3
Kikuyu	436	14.2
Luo	410	13.4
Kamba	278	9.1
Mijikenda/Swahili	233	7.6
Kisii	201	6.6
Meru/Embu	197	6.4
Taita/Taveta	127	4.2
Other	34	1.1
Masai	7	0.2
Total	**3060**	**100.0**

Table 4.1 continued

Variable	Number of Cases (N)	Valid %
Religion		
Protestant/Other Christian	2063	67.4
Catholic	786	25.7
No Religion	124	4.1
Muslim	77	2.5
Other Religion	9	0.3
Total	**3059**	**100.0**
Respondents' Occupation		
Not working	1253	41.0
Agric-self employed	1115	36.4
Sales	423	13.8
Professional/Technical/Managerial	119	3.9
Skilled manual	72	2.4
Household and domestic	27	0.9
Unskilled manual	25	0.8
Clerical	20	0.7
Services	5	0.2
Total	**3059**	**100.0**
Children ever born		
0	130	4.2
1	366	11.9
2	446	14.6
3	381	12.4
4	379	12.4
5	311	10.2
6	335	10.9
7	214	7.0
8	177	5.8
9	156	5.1
10	102	3.3
11	33	1.1
12	24	0.8
13	6	0.2
14	2	0.1
15	2	0.1
Total	**3064**	**100.0**

Table 4.1 continued

Variable	Number of Cases (N)	Valid %
Grouped children ever born		
One or more Children Ever Born	2934	95.8
No Children Ever Born	130	4.2
Total	**3064**	**100.0**
Fertility Desires		
No more children	1509	49.3
Have another child	1145	37.4
Sterilized	185	6.0
Undecided	141	4.6
Declared infecund	81	2.6
Total	**3061**	**100.0**
Preferred Waiting Time		
<12 months	254	22.2
1 year	102	8.9
2 years	201	17.6
3 years	220	19.2
4 years	115	10.0
5 years	175	15.3
6+ years	49	4.3
Non-numeric	6	0.5
Don't Know	23	2.0
Total	**1145**	**100.0**
Ideal Number of Children		
0	5	0.2
1	30	1.0
2	352	11.5
3	452	14.8
4	1135	37.1
5	340	11.1
6	356	11.6
7	44	1.4
8	66	2.2
9	10	0.3
10	56	1.8
12	11	0.4
13	2	0.1
15	3	0.1
20	2	0.1
Non-numeric response	198	6.5
Total	**3062**	**100.0**

Table 4.1 continued

Variable	Number of Cases (N)	Valid %
Grouped Ideal Number of Children		
Ideal 0	5	0.2
Ideal is 1-3	834	27.2
Ideal is 4-6	1831	59.8
Ideal is 7+	194	6.3
Non-numeric Responses	198	6.5
Total	**3062**	**100.0**

Source: Computed from 1998 KDHS Data

4.2.1 Region of Residence

From the study, the largest proportion of the respondents, 27.6 percent, hailed from the Rift Valley province while Central province had the least representation of 10.2 percent. Nyanza, Western, Eastern and Coast accounted for 19.0, 15.8, 14.9 and 12.5 percent respectively. The reason for Rift Valley province having the largest population is because the province is the largest geographically, and holds the largest population among all other provinces in Kenya. The sampling frame used was based on the 1989 population census, hence the variations in regional proportions.

4.2.2 Educational Attainment and Literacy Levels

The revelation of the study was that a substantial number of the respondents, 61.8 percent, had only attained primary education. Considering that the study was limited to the rural population and specifically women, it was not a wonder for such a high proportion to have attained the highest level of primary. Those who had attained secondary education comprised 20.5 percent of the respondents while those who had no education at all constituted 16.4 percent. Only 1.3 percent of the respondents had attained higher education.

A general picture of the literacy levels of the respondents was that slightly more than half could read easily, 54.0 percent. The remaining proportion could either read with difficulty (23.2 percent) or not read at all (22.8 percent). The proportion of those who could read easily can be explained by the large proportion of those who claimed that they had been to school, that is over 80 percent of the respondents.

Having drawn the sample from a rural population, the low proportions of those who read a newspaper once a week are explainable. Only 26.5 percent said that they read a newspaper once a week while the rest did not, 73.5 percent. Perhaps inaccessibility of newspapers could explain the low rates as well the relatively low socio-economic status of the people, which renders the purchase of a newspaper a rare event. Another factor that could explain the low rate is the educational attainment of the respondents.

Similarly, only a small proportion said they watch television every week. Precisely, only 14.4 percent of the respondents affirmed. The rest, 85.6 percent, said they did not watch television every week. Considering that an overwhelming majority, 96.9 percent, of the respondents said that they had no electricity, the expectation would be that few watch television. In addition, only 7.4 percent of the respondents said that they owned television sets. According to the study, 66.4 percent of the respondents alleged they owned radios. This explains the 58.7 percent figure of the women who said they listened to radio everyday against 41.3 percent who did not listen to radio everyday.

4.2.3 Age of the Respondents

Approximately, 85 percent of the respondents fell in the age bracket 20 – 44 with the largest proportion of respondents, 20.8 percent, being in the age group 25-29. Age groups 45-49 and 15-19 accounted for less than 10 percent each with 9.5 percent and 5.3 percent respectively. The low proportion of women in the age group 15-19 was due to the focus of married women only.

4.2.4 Ethnicity

Having covered seven of the provinces in Kenya, most of the ethnic groups were represented. Kalenjins had the largest representation of 19.9 percent. The reason for there numbers is because Rift Valley province had the most respondents, and Kalenjins are the main inhabitants of the region. Luhya, Kikuyu and Luo ethnic communities had 17.3 percent, 14.2 percent and 13.4 percent representation respectively. Kamba, Mijikenda/Swahili, Kisii, Meru/Embu, Taita/Taveta and "others" (other ethnic groups identified with) ethnic groups made up les than 10 percent each. The Maasai ethnic group had less than 1 percent respondents represented.

4.2.5 Religion

Majority of the respondents, 67.4 percent, reported they were Protestants or belonged to other Christian denominations. Whereas Catholics accounted for 25.7 percent, 4.1 percent were not affiliated to any religion. Muslims comprised 2.5 percent and only 0.3 percent of the respondents belonged to other religions (other religious affiliations not listed).

4.2.6 Occupation

40.9 percent of the respondents reported they were not engaged in any work. Another 36.4 percent said they were self-employed in the agricultural sector. Considering that the study's center of attention was rural areas, which are predominantly agricultural and have limited employment opportunities, the findings that over 70 percent are not working and in the agricultural self-employed sector are valid. Those who reported they were involved in sales, professional, technical and managerial positions and skilled manual were 13.8 percent, 3.9 percent and 2.4 percent respectively. Other listed occupations as household and domestic, unskilled manual, clerical and services accounted for less than one (1) percent each. It is evident that office-related occupations and those requiring professional skills were not common among the respondents.

4.2.7 Fertility Outcome

Use of the "married" marital status as a selection criterion for the sample as well as the focus of women in the reproductive age gave the expectation that majority of respondents had at least one child. As Bongaarts articulated:

> ...Socially sanctioned childbearing, however, is in virtually all societies limited to women in relatively stable unions (marriage). Marriage may in practice be taken as a starting point of the actual reproductive years, since it takes place, with few exceptions, after menarche. As a consequence, any changes in age at menarche can generally affect fertility only by influencing age at marriage. Once married, a woman may be considered at risk of childbearing until the onset of sterility or menopause, unless a marital disruption intervenes...

An overwhelming majority (95.8 percent) of the respondents had one or more children ever born against 4.2 percent with no children ever born. Most of them had

two (2) children ever born with a mean of 4.44 children. The range of children ever born was fifteen (15).

4.2.8 Fertility Desires

Measurement of reproductive preferences and the assessment of their implications is continuous. Controversy surrounds the validity and reliability of responses to survey questions about ideal family size and desire to continue childbearing but their usefulness lies in specifying fertility norms and intentions. Fertility outcome is subject to fertility preferences.

Couples' fertility intentions and desires are often influenced by personal and familial changes that may occur during the reproductive age. These influences could be age and childbearing experiences, socio-economic characteristics, the values and disvalues of children among others (Bulatao and Fawcett, 1983). The study shows that 49.3 percent of the respondents did not want any more children. This contradicts the earlier presented figures of contraceptive use at the time of the study (34.9 percent). It is a clear indication that there is an unmet need among the women. On the other hand, 37.4 percent of the respondents said they wanted to have another child. Another 6.0 percent alleged they were sterile while 4.6 percent were undecided. This left out 2.6 percent who declared they were infecund.

Although 37.4 percent indicated they wanted to have another child, the waiting time varied among them with the majority of those desiring another child, 22.2 percent, reporting a preferred waiting time of less than twelve (12) months. Those who

preferred a waiting time of two years, three years, four years and five years were 17.6, 19.2, 10.0 and 15.3 percent respectively. 8.9 percent preferred a one-year waiting time as 4.3 percent preferred a waiting time of six or more years. 2.0 percent did not know when they wanted to have another child while less than 1 percent gave a non-numeric response like "It depends on God" or " As many as I can have".

4.2.9 Ideal Family Size

An ideal family size refers to a model family size or the number of children one would like at the end of her whole life irrespective of the children she already has. Upon being asked about their ideal family sizes, majority (59.9 percent) of the respondents declared an ideal family size of four to six (4-6) children with the modal number being four (4) children. 27.2 percent's ideal size was one to three (1-3) children whereas those that gave non-numeric responses and those with an ideal family size of seven (7) or more were 6.5 and 6.3 percent respectively. Surprisingly, only five (5) respondents, constituting 0.2 percent, expressed their ideal family size as zero (0).

According to Bulatao and Fawcett (1983), ideals are often influenced by desires and especially in the early stages of childbearing when ideals are presumably more fluid. Desires are also affected by ideals, particularly when the individual considers whether to go beyond a particular number of children. Ultimately, the two measures reshape the fertility outcome.

4.3 Contraceptive Knowledge and Behaviour

4.3.1 Contraceptive Knowledge

As earlier seen, knowledge of contraceptive methods is nearly universal in Kenya. Even with a representative sample, replication of this finding is expected. Of the 3,064 respondents comprising the sample, 98.4 percent were aware of at least one modern method of contraceptives (Pill, Intra Uterine Devices (IUD), Injections, Diaphragm/Foam/Jelly, Condom, Female sterilization, Male sterilization and Norplant/Implants). Only 1.4 percent of the respondents did not know any method, whether folkloric ("other" methods or a country-specific methods), traditional (Periodic Abstinence or Rhythm, Withdrawal and abstinence) or modern. Those who had knowledge of either a folkloric method only or a traditional method only were only four (4), constituting approximately 0.1 percent.

4.3.2 Contraceptive Knowledge and Ever Use of Contraceptives

Knowledge of contraceptives should be in line with use but this is not often the case. It is interesting to find out that of the 98.4 percent who had knowledge of at least one modern method, only 49.2 percent professed to have ever used a modern method against 41.2 percent who reported they had never used a method. Another 8.7 percent claimed they had ever used a traditional method while only a negligible percent (0.9) of those who knew at least one modern method had ever used a folkloric method.

Ever use of a contraceptive method refers to the percentage of women ever in union who at some point in life have used a contraceptive method. Overall, 58.0 percent had ever used a method, whether modern, traditional or folkloric, against 42.0 percent

who had never used any contraceptive method. It is certain that those women who had no knowledge of any method would not have ever used a method. Similarly, all those who knew only a folkloric method had never used any method of contraceptives. 33.3 percent of those who knew only a traditional method had never used any method.

The breakdown of contraceptive knowledge against ever use reflects the discrepancies in contraceptive knowledge and ever use. Usually, different persons have different reasons for use or non-use of a method. Reasons vary and range from health to social to economic related. Table 4.3 below gives a summary of the comparison between contraceptive knowledge and ever use.

Table 4.2 A summary of contraceptive knowledge versus ever use of contraceptives by method

	Knows no method	Knows only folkloric	Knows only traditional	Knows only modern	Total
Never used	44 (100%)	1 (100%)	1 (33.3%)	1242 (41.2%)	**1288 (42.0%)**
Used only folkloric	0 (0%)	0 (0%)	0 (0%)	26 (0.9%)	**26 (0.8%)**
Used only traditional	0 (0%)	0 (0%)	2 (66.7%)	263 (8.7%)	**265 (8.6%)**
Used only modern	0 (0%)	0 (0%)	0 (0%)	1485 (49.2%)	**1485 (48.6%)**
Total	**44 (100%)**	**1 (100%)**	**3 (100%)**	**3016 (100%)**	**3064 (100%)**

Source: Computed from 1998 KDHS Data

4.3.3 Contraceptive Knowledge and Current Use of Contraceptives

Knowledge of contraceptives does not ultimately translate to contraceptive use. This has been revealed in the literature. The study revealed that of the 3,064 respondents, only 34.9 percent were using a method (modern, traditional or folkloric) at the time of

the study. 65.1 percent were not using any method at all. 28.7 percent of the total were using a modern method while 5.6 percent were using a traditional method of contraception. A negligible proportion of 0.6 percent said they were using a folkloric method of contraception at the time of the study.

Comparing this with contraceptive knowledge, it is clear that there are discrepancies. As expected, all the women who reported that they did not know any method were not using any method of contraception. Only one respondent had knowledge of a folkloric method only and she was not practicing contraception at the time of the survey. 66.7 percent of those who had knowledge of only a traditional method were not contracepting at the time of the survey meaning only 33.3 percent were using contraceptives. On the other hand, of the 98.4 percent who had knowledge of a modern method, more than half of the respondents (64.6 percent) were not using any modern method of contraception. This was against 29.2 percent who were using. Still, 5.6 percent and 0.6 percent of those who knew a modern method of contraceptives were using a traditional method and a folkloric method respectively.

Table 4.3 below summarizes contraceptive knowledge by method versus contraceptive use by method, at the time of the survey. There is a clear indication that the disparity between contraceptive knowledge and current use is great. This comparison is important in highlighting acceptance of contraceptives.

Table 4.3 A summary of contraceptive knowledge versus current use of contraceptives by method

	Knows no method	Knows only folkloric	Knows only traditional	Knows only modern	Total
Not using	44 (100%)	1 (100%)	2 (66.7%)	1947 (64.6%)	**1994 (65.1%)**
Using only folkloric	0 (0%)	0 (0%)	0 (0%)	19 (0.6%)	**19 (0.6%)**
Using only traditional	0 (0%)	0 (0%)	1 (33.3%)	170 (5.6%)	**171 (5.6%)**
Using only modern	0 (0%)	0 (0%)	0 (0%)	880 (29.2%)	**880 (28.7%)**
Total	**44 (100%)**	**1 (100%)**	**3 (100%)**	**3016 (100%)**	**3064 (100%)**

Source: Computed from 1998 KDHS Data

4.3.4 Ever Use of Contraceptives and Current Use

Ever use by definition must equal or exceed current use of contraceptives. Ever use reflects the extent to which a given population has used contraception. Current use on the other hand refers to use of contraceptives at the time when a given population is being studied.

From the study ever use of contraceptive was much more than current use of contraceptives. 58.0 percent of the respondents had used a contraceptive method (modern, folkloric or traditional) against 34.9 percent who were using at the time of the survey. Reasons for contraceptive use can be either to limit or space children. As mentioned earlier, reasons for non-use vary from one individual to another.

Overall, a comparison between ever use and current use gives an indication of perseverance of contraceptive users and the relative duration of contraceptive use. (London et. al., 1985; United Nations, 1989a). this gives a glimpse of discontinuation.

4.4 Relationship between Contraceptive Use and Sex Composition

This was a bivariate analysis whose purpose was to determine whether there is a relationship between the dependent variable (contraceptive use) and the independent variable (sex composition of living children).

The results of the cross-tabulations and the chi-square test (χ^2) show that sex composition and contraceptive use have a significant association. The χ^2 value=126.635 at 20 degrees of freedom and α=0.01. Thus, the null hypothesis, H_0, stating that there is no significant association between the sex composition and contraceptive use is rejected. By implication, the alternative hypothesis, H_1, is accepted. That is, there is a significant association between the sex composition and contraceptive use.

From Table 4.4 below, the following patterns of association between contraceptive use and sex composition of children are evident: First, contraceptive use is strongly dependent on whether couples have at least one surviving child, irrespective of the gender. Only 4.7 % of the women with no surviving children were contracepting. The sex of the first child may not be crucial. Secondly, contraceptive use is higher among women with balanced or nearly balanced number of boys and girls. Although the pattern is not very consistent, this can be observed among women with three, four and five or more living children. The percentages are 43.4, 40.8 and 44.3/45.4 respectively. Another visible pattern is relatively lower contraceptive use among women with only one boy in all families that is, one, two, three, four and five-children. 27.5, 34.4, 33.8, 34.9 and 34.9 percent represents this respectively. Women

with girls only also have low contraceptive usage. Once again, the patterns are not very consistent.

Table 4.4 Percentage distribution of women contracepting by sex composition of living children.

Sex Composition of Children	% Contraceptive Use	Number of women
No children	4.7	172
One boy	27.5	193
One girl	29.9	197
Two boys	44.2	113
One boy, One girl	34.4	259
Two girls	21.8	124
Three boys	36.5	63
Two boys, One girl	43.4	159
One boy, Two girls	33.8	157
Three girls	38.3	47
Four boys	47.6	21
Three boys, One girl	40.4	109
Two boys, Two girls	40.8	169
One boy, Three girls	34.9	83
Four girls	35.5	31
Five or more boys	38.3	183
Four boys	39.3	234
Three boys	44.3	264
Two boys	45.4	205
One boy	34.9	43
No boy	29.8	238
Total	**34.9**	**3064**

Source: computed from 1998 KDHS

CHAPTER FIVE

APPLICATION OF ARNOLD'S MODEL

5.1 Introduction

This section presents existing the sex preference and its effect on contraceptive use, an application of Arnold's model. The results are further broken down to present the regional and educational differences in sex preference and the resultant effect on contraceptive use.

5.2 Overall Sex Preference and its Effect on Contraceptive Use

The assumption of the Arnold's model in observing sex composition in relation to contraceptive use is that, the women who are most satisfied with the sex compositions of their living children will most likely use contraceptives.

From the study, it is not surprising to find that very few couples with no living children (4.7 percent) were contracepting. Still, few couples want to stop childbearing at only on child, no matter the sex of the first child. Table 4.5 below shows the percentage of women using contraceptives by number and sex composition of living children. The disparity in contraception among women with one child is small as compared to that of women with two or more children. Any sex preferences will start appearing at two-children sex compositions.

Table 5.1 Percentage of women using contraceptives by number and sex composition of living children

No. of children	Percentage using contraceptives		Number of cases
	Actual	In absence of sex preference	
No children	4.7	4.7	172
One child			
One girl	27.5	29.9	193
One boy	29.9	29.9	197
Two children			
Two boys	44.2	44.2	113
One boy, one girl	34.4	44.2	259
Two girls	21.8	44.2	124
Three children			
Three boys	36.5	43.4	63
Two boys, one girl	43.4	43.4	159
One boy, two girls	33.8	43.4	157
Three girls	38.3	43.4	47
Four children			
Four boys	47.6	47.6	21
Three boys, one girl	40.4	47.6	109
Two boys, two girls	40.8	47.6	169
One boy, three girls	34.9	47.6	83
Four girls	35.5	47.6	31
Five or more children			
Five or more boys	38.3	45.4	183
Four boys	39.3	45.4	234
Three boys	44.3	45.4	264
Two boys	45.4	45.4	205
One boy	34.9	45.4	43
No boy	29.8	45.4	238
Total	**34.9**	**41.0**	**3064**

Source: Computed from 1998 KDHS data

Although the frequencies are not consistent, a trend can be drawn. An overall reflection of the frequencies and percentages is that there exists a preference, by couples, to have a balanced number of boys and girls. For example, in the 4-and 5 or more children-child families, contraceptive rates are higher as the sex composition

gets balanced or nears a balance of boys and girls. In other words, couples desire equal number of boys and girls. This preference is backed by a slight preference for boys over girls.

A preference of sons over girls is evident when considering single-sex compositions. That is, either all girls and all boys — families. For instance, looking at couples with two, four and five or more children, single-sex compositions comprising boys only have more women contracepting than those with girls only. Whereas 44.2 percent of the women with two boys are contracepting, only 21.8 percent with a sex composition of two girls are contracepting. As for women with four children, the percentages are 47.6 percent and 35.5 percent for a composition of all boys and all girls respectively. This is a clear indication of son preference over daughter preference. This preference of sons over daughters is also supported by the low contraception percentage by women with compositions comprising only one boy and several girls. These percentages are relatively low. However, the use of an open-ended category, five or more children, does not provide the precise information about the number of daughters. It may lead to ambiguity and therefore conclusions on preferences may not be too valid.

A general picture about the contraceptive levels is that women at higher parities contracept more as compared to those in the lower parities. This is due to the large family size norm, which is especially a common feature in the Sub-Saharan region. This, however, is changing gradually with development.

The question of concern is, with the clear preference of a balanced number of boys and girls as well as a moderate preference of boys over girls, what is the implication on contraceptive use? Arnold's model assumes that if there were no sex preferences, women at each parity would act in the same manner as those in the same parity who are most satisfied with their sex compositions. This means that percentages of all the women in the same parity would be equal to the maximum rate in that parity. Column 3 in Table 4.5 above presents the assumption. The application of the model:

$$\Sigma C^*_i P_i / \Sigma P_i.$$

Where; C^*_i equals the maximum rate of contraceptive use at each parity i, and P_i equals the number of women at each parity, yields 41.0 percent contraceptive use in absence of sex preference against 34.9 percent actual contraceptive use. This means in absence of sex preferences it would increase by 6.1 percentage units. This is a true indication that sex preferences, however mild they may be, have an effect on contraceptive use.

As seen earlier that sex preferences are mainly culturally determined, it is important to note that if sex preference attitudes are changed, contraceptive use is likely to improve. The change can occur in an understanding that children, whether boys or girls have 'identical' values and that the only differences are biological. However, such changes are bound to take a very long time.

5.3 Regional Variations in Sex Preference and its Effect on Contraceptive Use

Of interest are the variations in sex preference and its effect on contraceptive use by region, (see *Appendix I*). Looking at the analysis, Central province has the highest percentage of contraceptive users (65.0 percent) while Nyanza province has the least (22.0 percent). Eastern, Rift Valley, Western and Coast had 50.2, 33.1, 29.8 and 22.2 percent respectively. Refer to Table 4.6 below.

Table 5.2 Percentage regional actual contraceptive use and use in absence of sex preference

Region	% contraceptive use	% use in absence of sex preference	No. of women
Central	65.0	87.4	314
Coast	22.2	30.1	383
Eastern	50.2	69.0	456
Nyanza	22.0	29.7	581
Rift Valley	33.1	48.2	847
Western	29.8	41.4	483

Source: Computed from 1998 KDHS

For all the regions, a general trend is the increase in contraceptive use with the increase in number of children. In other words, women at higher parities use contraceptives more than those in the lower parities. This is an expected trend, as couples would desire to stop bearing children after they have acquired several children.

Sex preferences are present in all the regions although they vary in their nature, from one region to the other. Central province is characterized by slight preferences of at least one child of each sex. This region does not reveal any single-sex preferences for

either girls or boys. This could probably be attributed to the socioeconomic status of the people. Furthermore, familial systems that could possibly influence strong preferences are not strong. Findings in Coast, Western and Rift Valley provinces also indicate a preference for at least a child of each sex. Besides, slight preferences for boys over girls are noticeable.

In Eastern province, the findings show that couples there is a substantial desire to have a balanced number of boys and girls as well as minor preferences for boys over girls. This is visible from three-child families and higher parities. A balance or near balance of number of boys and girls is characterized by comparatively higher rates of contraception. Boy preference over girl is clearly visible in girls only and boys' only compositions. Two, four and five or more children-child couples with all boys are one to four times more likely to contracept than those with all girls.

There appears to be a strong preference for boys over girls in Nyanza province. The preference is most obvious when one looks at the women whose children are of one sex. This is observable among women with two, three, four and five or more children. It is quite interesting to see that among those with three girls, none of the women is contracepting.

Referring to Table 4.6 above, the third column gives the contraceptive use under the assumption that no sex preferences exist. For all the regions, absence of sex preference would witness an increase in contraceptive use. The increments range

w 7.7 percentage points in Nyanza to a high of 22.4 percentage points in

noting that due the relatively small samples in the regions, errors are bound occurred with some cells having very few cases. In future it will be wise to the proportions of respondents in each combination of boys and girls. All the gives a picture of existing sex preferences and the impact on contraceptive s is valuable more so in policy recommendations.

lucational Variations in Sex Preference and its Effect on Contraceptive

alysis of sex preferences is critical because of the role education plays in ting contraceptive use. (See *Appendix II)*. More than half (54.4 percent) of the idents who had attained secondary and higher education were contracepting at me of the survey. See Table 4.7 below with a summary of the educational ions in sex preference and its effect on contraceptive use.

e 5.3 Percentage educational variations in actual contraceptive use and use sence of sex preference

cational inment	% Contraceptive use	% Use in absence of sex preference	No. of Women
education	15.7	23.8	502
ary	33.1	41.5	1895
ondary +	54.4	59.1	667

Source: Computed from 1998 KDHS

v usage was observed among women with no education (15.7 percent) and those h primary education (33.1 percent). This is reflective of the empirical situation

whereby those with little or no education have relatively low usage of contraceptives, as earlier mentioned.

Although data on sex preferences is inconsistent, conclusions can be based on the visible trends. Contraceptive use tends to increase among women with many children in all the educational levels. Among women with no education, there is a preference for at least one child of each sex although a son preference is reflected. Within compositions of three and four children, contraception is non-existent among women with all girls. This is a clear indication that they are not satisfied with the composition of their children. Women with no education have relatively low contraception even at higher parities. The highest contraceptive use is among women with five or more boys, 29.5 percent. This is a possible explanation of large family size norms.

Contraceptive use rises with women whose highest level of education is primary, with use being highest among women with four boys. There are traces of a preference for at least a child of each sex. This is more pronounced at the lower parities. Son preference is also noticeable among these women. From parities two and above, women with all boys are using contraceptives more than those with all girls.

Secondary and higher education holders have fairly high use of contraceptives. This category has a preference for an equal number of boys and girls. This is seen throughout the parities. Women with balanced or a near balance of boys and girls are the highest contraceptors. More so, a mild son preference exists. The differences in one-sex compositions, however, are not large.

All these preferences may influence contraceptive use. Column three in Table 4.7 shows the effect on contraceptive use. The rates presented assume that sex preference is non-existent. Contraceptive use among women with no education, primary education, and secondary and above education would be expected to rise to 23.8, 41.5 and 59.1 percent respectively. The increments for those with no education, primary education and secondary and higher education were 8.1, 8.4 and 4.7 percentage points.

Just as in the regional variations, the proportions of respondents with each combination of boys and girls may not have been adequate to run the analysis.

CHAPTER SIX

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter focuses on the summary of the study, conclusions drawn and outlines recommendations based on the findings of the study.

6.2 Summary

The study utilized data from the 1998 KDHS data to establish the effect of sex composition of living children on contraceptive use. Specifically, it aimed at determining the existing sex preferences, determining the relationship between sex composition and contraceptive use, establishing what the level of contraceptive use would be in absence of any sex preference and making policy recommendations.

To understand the sorts of the study population, selected background characteristics of the respondents were described. These included: Region of residence, educational attainment, age, religion, ethnicity, occupation, fertility outcome, fertility desires and ideal family size. Frequencies were used to generate the data.

Cross tabulations were used to make comparisons between the respondents contraceptive knowledge and ever use of any contraceptive method, contraceptive knowledge and currents contraceptive use and ever use of any contraceptive method and current contraceptive use. Furthermore, the relationship between sex composition of living children and contraceptive use was established. This was achieved through the application of cross tabulations and the chi-square test.

To determine the existing sex preference and the effect on contraceptive use, Arnold's model was used. Sex preference was determined in relation to contraceptive use. The assumption of the model is that women who are most satisfied with the sex composition of their children will most likely use contraceptives. The model also ascertained what the level of contraceptive use would be in absence of sex preference. These measures were done for the overall sample and further by region and educational aspects.

6.3 Conclusions

Having had several objectives, the study saw the achievement of them all. The revelation was that generally, there exists a preference for a balanced number of sons and daughters coupled with slight son preferences. These preferences were found to have an effect on contraceptive use whereby in absence of the preferences, contraceptive use would have increased from 34.9 percent to 41.0 percent.

Further analysis on sex preference and its effect on contraceptive use considered regional and educational differences. Regional and educational variations in the nature of sex preferences and the effect on contraceptive use were observed. A preference for at least one child of each sex was evident in Central, Coast, Rift Valley and Western regions as well as among those with primary and no education. Son preference was also traced though mild. In Central, unlike the other provinces, the preferences were very small. Eastern province and those who had attained secondary

and higher education had a preference for a balanced number of sons and daughters. An exclusive preference of sons was noted in Nyanza province.

Contraceptive use was seen to rise with an increase in the number of living children among the women. That is, as one moves up the parities, contraceptive use increases. In the analysis, women with no living children were the least contraceptive users. In some instances, none of the women with no children was contracepting.

Another finding from the study was that there is a significant association between sex composition of living children and contraceptive use. In other words, a change in the former will subsequently have an effect on the latter.

In conclusion, sex composition preferences still exist and no matter how slight they may be, they have an effect on contraceptive use.

6.4 Recommendations

6.4.1 Policy Recommendations

The most important policy implication from the findings is that contraceptive use would increase if sex preferences were diminished. Consequently, the goal of controlling the high fertility rates would be achieved.

(i) With the knowledge of existing sex preferences and the effect on contraceptive use, which ultimately influence fertility, educational campaigns should be done to encourage couples to be satisfied with the

sex of their children. This should help break the values attached to the sex of a child.

(ii) Women's education should be promoted in order to equip them to be able to counter social and cultural values that may influence low contraceptive usage. They are able to make informed decisions about their lives and are not bound to culture. Contraceptive use tends to increase with the level of education.

6.4.2 Recommendations for Further Research

(i) A similar study should be done for urban areas in order to have a view of the existing sex preferences, if any.

(ii) We know the nature of sex preferences and the effect on contraceptive use. But, are the underlying factors behind the preferences known? A qualitative research should be undertaken to reveal the causes of the sex preferences given the variations within regions and educational attainment.

(iii) A study on the male preferences should be done. This is in view that fertility and contraceptive behaviour is bases on a couple's decision.

(iv) Although the effect of sex preference on contraceptive use has been established, in magnitude, some of the increments may seem large yet statistically the differences are not significant. Similarly, some differences look large but may not be significantly different. There is need therefore to determine the significance of the differences.

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APPENDICES

Appendix I

Regional Variations in Sex Preferences and its Effect on Contraceptive Use

Central Province

No. of Chn. / Comp	Actual Use %	In absence of sex pref.	No. of women
No children	14.3	14.3	14
One child			
One boy	57.1	81.8	21
One girl	81.8	81.8	22
Two children			
Two boys	90.5	90.5	21
One boy, One girl	48.6	90.5	35
Two girls	70	90.5	10
Three children			
Three boys	60	84.2	10
Two boys, One girl	84.2	84.2	19
One boy, Two girls	76.9	84.2	13
Three girls	80	84.2	5
Four children			
Four boys	50	87.5	2
Three boys, One girl	68.8	87.5	16
Two boys, Two girls	65	87.5	20
One boy, Three girls	87.5	87.5	8
Four girls	66.7	87.5	3
Five or more children			
Five or more boys	69.2	100	13
Four boys	73.3	100	15
Three boys	75	100	24
Two boys	64.7	100	17
One boy	100	100	2
No boys	33.3	100	24
Total	**65**	**87.37420382**	**314**
		87.4	

Coast Province

No. of Chn. / Comp	Actual Use %	In absence of sex pref.	No. of women
No children	0	0	30
One child			
One boy	15.8	15.8	19
One girl	13	15.8	23

Two children			
Two boys	26.7	33.3	15
One boy, One girl	33.3	33.3	33
Two girls	15.8	33.3	19
Three children			
Three boys	33.3	33.3	6
Two boys, One girl	21.1	33.3	19
One boy, Two girls	22.7	33.3	22
Three girls	0	33.3	5
Four children			
Four boys	50	54.5	4
Three boys, One girl	54.5	54.5	11
Two boys, Two girls	12.5	54.5	16
One boy, Three girls	12.5	54.5	8
Four girls	0	54.5	1
Five or more children			
Five or more boys	31	31	29
Four boys	21.9	31	32
Three boys	27.3	31	33
Two boys	27.3	31	22
One boy	11.1	31	9
No boys	25.9	31	27
Total	**22.2**	**30.07389034**	**383**
		30.1	

Eastern Province

No. of Chn. / Comp	Actual Use %	In absence of sex pref.	No. of women
No children	7.1	7.1	14
One child			
One boy	29	40.6	31
One girl	40.6	40.6	32
Two children			
Two boys	64.7	64.7	17
One boy, One girl	47.4	64.7	38
Two girls	21.4	64.7	14
Three children			
Three boys	50	66.7	10
Two boys, One girl	66.7	66.7	27
One boy, Two girls	64.5	66.7	31
Three girls	55.6	66.7	9
Four children			
Four boys	100	100	3
Three boys, One girl	45.5	100	11
Two boys, Two girls	53.8	100	39

One boy, Three girls	75	100	12
Four girls	25	100	4
Five or more children			
Five or more boys	35	75	20
Four boys	53.3	75	45
Three boys	61.8	75	34
Two boys	72.7	75	33
One boy	75	75	4
No boys	28.6	75	28
Total	**50.2**	**68.98552632 69**	**456**

Nyanza province

No. of Chn. / Comp	Actual Use %	In absence of sex pref.	No. of women
No children	5.6	5.6	54
One child			
One boy	6.3	11.5	32
One girl	11.5	11.5	52
Two children			
Two boys	19	19	21
One boy, One girl	17.5	19	40
Two girls	11.1	19	27
Three children			
Three boys	37.5	37.5	8
Two boys, One girl	11.1	37.5	27
One boy, Two girls	10	37.5	30
Three girls	0	37.5	9
Four children			
Four boys	33.3	34.6	3
Three boys, One girl	31.3	34.6	16
Two boys, Two girls	34.6	34.6	26
One boy, Three girls	20	34.6	15
Four girls	14.3	34.6	7
Five or more children			
Five or more boys	33.3	43.2	27
Four boys	33.3	43.2	45
Three boys	37.1	43.2	62
Two boys	43.2	43.2	37
One boy	14.3	43.2	7
No boys	30.6	43.2	36
Total	**22**	**29.73907057 29.7**	**581**

Rift Valley Province

No. of Chn. / Comp	Actual Use %	In absence of sex pref.	No. of women
No children	2.9	2.9	34
One child			
One boy	28.8	28.8	52
One girl	26.2	28.8	42
Two children			
Two boys	42.9	42.9	28
One boy, One girl	36.2	42.9	69
Two girls	27.3	42.9	33
Three children			
Three boys	31.6	42.9	19
Two boys, One girl	38.2	42.9	34
One boy, Two girls	22	42.9	41
Three girls	42.9	42.9	14
Four children			
Four boys	40	60	5
Three boys, One girl	28.6	60	35
Two boys, Two girls	37.3	60	51
One boy, Three girls	21.7	60	23
Four girls	60	60	10
Five or more children			
Five or more boys	33.8	57.1	71
Four boys	30.8	57.1	65
Three boys	43.4	57.1	76
Two boys	39	57.1	59
One boy	57.1	57.1	14
No boys	31.9	57.1	72
Total	**33.1**	**48.21806375**	**847**
		48.2	

Western Province

No. of Chn. / Comp	Actual Use %	In absence of sex pref.	No. of women
No children	3.8	3.8	26
One child			
One boy	31.6	31.6	38
One girl	30.8	31.6	26
Two children			
Two boys	0	25	11
One boy, One girl	25	25	44
Two girls	9.5	25	21

Three children			
Three boys	10	60	10
Two boys, One girl	45.5	60	33
One boy, Two girls	30	60	20
Three girls	60	60	5
Four children			
Four boys	25	35	4
Three boys, One girl	35	35	20
Two boys, Two girls	29.4	35	17
One boy, Three girls	23.5	35	17
Four girls	16.7	35	6
Five or more children			
Five or more boys	52.2	52.2	23
Four boys	46.9	52.2	32
Three boys	37.1	52.2	35
Two boys	35.1	52.2	37
One boy	0	52.2	7
No boys	27.5	52.2	51
Total	**29.8**	**41.40414079**	**483**
		41.4	

Educational Variations in Sex Preference and its Effect on Contraceptive Use

No Education

No. of Chn. / Comp	Actual Use %	In absence of sex pref.	No. of Women
No children	0	0	30
One child			
One boy	6.7	13.3	15
One girl	13.3	13.3	15
Two children			
Two boys	11.1	11.1	9
One boy, One girl	7.1	11.1	14
Two girls	0	11.1	9
Three children			
Three boys	0	13.3	8
Two boys, One girl	13.3	13.3	15
One boy, Two girls	6.7	13.3	15
Three girls	0	13.3	5
Four children			
Four boys	20	26.3	5
Three boys, One girl	14.3	26.3	14
Two boys, Two girls	26.3	26.3	19
One boy, Three girls	11.8	26.3	17
Four girls	0	26.3	4
Five or more children			
Five or more boys	29.5	29.5	61
Four boys	23.6	29.5	72
Three boys	12.3	29.5	57
Two boys	16.7	29.5	30
One boy	0	29.5	10
No boys	17.9	29.5	78
Total	**15.7**	**23.83227092**	**502**
		23.8	

Primary Education

No. of Chn. / Comp	Actual Use %	In absence of sex pref.	No. of Women
No children	2.7	2.7	110
One child			
One boy	19.4	22	129
One girl	22	22	123
Two children			
Two boys	47.2	47.2	72

One boy, One girl	30.7	47.2	166
Two girls	22	47.2	82
Three children			
Three boys	35.9	36.6	39
Two boys, One girl	36.6	36.6	101
One boy, Two girls	26.6	36.6	109
Three girls	28	36.6	25
Four children			
Four boys	53.8	53.8	13
Three boys, One girl	39.1	53.8	69
Two boys, Two girls	34.5	53.8	113
One boy, Three girls	35.7	53.8	42
Four girls	36.8	53.8	19
Five or more children			
Five or more boys	38.5	49.7	104
Four boys	42.6	49.7	129
Three boys	49.7	49.7	167
Two boys	43.3	49.7	127
One boy	40.7	49.7	27
No boys	34.1	49.7	129
Total	**33.1**	**41.52575198**	**1895**
		41.5	

Secondary and Higher Education

No. of Chn. / Comp	Actual Use %	In absence of sex pref.	No. of women
No children	15.6	**15.6**	**32**
One child			
One boy	55.1	55.1	49
One girl	50.8	55.1	59
Two children			
Two boys	46.9	46.9	32
One boy, One girl	46.8	46.9	79
Two girls	27.3	46.9	33
Three children			
Three boys	56.3	69.8	16
Two boys, One girl	69.8	69.8	43
One boy, Two girls	69.7	69.8	33
Three girls	64.7	69.8	17
Four children			
Four boys	66.7	67.6	3
Three boys, One girl	57.7	67.6	26
Two boys, Two girls	67.6	67.6	37
One boy, Three girls	50	67.6	24
Four girls	50	67.6	8

Five or more children			
Five or more boys	66.7	68.8	18
Four boys	60.6	68.8	33
Three boys	67.5	68.8	40
Two boys	68.8	68.8	48
One boy	66.7	68.8	6
No boys	41.9	68.8	31
		59.0906051	**667**
Total	**54.4**	**59.1**	