DETERMINANTS OF FERTILITY PREFERENCES IN KENYA.
A study based on the 1998 Kenya Demographic And Health Survey Data.

By
Elon Wamahiga Wachira

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DECLARATION

I declare that this is my original work and to the best of my knowledge, it has not been produced in any university or educational institution.

Wachira W.E. 

Date. 25/04/02

This thesis has been submitted with our approval

Dr Otieno A.T.A

Date. 2/5/02

Dr Kimani Muungaru

Date. 8/5/02

Population Studies and Research Institute
University of Nairobi
P.O. Box 30197
Nairobi Kenya.

DEDICATION

To my parents, brothers and sisters without whom it would not have been possible to get to this level and to my husband Henry Mwaura.

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ABSTRACT

The subject of fertility preferences is of fundamental importance for population policy and also for family planning programs. Actual fertility primarily reflects desired fertility because it is assumed that couples are roughly able to achieve their fertility targets. Despite this, only minimal attention from researchers has been dedicated to the study of fertility preference. Even then, several important factors determining fertility preferences have been left out. This study seeks to bridge the gap of knowledge on determinants of fertility preferences.

The main objective of the study is to examine the effect of some selected study factors on fertility preferences while controlling for the effect of other factors also known to have an effect on fertility preferences. The study variables considered in this study include marriage type, number of unions, child loss experience, exposure to mass media, gender mix of living children and knowledge of modern family planning methods. Control factors that are included in the study are age, education level, religion, region of residence, work status of the woman, place of residence and ethnicity. Desire for more children and preferred waiting time were used in the study to designate the dependent variable.

The study population consisted of 4887 Kenyan women of childbearing ages (15-49) covered in the Kenya Demographic and Health Survey of 1998. The techniques of Data presentation and analysis that were employed included use of frequency tables, cross tabulation and logistic regression analysis. Descriptive statistics indicated that majority of the women did not desire any more children. Cross tabulation results indicated that desire for more children is significantly associated with all the factors included in the study with the exception of number of unions. Logistic regression was used to regress desire for more children on the socio- demographic, socio-economic, and socio-cultural and exposure factors. The results of logistic regression show that controlling for education, age, work status of the respondent, religious affiliation, ethnic background, place and

region of residence, only two of the study variables were found to be significant in explaining differences in fertility preferences. These were the number of unions, and gender mix of living children. Before controlling for these factors, all other factors apart from number of unions were found to be significant in explaining differences in fertility preferences of Kenyan women. These included the type of marriage, knowledge of modern family planning methods, gender mix of living children, child loss experience and exposure to mass media.

The study also found that those factors that are responsible for differences in the desire for more children are also important determinants of preferred waiting time to the next birth .The study found that gender mix of living children and number of unions are important determinants of preferred waiting time. In addition the type of marriage was also found to be important. These factors were found to be important determinants of desire for more children revealing a consistency between the two measures of fertility preferences.

The major conclusion that was derived from the results of this study was that all the study variables included in the study are important determinants of fertility preference. However the study found that gender mix of living children and the number of unions are the most important factors determining fertility preference controlling for all other factors included as controls in the study. Other factors found to be important determinants of fertility preference included age and ethnicity.

On the basis of these results and conclusions, recommendations have been made for policy as well as for research. The findings indicated that gender preference is evident in Kenya either in favour of an equal mix of living children or better still in favour of sons. This kind of preference has contributed to high fertility preferences especially among women with more daughters. This scenario demands that more efforts be made to address the existing gender disparities so as to fully integrate gender concerns into the development process. This kind of a shift can occur within a milieu of

broad social, economic and cultural change involving changes in the role of women education, economic structure, family structure and more particularly changes in social and cultural beliefs and traits that favor men hence disadvantaging women leading to a low preference for girls among parents. The study also found that marital instability is a major contributory factor to higher fertility preferences. Policy measures should be geared towards promotion of marital stability and support to the family as the basic unit of the society.

CHAPTER ONE: INTRODUCTION

1.0 Background to the study

Fertility preferences in Kenya have changed dramatically during the last two decades as has been demonstrated by the various surveys conducted in the country in the recent past. The Kenya fertility survey (KFS), Kenya contraceptive prevalence survey (KCPS), and the Kenya Demographic and Health Surveys (KDHS) asked a series of questions to ascertain fertility preferences of the respondents: that is desire to have another child, the length of time they would like to wait before having another child and the number of children considered ideal. These data make quantification for fertility preferences possible.

This study limits to the definition of fertility preferences as measured by the desire to have another child and whether one would want to have the child soon or later. The interpretation of survey data on fertility preferences is often difficult, since it is understood that respondents reported preferences are in a sense hypothetical and thus subject to change and rationalization. However the utility of information on fertility preferences to anticipate changes in actual fertility behaviour has been demonstrated in a wide range of contexts where actual fertility primarily reflects desired fertility assuming that couples are roughly able to achieve their fertility targets. The subject of fertility preferences is also of fundamental importance for population policy and for family planning programs. Whether couples want to cease childbearing or delay the next pregnancy determines the demand for family planning and the potential impact on the rate of reproduction. Couples stated family size preferences are considered important for assessing their demand for children, for measuring their motivation for fertility limitation and for predicting future prospects of fertility change. Thus the importance of studying fertility preferences derives from the fact that these preferences when implemented are

potentially important in shaping future fertility of a given society. It is often noted that with reproduction increasingly under voluntary control, the number of children preferred by a couple will be an increasingly important determinant of fertility.

Fertility preferences vary considerably across countries but appear more homogenous within regions The spread of a small family norm has accelerated rapidly in some parts of the developing world (in much of Asia, Latin America and North Africa) and is beginning to emerge in a few sub-Saharan African countries like Kenya, Zimbabwe and Botswana. Kenya in particular has experienced changes in fertility preferences that have not been documented elsewhere in sub-Saharan Africa. The proportion of currently married women who do not desire more increased from 17 percent in 1977 to 32 percent in 1984. This further increased to 49 percent in 1989 and then to 52 percent in 1993 and to 53 percent in 1998. According to the 1998 Kenya Demographic and Health Survey, While 40 percent of currently married women would like to have another child, only 14 percent would like to have one soon (within 2 years),while 25 percent would prefer to space their children waiting two or more years for the next child. Actual fertility performance of Kenyan women during the same period has changed along with these changes in fertility preferences. The total fertility rate (TFR) declined from 7.9 children per woman in 1977 to 7.7 in 1984, 6.7 in 1989, 5.6 in 1993 to the level of 4.7 children per woman in 1998.

Despite all these improvements in fertility levels both actual and preferred, there is still need to control the population of Kenya at a manageable level bearing in mind the scarce resources. Indeed the government of Kenya has been keenly aware of the serious effects of high population growth on socio- economic development and aims at reducing the total fertility rate to 2.5 births per woman by the year 2010. There is therefore the need to further control the rate of population growth to realize sustainable socio-economic as well as other forms of development required in the country. It is true that sub-Saharan Africa has vast resources and potential for development. To fulfill that potential both an immediate response to today's crisis and sustained efforts to ease the long-term constraints on development are required. Such efforts include adopting more efficient economic policies and reducing high levels of fertility so that population growth subsides (World Bank 1984). Specifically the

economic, social and political climate in Kenya is still very conducive for further changes and especially to meet the fertility reduction targets set for the years to come.

It is evident that actual and desired fertility are positively associated and can be explained by the fact that women with high initial preferences proceed to have many children while those with low preferences have successfully controlled their fertility. These are referred to as the rationalization and implementation effects. The key issue in this study therefore is the mechanism of influencing reproductive behavioral attitudes that goes further to change actual reproductive performance. Emphasis should therefore be placed on relevant policy measures that aim at changing the traditional social structure that promote high fertility preferences leading to high fertility outcomes.

It is therefore important to identify the specific factors that are responsible for differences in fertility preferences in Kenya and to which therefore the prevailing levels of fertility in the country could be attributed. It is also important to isolate those factors that are specifically relevant for policy implication. This study aims at bridging these gaps and sheds some light on relevant issues regarding fertility preferences of Kenyan women based on the 1998 Kenya Demographic and Health Survey.

1.1 Problem statement

Results of the 1989 census indicate that the inter-censal population growth rate in Kenya was 3.4 per annum. Further the current rate stands at 2.9 per annum according to 1999 census. Despite this declining population growth (driven by declining fertility rates and increases in mortality associated with HIV/AIDS epidemic), the size of Kenyan population has grown from 5.4 million in 1948 to 23.2 million in 1989 (CBS, 1994) and to the current 28.7 million in 1999 (CBS 2001). Total fertility rate currently stands at 4.7 children per woman. The

national population policy for sustainable development has a set of goals one of them being to reduce total fertility rate from 5.0 in 1995 to 4.0 by the year 2000 to 3.5 by 2005 and 2.5 by the year 2010. One of the prerequisites for fertility decline is that reproduction comes within the calculus of conscious choice (Coale, 1973).

Preferences are potentially very important in shaping the fertility of the society where future fertility behaviour will most likely be affected by the currently observed fertility preferences. This means that unless there is a change in these preferences, the level of fertility may not change in the future. Further more, there are differentials in fertility preferences as well as actual fertility both at macro and micro levels as fertility decision-making involves a complete series of decisions over the life cycle. Fertility preferences are influenced by a different set of demographic socio economic and socio cultural characteristics of couples making reproductive decisions during their reproductive career.

On one hand family planning programs have played a central role in Kenya's fertility transition though legitimization of small families and the use of modern contraception, but on the other hand development in the form of increasing levels of education, income levels, improved status of women, changes in cultural attitudes and values among other factors have played a significant role in influencing fertility preferences.

Although a number of these factors have been known to influence fertility preferences, the central problem of this study is to re-examine to what extent some socio-cultural values influence fertility preferences at the time when Kenya is undergoing rapid fertility change. In particular the study aims at investigating the effect of marriage type, marital instability, sex preference of children, child mortality and program issues that have been put in place such as family planning messages and mass media improvement on fertility preferences. In view of

the above, this study is set to investigate the situation in Kenya on the basis of the 1998 Kenya demographic and health survey data.

1.2 Objectives

The general objective of this study is to examine the role of selected socio-demographic, socio-economic and exposure factors in determining fertility preferences in Kenya.

Specific objectives

- To establish the levels and differentials of fertility preference in Kenya.
- To examine the role of marriage type and number of unions in determining fertility preferences.
- To examine the role of gender mix of living children and child loss experience in determining fertility preferences.
- To examine the role of exposure to mass media and knowledge of modern family planning methods in determining fertility preferences in Kenya.

1.3 Scope and limitations

This study utilizes secondary data derived from the Kenya demographic and health survey of 1998. This is the third survey of its kind to be conducted in the country following the 1989 and 1993 Kenya Demographic and Health Survey. Like earlier Demographic and health survey, the 1998 survey was designed to provide information on demographic trends and indicators of maternal and child health in Kenya. The principal aim was to provide a

viable demographic database that can be readily available to policy makers and researchers alike. This was a national survey carried out by the National Council for Population and Development in collaboration with Central Bureau of Statistics with Macro International providing technical and financial assistance through USAID. The study is restricted to currently married women of childbearing ages (15-49). Three types of questionnaires were used in the 1998 Kenya Demographic and Health Survey. Data used in this study is from the women's questionnaire that was used to collect information from women aged 15-49 and included questions on various topics including fertility preferences.

This study has several limitations .The 1998 Kenya demographic and Health Survey despite being national in scope excluded all three districts in North Eastern Province and four other Northern districts (Samburu, Turkana, Isiolo and Marsabit). Reliable estimates could not be produced for all districts in the country which have increased in number from 48 to75 since 1993; without expanding the sample to an unmanageable size, this called for over sampling at the district level leading to the sample not being self-weighting at the national level.

Other than the sampling limitation, inquiries about family size preferences often face the problem of non-response or ambiguous answers. Another limitation is that despite the fact that fertility decision-making is a process involving a couple, this study only considers fertility preferences of women and leaves out men's preferences. The study also limits to fertility preference as measured by desire for more children and then preferred waiting time as an alternative measure and leaves out other measures like ideal family size. The study also focuses on the determinants of fertility preferences for Kenyan women but does not examine whether these desires have a predictive validity on their subsequent fertility performances.

Lastly the study limits to only currently married women despite the fact that the question of fertility preference was asked of all women in the 1998 KDHS survey. This was purposely to take care of missing cases in a number of independent variables that only focused on married women for example marriage type and number of unions.

1.4 Rationale

The importance of studying fertility preferences derives from the fact that these preferences when implemented are potentially important in shaping future fertility of a given society. It is often noted that with reproduction increasingly under voluntary control, the number of children preferred by a couple will be an increasingly important determinant of fertility. As stated earlier information on preferences is also very important for population policy and for family planning programs. In recent years, substantial effort has been devoted to estimates of desired fertility in developing countries. Much of this has focused on unmet need for contraception while others have focused on the estimation of the level of fertility that would prevail if preferences were fully implemented.

Despite this it is evident that the study of fertility preferences has not received enough attention, infact very little attention has been given to the study relative to the merits of a variety of factors influencing the preferences and its measures. In a developing country like Kenya where reduction of fertility is a key issue, this study will be essential in setting priorities to allocate the scarce resources towards the factors that could greatly influence fertility desires and hence future fertility reduction. It is therefore of fundamental importance to isolate the factors that determine fertility intentions and those that could be specifically relevant for policy implications.

Most studies have concentrated on factors influencing ideal family size, a measure of fertility preference that has been commonly used. This is a simple and an intuitive concept but has serious drawbacks as a proxy for desired reproductive behaviour. Some factors lead a woman's response to the question of desired family size leading to an over estimation of desired fertility, for example infant mortality. Others lead to an over estimation for example strong gender preference.

Where desired number of births is large, non-numeric responses occur more frequently. Also rationalization of births is common for women with higher parities. This study focuses on a different measure of fertility preference, which is seen to outweigh the limitations of less useful measures. This study seeks to look at fertility preference through the desire for more children indicator an area that has not been thoroughly studied. Further, the study adopts a different measure to establish if the same factors determining desire for more children hold if a different indicator of fertility preference namely preferred waiting time is used.

Moreover most studies that have been done on fertility preference have focused on a smaller sample size and limited to specific areas (Durell, 1990, Nkanata, 1990), other studies that have been done on a national level and using large scale data have concentrated on ideal family size. They have also left out some explanatory variables that could be important in explaining difference in fertility preferences for example marital stability, family planning programs, gender mix of living children and exposure to mass media. This study therefore seeks to bridge these gaps and bring out a more comprehensive and up to date analysis of the determinants of fertility preferences.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

In recent years, substantial effort has been devoted to estimating desired fertility throughout the world. Several studies have been done worldwide. Some of them reveal the effect of demographic factors on fertility preference to be most important. Others argue that socio-economic development indicators are important and still others have revealed otherwise. This chapter examines some of these studies in terms of socio-cultural, socio-economic and demographic factors and their relationship with fertility intentions. Further the chapter presents the variables used in this study and a description of the same.

2.1 Socio – economic factors

Studies have shown that better educated couples tend to prefer small family sizes and do terminate childbearing sooner than the less educated counter parts . Poedjastoeti and Hatmadji, 1991 found that the percentage of women wanting to terminate childbearing decreases as education level increases. Other studies however have shown that education is positively related with fertility preferences and could be explained through other effects e.g. income whereby higher incomes associated with higher education results in a couples ability to afford more children (Schultz; 1973 cited in Ross, 1977). Knodel and Debavalya (1978) in their study of the Thai Women discovered that two thirds of married women wanted no more children, desired family size was found to be inversely related to the educational attainment of the respondents. Similarly urban-rural differentials persisted for each educational category.

In America, Freedman et al (1959) noted that family size varies with religion, education, income, and women's status, type of residence and region of residence. The study revealed that women of lower education attainment expected to bear larger number of children. Women's increased education leads to deliberate and volitional changes in their reproductive behaviour e.g. women's education has a consistent but moderate inverse effect on desired family size in virtually every setting.

Studies in several settings have shown that women's education has a substantial net effect on family size desire controlling for household economic status and other covariates An analysis of thirty-seven countries worldwide concludes that about half of the gross effect on desired fertility at each level of education can be attributed to education alone. The net effect is strongest in Sub Saharan Africa and weakest in Latin America (United Nations 1987). The strength of the relationship between women education and desired fertility varies over time and the change depends on the context, the relationship tends to weaken in the type of more developed setting, where overall fertility levels are already low. This is largely because of a substantially greater decline in desired family size among the least educated women, than among other women (Weinberg, Lloyd and Blanc 1989, Bong arts and Lightbourne 1990). Stoechel (1975) in his study on differentials in fertility, family planning and family size in Southern Korea found that urban and rural women with high education level have lower ideal family size and ideal number of sons than women with lower education. Jejeebhoy, 1995 in a review of fifty-three countries found that in several settings, it required at least an upper primary education to markedly change family size desires

In Mexico, substantial declines in desired family size became obvious only among women with seven or more years of education (Levine et al, 1991). Okeje (1993) in his study

in Edo and Delta states of Nigeria found that, women with primary schooling want negligibly fewer children than uneducated women. It is only after women attain some secondary and especially tertiary education that differentials in family size falls substantially. Asikpata (1988) in his study on determinants of family size preferences in Ghana found that women with no schooling wanted an average of seven children as opposed to women with two or more years of schooling who wanted an average of four children. There was no significant variation in the total number of children desired by place of residence.

According to the DHS report of 1983, desired fertility declines monotonically with education but the slope of the descent varies considerably from country to country. Differentials are most pronounced in Sub Saharan Africa where the gap between women at lower and upper education strata is an average of two children. In Kenya, a survey done by International Labour Organization /University of Nairobi revealed that ideal family size is negatively related to the wife's education.

Several studies have established that urban women have lower actual fertility performance and ideal family size compared to their rural counterparts (Choe et al 1992, Poedjastoeti and Hatmadji 1991, Mustafa 1988, Khan and Sirageldin 1977, Deep1988). Fertility preferences are also shaped by the status of women. In institutional contexts characterized by women's dependence on men, bearing a large number of children especially sons becomes a conventional strategy for women to enhance their security and reassure their identity (Cain, 1984 and Mason, 1987). High fertility is self perceived as beneficial not only by women in vulnerable positions but also by men who might bear few of the costs of childbearing and none the less enjoy its benefits (Folbre, 1983).

Anker and Knowles (1982) in their study in Kenya found that female labour force participation is significantly related to fertility. However, the study found that in Kenya there is no major conflict between the wife's ability to work and raise a family. Snyder (1974) in his study on determinants of family size in Sierra Leone found that laborforce participation of Sierra Leon women has a positive effect on family size, probably due to the fact that mothers of large families are forced by economic necessity to re-enter the labour market or because re-entry is made easier by the presence of elder children in large families who can take care of the younger siblings.

Other studies that have documented the relationship between desire for children and labour force, participation include Lee and Bulatao, 1983; Mustafa, 1988; Deep, 1988; Abdalla, 1988). These authors have argued that the negative relationship is attributed to the opportunity cost attributed to child bearing and rearing thus leading to women desiring smaller family sizes.

2.2 Socio-cultural Factors.

There is no consensus among researchers in the effect of polygamy on reproductive processes. They are equally divided among those who claim that polygamy reduces the fertility of individual women (Garenne and Van de Wale, 1989; Handweker, 1986; Pison, 1987), those who claim it has no effect at all (Mulder, 1989; Pebley and Mbugua, 1989; Sichona, 1992) and those who claim it increases women's fertility (Ahmed, 1986; Arowolo, 1981). These studies however have led to an increasing understanding that the micro effect of polygamy on fertility at the individual level may be quite different from its macro effect at

the aggregate level. While the former may be negligible and insignificant, the latter could be enormous (Bhatia, 1985; Pison, 1986).

Alex,1995 using the 1989 KDHS data identified three distinct polygyny regimes namely low, mid and high .The proportion of currently married women who desire no additional children at each parity are inversely related to polygyny levels in Kenya. For women with the same number of surviving children, those in low polygyny areas are less likely than those in mid and high polygyny areas to desire another child. Taken together, results from his analysis show that women in high polygyny regime are more pronatalists than those in a lower polygyny regime. This pronatalism may result from a value orientation that favour and encourage high reproductive performances. The force of this reproductive value operated equally for men and women in the high polygyny regime. However the fluidity in marriage types may explain any observed differences or similarities in the fertility of polygamous and monogamous women (Ahmed 1986; Poison 1987). Although monogamous respondents are more likely than their polygamous counterparts to want no more children, fewer men actually prefer to cease child bearing (Dodoo, 1998; Dodoo and Van Landewizk, 1996).

Marriage type appears to be differentially related to the relative fertility of women and men (Fapohunda and Todaro, 1988) but male preference is more influential when women live in more traditional rural areas (Njogu, 1991; Tuladhar, 1985). With regard to marriage type, women in polygamous marriages may have more decision-making autonomy perhaps afforded by the presence of other wives. Meanwhile the more educated and urban monogamous women may be negatively affected by economic development because the western context of development frequently implied higher expectations but reduced

opportunities for women which make women more subject to the influence of male preferences (Fapohunda and Todaro, 1988; Michelle, 1984).

In a study on determinants of family size preference and desire for additional children in Ghana, Ashikpata (1988) found that ethnic origin is one of the most important predictors of desired family size in Ghana. The Ewel and Akani were found to have lower desired family size than other ethnic groups considered in the study. Freedman et al (1959) noted that among other factors family size varied with religion in America. Jaccard and Davidson (1979) tested a model where psychological, social and economic variables came into play in influencing fertility related decisions. According to the model, a woman's intention to engage in a certain behaviour for example to have a child or not is a function of her belief about consequences of performing that behaviour or her beliefs about what others think she should do and comply with them. Analysis of variance performed on intention to use birth contrd and intention to have a child found that there were significant religious differentials on intention, to have a two- child family, with Catholics being less likely to have a two-child family as compared to Protestants.

2.3 Socio-demographic factors

Available research indicates that intentions for further births (as opposed to preferences for subsequent birth to be of a particular gender) are influenced by the desire to balance gender composition and not preferences for one gender over the other. Parents preferences for the sex of their children vary widely across cultural and are important to studies of family planning because they may affect both fertility intentions / preferences as well as completed fertility .In many of the worlds developing economies a preference for sons has been widely

documented and is attributable to a variety of social, economic and cultural factors (Williamson 1976). Slogan and Lee (1983) found that women with two children of the same gender are twice as likely to intend another girl as are women with a girl and a boy .At parity one, women with girls are more likely to intend a second birth compared to women with boys. For urban husbands, the number of daughters appears not to be relevant to their future fertility desires. This may imply that in the urban environment, a desire to limit births emerge among younger men with smaller family sizes, such that if the desired number of sons has been achieved, men are willing to forego having additional children, even if they have no daughters. Poedjastoeti and Hatmadji, (1991) using Indonesian DHS data also found an inverse relationship between desire to have more children and number of living sons.

Stunner and Madder (1975) conducted an analysis of actual family size composition and desire for additional children among a national sample of ever-married Filipino women. They found that for women with two living children, the percentage wanting no additional children decreased with an increase in the number of living sons. They also found that son preference was higher in rural areas while in the urban areas and highly developed parts, the preference was strongly in the direction of a balanced sex composition.

Results form ILO/ University of Nairobi survey show that Kenyan wives have very little preference for male children as compared to female children. Asked about the sex composition of their ideal family, almost three-quarters of adult female respondents expressed either no son preference compared to daughters or a preference for an equal number of boys to girls. Few indicated a slight preference for sons. Dow (1967) also found very little difference in the desire for sons and daughters. This lack of a strong sex preference

in Kenya is not too surprising given the important role played by women in the rural economy and the traditional practice of paying a bride price at the time of marriage.

Arnold (1981) in an analysis of twenty countries reported that the most common sex-preference pattern is for at least one son and one daughter. Stunner and Madder (1975) in their analysis of actual family size composition and desire for additional children among ever married sample of Filipino women found that the percentage wanting no additional children drops as the number of sons increased. Kim and Choi (1981) in their study of preference for number and sex of children and contraceptive use in Korea using 1974 Korean National Fertility Survey found the number of living sons to be the most important determinant in a woman's decision whether or not to have another child. Khan and Sirageldin (1977) in their study on correlates of desire for more children among Pakistan women found that the negative inducement of the number of living sons on wanting additional children is about three times that due to the number of living daughters and the greater the deficit number of living sons or daughters from the corresponding ideal number, the greater the probability of couple wanting additional children. The preference for sons is more than an attitude because it has demographic consequences. Researches conducted in Bangladesh (Raman and Da Vanzo, 1993; Amin and Mariam, 1987), Korea (Arnold, 1985; Park, 1978 and 1983), Taiwan (Williamson, 1976; Coombs and Sun, 1978), Morocco (Rosette, 1972), India (Das, 1987), and Pakistan (Ali, 1989; Khan and Israeli, 1977) have shown son preference to be partially responsible for parents desire for additional children. When parents already have one son or more, among their offspring, they are more likely to use contraceptives in order to delay childbearing (Davanzo and Stabird, 1991; Das, 1987; Amen and Miriam, 1987; Chowdhury, 1979; Bairagi and Langsten, 1986).

Arnold et al (1975) in a study of the value of children conducted in Asian and Pacific countries concluded that family size is influenced by parents' preference for sons. Having sons who survive induces parents to use more effective permanent methods of birth control like sterilization or to have abortions (Rahman et al, 1992, Arnold and Liu, 1986; Robey, 1985; Sarma and Jain, 1974) . Not only does the number of surviving sons trigger contraceptive use among non-users, it also reinforces continuation among the users (Godalla et al, 1985; Sun et al, 1978). As a result mothers with more sons bear fewer additional children or have a longer subsequent birth interval compared with mothers with more daughters (Rahman and Da vanzo, 1993, Chowdhury and Bairagi, 1991; Das, 1987, Bairagi and Langston, 1986; Tu, 1991, Da Vanzo and Starbird, 1991; Robey, 1985). Using the world fertility survey data to analyse the relationship between son preferences and total fertility in twenty-seven developing countries, Cain (1984) concluded that countries with a marked preference for sons also have high and unyielding fertility. Even more problematic is China where family size is limited by the official one child policy, Son preference has been cited as a reason for illegal use of prenatal sex identification technology such as ultra sound, Amniocentesis, or chronic foetus sampling and subsequent abortion when the foetus is female (Yi etal, 1993). Using a hazard analysis, Leung (1988) found that the number of boys significantly decreases the risk of an additional birth among Chinese Malaysians. While evidence of son preference in developing countries is overwhelming, researchers have also found a co-existing desire for a daughter among parents who already have one son, for example among Thai women (Prachuamoh et al, 1974). In a study of birth spacing in Bangladesh, Rahman and Da Vanzo (1999) reported that among parents who have at least

four children, subsequent pace of reproduction significantly increases in the absence of a daughter.

The actual number of living children in a household has also been documented to be directly related to ideal family size in several studies (Pulum, 1980; Lightbourne and MacDonald, 1982; Deep, 1988). This positive association between actual and ideal numbers has two explanations, it can arise because women with high initial preferences have proceeded to have many children and those with low preferences have successfully controlled their fertility (Knodel and Prachuamoh, 1993) referred to as rationalization and implementation effects. Deep (1988) investigated the relationship between number of living children and fertility behaviour and attitudes of women aged 15 – 49 in Egypt, Sudan, Kenya and Lesotho and found that when number of living children increased by one child, Ideal family size increase by 0.24 on average. For Kenya, he found that number of living children is one of the most important factors affecting desired family size.

Child loss experience has been documented to be strongly related with both actual and desired fertility. Pebley, Delgado and Brieman (1979) using data from rural Guatemala examined if fertility desires are shaped by familial and personal experience with child mortality (deaths of siblings and one owns children). Child loss was analysed together with other socio-economic control variables such as education, residence and housing quality index using a logit analysis. The results revealed that experience with child mortality, own child and siblings death was strongly and positively related to the desire for additional children at parity three and above. Rustein (1974) cited in Musalia (1991) in a study in Taiwan using data collected in sample surveys in 1967 and 1969, applied multiple classification analysis and made the conclusion that couples with a child death would go on

to have more births than other couples. Chanaka (1987), in his study using WFS data collected in Egypt, Ghana and Lesotho and using desired family size, additional children wanted and use of contraceptives as proxies fertility preferences found child loss experience to be strongly related to desired family size, such that in all the three countries, desired family size was greater among women who had experienced the loss of at least one child. Williams (1977) noted that in many researches, the view is that fertility decision-making process by couples is influenced by couple's mortality and fertility experiences at each time. Heer and Wu (1975) argued that fertility declines are made sequential and may be different at different stages of life. Using logistic analysis they concluded that personal experiences with the death of ones own children has an effect on additional children desired but there effects are manifested at different stages.

There are four different effects of infant and child mortality on fertility;

Physiological effects, replacement effects, insurance effects and societal effects. The first depends on a couple's own experience with infant mortality while the others are termed as behavioural effects. Replacement effects imply that couples continue to bear children replacing those who die young until some number surviving potential is considered sufficient. Insurance effects assumes that couples have an accurate perception of mortality trends in the community independent of their own experience therefore adjust their fertility upwards accordingly in anticipation of future deaths thus ensuring the survival of at least the number of children considered sufficient. Preston (1975) using a mathematical model to investigate the extent to which mortality decline influences fertility decline concluded that the total percentage change resulting from a given change in mortality is smaller than or equal to but cannot be more than 50 percent of the corresponding change in mortality. This

implies that population will continue to grow even with a reduction in mortality. Knodel (1981) compared subsequent fertility behaviour of couples that have reached similar stages in childbearing process according to their previous experience in child loss while controlling for several factors. The high correlation between the two is as a result of socio- economic factors affecting both variables in the same direction as well as direct causal effect of fertility on mortality. Direct personal experiences of a child loss can influence a woman's subsequent reproductive behaviour; also fear of losing subsequent children, indirect experiences like knowledge of child deaths among friends and relatives or in the community could affect reproductive behaviour.

Publey, Delgado and Brunmenn (1979) studied individual level behavioural effects of infant. Child mortality on fertility desires in Guatemala. Child loss was analyzed together with socio-economic control variables like education, residence and housing quality index and it was found to be strongly and positively related to the desire for additional children using logistic regression analysis. Nur (1985) using Jordanian fertility survey data and Multiple Classification Analysis while controlling for selected socio-economic and demographic variables showed that women with prior experience of infant deaths tend to have a greater number of children ever born compared to those who never experienced any child death. Cantrelle et al (1978) using African data failed to find any relationship at an aggregate level between the total fertility rates and infant mortality rates.

In Kenya studies done; reveal that a child death is related to fertility. Wamucii (1991) using Kenya Fertility Survey of 1977 and Kenya Demographic Health Survey of 1989 found that experience of a child death was an important predictor of contraceptive use in Kenya. Kimani (1992) using the 1989 Kenya Demographic and Health Survey data used birth

intervals as a measure of fertility and found that the death of a child is associated with shorter birth intervals, hence a higher fertility compared to no childless experience. According to him, subconsciously the presence of an infant may reduce the frequency of intercourse in several ways such as sleeping arrangements between couple whereby the wife sleeps with the baby. It may also overburden the mother, reducing her sexual desires and subsequently her risk of conception. Musalia (1991) using 1989 Kenya Demographic and Health Survey data attempted to establish the relationship between infant child mortality on fertility. Using multiple classification analysis and controlling for other factors, he found that at each given parity women who had suffered child losses went on to have a higher number of births in order to replace dead ones. Ongor (1990) using the KFS data studied some factors that influenced fertility attitudes and outcome. The specific objective was to look into the effect of personal infant or child loss on fertility attitude and outcome. Applying logistic regression model he found that infant/child loss supported the hypothesis that a positive relationship exists between children ever born and direct infant/child loss.

In summary at macro level the relationship between child mortality and fertility is complex and results haven't been consistent due to different correlated factors for example norms existing in a society on family size, sex preferences in different societies. At micro level, the effect has been conceptualised and undertaken at various levels of analysis utilizing a variety of infant/ child mortality and fertility measures. In addition, studies in Kenya have not revealed consistency on the relationship between the two probably due to difference in the choice of measure of fertility and the methods of analysis.

Kim and Choi (1981) in their study of fertility preferences of Korean women found that a respondent's age and her marital duration are two of the four demographic variables

that accounted for a 90 percent variance in desire for future births. Snyder (1974) in his study in Sierra Leone found that life-cycle variables are important determinants of births. A wife's age has a positive effect up to age 35, while a wife's age at first birth has a negative effect reflecting that parents crowd births into the early years of marriage rather than spacing them evenly.

Regarding marital duration and the number of times a woman has been married, Poedjastoeti and Hatmadji (1991) in their study on recent fertility trends in Indonesia found that women with longer marital duration are more likely to want to terminate child bearing than those who have been married for a shorter duration. Studies among Thai women showed a clear association between desire for additional children and marital duration as well as the number of living children (Knodel and Debalvaya, 1985). Other things being equal, we would expect that changes in the proportion of women ever marrying would translate directly into changes in fertility (ignoring extra marital fertility). Increases in the proportions married and decreases in age at marriage both lead to a positive effect in lifetime fertility. However, the effect of increasing rates of divorce is uncertain, On one had increases in the period of non-martial exposure would reduce fertility, but this effect would be counter balanced by a tendency for women to remarry and form a new family with each new husband. On balance we would expect the net effect on fertility of all these nuptial changes to be small.

2.4 Exposure to mass media and knowledge of modern family planning methods.

The influence of Mass Media on behaviour has been the subject of much research over time. Some studies suggest that mass media has little effect since people were more influenced by personal contacts and selective perceptions. Later research looking at more sophisticated

campaigns designed to change a variety of behaviours shows that some mass media campaigns have indeed been able to change behaviour but usually because they were better planned and executed, relied more on audience research and mobilized personal and community interaction.

Today, as mass media especially television reach an even larger audience and as health promotion becomes more sophisticated in techniques of persuasion, the question as to whether mass media, health/family planning promotion influences behaviour is still relevant. Social learning theory suggests that mass media has far greater capabilities than the acknowledged role of creating public awareness or spreading specific information. Infact because people learn by observation and using other people as role models, then mass media can indirectly have a potent influence on behaviour. The entertainment component of mass media especially drama and some songs not only attract people's interest but also move them. Family planning practices are seen to spread faster where channels of communication carry these concepts best (Freedman 1987), also ideas have an even greater impact on the adoption of new fertility patterns than economic factors (Cleland and Wilson, 1987). Clearly the use of mass media, and especially an entertaining radio or television format wherever it reaches can be a powerful force not only in informing people about new technologies and legitimating them as community norms but also in stimulating people to seek their efforts to apply that information and in facilitating their efforts to apply their own behaviour (Piotrow et. al., 1990)

Two types of media exposure are of interest.

- General exposure to radio and television, on modern ideas can undermine traditional supports for high fertility.

- Exposure to mass media messages especially on the topic of family planning presumably can increase awareness of and influence contraceptive

Akinrinola. and Westoff (1995) in their comparative report based on twenty-eight surveys conducted in the second round of DHS programme noted that there is a wide range in the average number of children desired. In sub Saharan Africa, it ranges from a low of 3.9 in Kenya to a high of 8.5 in Niger. Factors responsible for these preferences among others included education, residence and exposure to mass media, which included listening to radio, watching television, reading newspapers or magazines with some frequency. Where it works well, exposure to mass media widens the horizon of the people and may free them from parochialism, anachronistic views and narrow minded-ness and it may enhance an individual's capacity for making informed choices (given the resources to act) including choices regarding family sizes. In family planning promotion, evidence is accumulating that well planned mass media approaches can influence attitudes and change behaviour.

In this study knowledge about family planning methods refers to knowledge of modern contraceptives. This usage precludes the wrong notion that in the past, people had no knowledge of how to avoid conception and terminate pregnancies, actions that invited social sanctions. Demographers evaluate knowledge of family planning methods to get a rough idea about the potential for fertility reduction but knowledge however doesn't always translate into behaviour. Undoubtedly, fertility desires are influenced to a lager extent by socio economic, religious and health factors which forge a mutual set of interests even in the absence of family planning very communication.

A couple's stated family size preferences is considered important for assessing their demand for children, for measuring their motivation for fertility limitation and for predicting

future prospects of fertility change. A recent debate over the relationship between family size preferences and fertility outcomes has centred on whether family planning plays a significant role in determining outcomes. If fertility outcomes are determined almost entirely by desired total fertility then the role of family planning programmes would be simply to facilitate through the use of modern contraceptives the reproductive intentions that couples would meet through less modern means if such services and methods were not available. According to this argument, a decline in the desire for children is a reflection of changing social, economic and cultural influences and family planning services and methods represent only a means to a predetermined end. It's indeed difficult to demonstrate empirically that family planning has played a significant role in reducing desired fertility. Critics have noted the important contribution that the availability of family planning services makes to reducing unwanted fertility but what of the role of family planning in creating ideational change, first by bringing about awareness of fertility control and second by promoting the advantages of smaller families and potentially kindling a desire to have fewer children. Family planning programmes have largely achieved the first precondition by fostering awareness of the individual power to control what was considered destiny, fate or up to God. In addition to increasing knowledge of and access to methods, programs typically stress the advantages of Family planning to parents, children and society as a whole. Family planning programmes promote a small family norm, through at the very least the ambiguous regulation of a small family, as a means of identifying service delivery sites or the programme itself.

While some programme limit themselves to this almost subliminal level of promotion, others aggressively strive to change family- size ideals. Strategies have included policy changes to raise the age at first marriage, campaigns to delay age at first birth to

promote birth spacing, fewer births over all for the improvement of maternal and infant health, efforts to equalize the value parents ascribe to girl children and boy children and attempts to raise awareness of the impact of rapid growth on the environment. Family planning programmes may recommend that couples have the number of children that they can reasonably afford and educate, or that will be commensurate with the country's self-defined need for sustained development

According to Ronald Freedman (1974), strong and surprising evidence from Matlab, Bangladesh demonstrated that intensive programme did not decrease preferences; however it did crystallize latent demand for fewer children, resulting in a demand for contraception. It is important to note that interest in creating Family planning programme arose in many countries only after declines in mortality and other aspects of development led to decreases in fertility preferences and created a potential demand for contraceptives in the population and a concern about fertility among government leaders. Therefore, at the beginning the immediate task for programmes was not to decrease fertility preferences but rather to legitimate contraception and make it available as the solution to pre-existing problems of unmet need. At that time, trying to reduce family planning preference further was often seen as difficult, unnecessary and politically risky. Once most programmes were underway their primary goals were usually to increase contraceptive use and decrease fertility.

Several kinds of evidence have demonstrated that family planning programmes sometimes do not affect preferences but do help to crystallize latent demand created not by the programme but by other development processes. In many places latent demand was created by non-programme forces before the programme began. Once the programme was underway, it served to crystallize latent demand quickly by overcoming cultural barriers.

Clearly, programmes have a feedback effect (a form of diffusion) that increases peoples desire to have smaller families and to use contraceptives when they observe or hear about such use and can see the resulting small families directly affected by family planning programme. Mass Media programs carrying family planning messages could affect fertility preferences directly. Results show that knowledge on the part of either or both spouses of a source of supply of family planning, substantially contributes particularly to the husbands desires to have more children.

Mahmood and Ringheim (1988) using data from Pakistan concluded that communications about family planning and family size are significant covariates of desire for more children. The direction of causation in this relationship is possibly a two way occurring when already established fertility desires are articulated to the partner and when a discussion of advantages of child spacing or birth limitation is translated into lower fertility desires. So far contraceptive accessibility remains a problem particularly in rural areas where only a minority of men know of a source of family planning. Similarly the use of mass media to raise awareness has not taken advantage of the growing percentage of respondents. By promoting child quality over quantity, counteracting son preference, encouraging couples to consider the health, educational and economic futures of their children promoting increased male responsibility for family planning reproductive health.

Despite all this, researchers have experienced difficulty in demonstrating convincingly that Family Planning programmes influence on demand for children. Akinrinola and Westoff (1985) in their comparative report based on twenty-eight surveys conducted in the second round of DHS programme studied two countries Bangladesh and Pakistan. There was an interesting large difference in the mean number of children desired

for Bangladesh (2.5) and Pakistan (4.1), two countries with many cultural similarities. It was explained that there has been an aggressive family planning programme effort in Bangladesh, which appears to have influenced reproductive preferences as well as contraceptive behaviour while no such effort has been mounted in Pakistan.

2.5 Theoretical framework

In this section, a review of some of the theoretical explanations about factors causing fertility change and/or its variation in society is undertaken. This will help in identifying appropriate variables that may be related to fertility preferences. Fertility differential is due to the combined effort of demographic, biological and socio-economic factors. The theoretical perspectives so far considered in developing countries have two different views. Proponents of the first view hold that development is the best contraceptive and that family planning programs are of little value in bringing about changes in reproductive Behaviour. This view is based on the assumption that fertility changes are as a result of changes in the demand for children as society develops (Pritchet, 1994). The alternative view points to the role family planning Programmes have played (Freedman, 1992, Cleland and Wilson, 1987). This view suggests that providing information and access to contraception offers potential for changes in reproductive Behaviour.

Malthusian theory Contended that an increase in economic development would lead to a decrease in fertility. The theory however implicated less the socio-cultural dimensional which today has been found to be of equal importance in the study of fertility differentials. Easterlin (1975) came up with one of the most popular economic theories of explaining

fertility changes in developing countries. His supply demand framework uses both economic and sociological approaches to explain fertility changes. Accordingly, social and economic modernization factors and other basic determinants affect fertility outcomes by operating through demand for children, supply for children and the cost of fertility regulation. Demand for children refers to the number of children parents will have if fertility regulation was costless. Supply on the other hand refers to the number of children parents will have without any deliberate efforts to limit childbearing. Cost of fertility regulation includes economic, psychological, health and social cost of acquiring and using contraception or abortion. If demand exceeds supply, then there is no motivation to control fertility while excess supply motivates couples to use contraception to be able to implement their fertility preferences.

Caldwell on the other hand advanced an alternative theory that holds that there are only two fertility regimes: one where it is rational to have many children and the other where it is rational to have fewer children. In each case, the actual family size is dictated by not only economic considerations but also social and psychological reasons. Children in developing countries have been viewed as likely to have net economic benefit through their productivity in farms and households economic support during old age. As society develops Caldwell's intergenerational wealth flow theory claims that the wealth flow reverses direction from younger to older and begins to flow from older to younger generation due to rising costs of education and rearing of children coupled with decreased dependence on agriculture and increased urbanization.

Similarly, Becker (1990) developed a consumer theory that stresses the rational cost-benefit analysis that parents are involved in, while deciding whether or not to limit family size. Accordingly, parents make some rational decision that influences their preferred family

size. In this theory, parents are not only concerned with quantity but also quality of children. There is also the time allocation cost of children to their parents relative to other activities. Fertility therefore will be affected as the demand to invest in high quality children increases.

This study makes use of pulums model whose basic concern was to identify socio-economic differentials in stated fertility preferences using data from Sri Lanka fertility survey of 1975. According to this model the response to survey questions, which concern numbers of births, are regarded as indicators of an underlying continuous variable at the level of the individual. The underlying variable is the utility that a woman has for a particular total or incremental number of births, taking into account her current circumstances. In order to emphasize the role of cultural, normative, personality, as well as economic dimensions the term preference is used.

In brief, it is assumed that every woman at any time has an entire preference function, which describes the relative utility of each family size that she could possibly have. That function, together with her current family size (number of living children that a women has at any particular time), will generate her statements about desire for additional children. If she attaches higher utility to a greater family size than the one she currently occupies, then she will state a preference for more children. By way of general formulation of the model, the preference function would therefore change as the woman's circumstances e.g. age, education, and work status, etc. change. It can therefore be interpreted to include re-assessment and re-calculation of utilities as family re-building progresses (pulum 1980)

The orientation to the statistical analysis of the responses will be briefly stated. Let u_i be the utility attached to a completed family size i. We assume that u_i has a systematic component which is a function of measured variables such as family size, education etc.

If we had true values of u_i and included a residual or unmeasured source of variation, e, we would be able to completely describe $u_i = f_i(x_i \quad x_k, e)$ with some functional form f_i (Pullum, 1980). If a woman occupies family size i and is considering moving to family size i+1, her decision indicates the sign $(u_i + 1 - u_i)$. If the difference is in the vicinity of zero, she will be undecided; otherwise she will respond "Yes" or "No" accordingly, as the difference is positive or negative. Pulums model has some limitations; it emphasizes demographic and socio-economic determinants of fertility preferences at the expenses of other factors, e.g. socio-cultural and exposure factors. In an attempt to fill this gap, the study includes these factors. However, it is important to emphasize that the study is not intended as a rigorous and direct testing for this conceptual framework, rather the framework will serve as a device to guide the study in an attempt to identify the determinants of fertility preferences in Kenya, based on the 1998 Kenya demographic and health survey data.

The demographic, socio-economic and socio-cultural variables and their theoretical relationship with the preference function conceptualized above are briefly discussed below.

A positive association between actual and desired number of children has been documented by several studies (Pullum, 1980; lee and Bulatao, 1983; Lightbourne and McDonald, 1982). This association is explained by the fact that where preferences are successfully implemented, women who initially desire a large family eventually have one and where implementation is poor, women may tend to rationalize an actual large family size by reporting it as their preference. On the other hand, the association between desire for additional children and actual family size is inverse; as family building progresses further, parents tend to stop child bearing (Khan and Sirageldin, 1977; Lee and Khan, 1978; Kim and Choi, 1981, Poedjastoeti and Hatmadji, 1991).

Several studies have shown the effect of sex composition on fertility preference (Kim and Choi, 1981; Stinner and Mader, 1975, Park, 1983; Radheshyam and Langsten, 1986; Khan and Sirageldin, 1977). The consensus among these studies is that a couple with a strong preference for one sex, or at least one child for each sex, may go beyond their family size in the event that they do not achieve the sex composition they want by the time their preferred number of children is reached. They also concur that desire for additional children is inversely related with the number of sons in the family.

Age of the mother is another factor that been association with fertility preference. The relationship between desire for additional children and age of respondents almost universally, is indirect (Freedman et all, 1974; Kim and Choi, 198; Bulatao and Fawcett, 1983). This is explained by the tendency of parents to crowd births into the early years of marriage rather than to space them evenly along their reproductive career. (Snyder, 1974)

The relationship between child loss experience and fertility intentions is a complex one. At micro level, the effect has been conceptualised and in general it may be assumed that the death of a children may lead to desire for additional children through a tendency towards replacement of lost children by couples. It is logically plausible that women with child loss experience would have a higher demand for additional children than those who have all their children alive (Chanaka, 1988; Choe et al: 1992; Snyder, 1974).

The relationship between educational attainment and fertility is multidimensional while factors such as changing tastes, opportunity cost of the wife's time and effective use of birth control would cause a negative relationship, such factors such as the effect of parents education on income, among other things may introduce a positive relationship.

The relationship between desired fertility and work status of a woman is not quite clear and there are conflicting opinions with regard to this association. This not withstanding, the negative association between number of children desired and women's participation in the labour force is documented by different studies (Lee and Bulatao, 1983; Moustafa, 1988, Abdallah, 1988). The presence of young children supposedly represent a significant cost in the form of foregone income for a working wife thus causing a negative relationship between fertility and female participation in the labour force. These theoretical assumptions have however, experienced a lot of criticisms especially in developing countries where opportunity cost of child care is relatively low given that other household members can help take care of children and where work is usually done around the home thus making childcare and work not necessarily incompatible. On other hand, women with many children have a relatively strong " need for income" so that these women may be more likely to work than other women.

Different studies have evidence that urban women have lower actual fertility performance and fertility preferences than women living in rural areas (Choe et al. 1992; Harper et al., 1974; Poedjastoeti and Hatmadji, 1991; Moustafa, 1988; Khan and Sirageldin, 1977). This urban-rural differential is due, among other things, to the characteristics of urban life itself such as the higher net cost of children, freedom from traditional pronatalistic values which favour large families and better access to employment on the modern sector and other lifestyles that provide alternatives to bearing and rearing of large number of children.

The theoretical relationship between fertility preference and religion has been evidenced with a consensus that different value systems and beliefs associated with different religions bring about differentials in reproductive Behaviour. These value systems are

attached to various factors such as widow remarriage, abstinence, religious celibacy and adoption of contraceptives. There also exist cultural differences in the above-mentioned factors between different ethnic groups thus bringing about differentials in reproductive behaviour (Ashikpata, 1988: Pullum 1980).

The influence of mass media on behaviour has been the subject of much research over time. Where it works well, exposure to mass media widens the horizon of the people and may free them from parochialism, anachronistic views and narrow minded-ness and enhance an individual's capacity for making informed choices (given the resources to act) including choices regarding family sizes. There has been a lot of diverse debate on the affect of family planning on stated preferences. A recent debate over the relationship between family size and fertility outcomes has centered on whether family planning plays a significant role in determining outcomes. If fertility outcomes are determined almost entirely by desired total fertility then the role of family planning programs would simply be to facilitate through the use of modern contraceptives the reproductive intentions that couples would meet through less modern means if such services and methods were not available. On the other hand critics have noted the important contribution family planning programs have made in bringing awareness of fertility control and by promoting the advantages of smaller families and potentially kindling a desire to have fewer children, facilitated by increased knowledge of and access to modern methods of family planning.

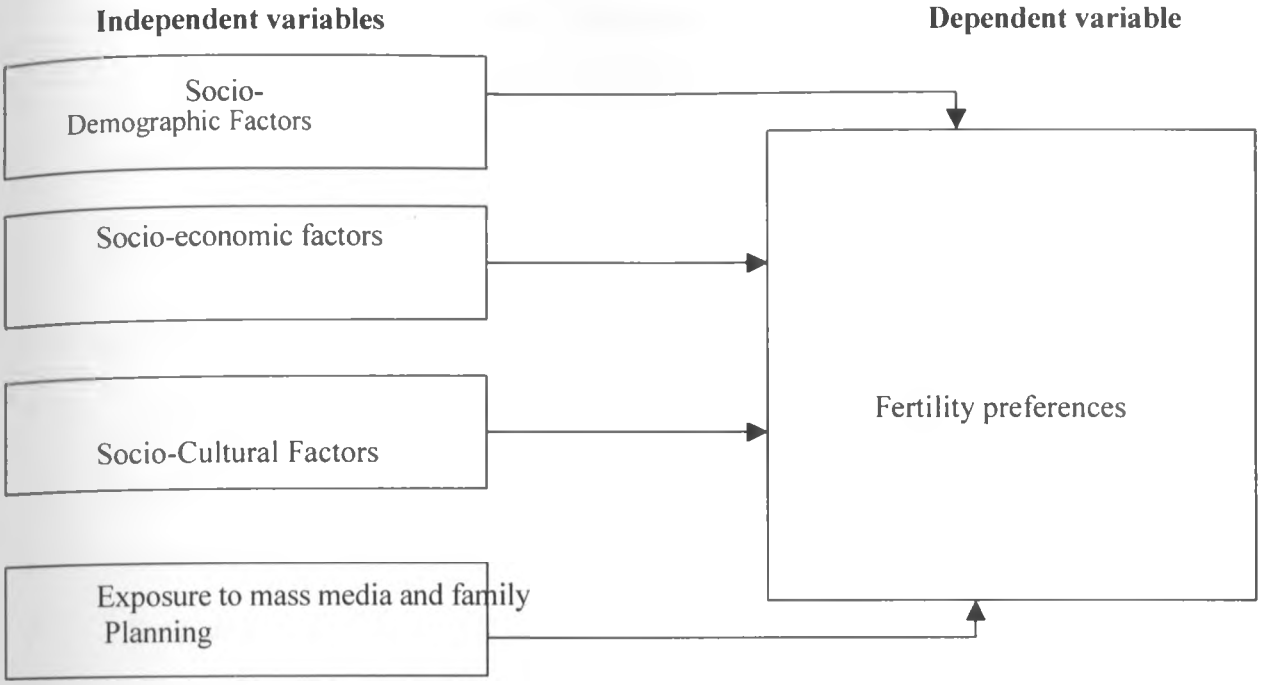
There is no consensus among researchers in the effect of marriage type on reproductive behaviour. On one hand polygamy reduces fertility preferences of individual women probably due to the decision-making autonomy afforded by the presence of other women. On the other hand the more educated and urban monogamous women may be

negatively affected by economic development hence desiring fewer children. While the relationship between marital duration and desire for additional children is clear, the effect of increasing rates of divorce and separation is uncertain. On one hand, increase in the period of non-marital status would reduce fertility, but this effect would be counter balanced by a tendency for women to remarry and form a new family with each new husband. On balance the net effect on fertility of these nuptial changes are expected to be minimal.

2.5 Conceptual model

From the literature review and the theoretical framework, it is evident that a link exists between various socio-economic, socio-cultural, and demographic as well as programme factors and fertility preferences. Pulums model describes the cause effect relationship between fertility preferences and these factors. This study adopts this model with some modifications to re examine to what extent some socio-cultural values and programme factors influence fertility preference at a time when Kenya is undergoing rapid fertility change.

Conceptual framework



Source: Modified from Pulum, 1980.

2.6 Definition of concepts

Fertility Preference refers to choices by parents in relation to fertility matters. The preferences include, how many children are considered to be ideal, whether one desires another child or not, how soon to have an additional child that is stop child bearing or space births etc. In this study, fertility preference is measured by desire for additional children and later, preferred waiting time is introduced in the study to determine if the same factors determining fertility preference would hold for a different measure of fertility preference. The study considers the following socio- demographic variables: age of the mother, marital stability, and gender mix of living children, child loss experience, and marriage-type. Socio-economic factors include indices of socio-economic status such as, level of education, type of

place of residence and work status of the woman. Socio-cultural factors are those that govern the way people live in a given society. These include religion and ethnicity. Exposure factors included in this study intend to cover contact or exposure variables that influence fertility preferences. They include exposure to mass media and knowledge of modern family planning methods.

2.7 Conceptual Hypotheses:

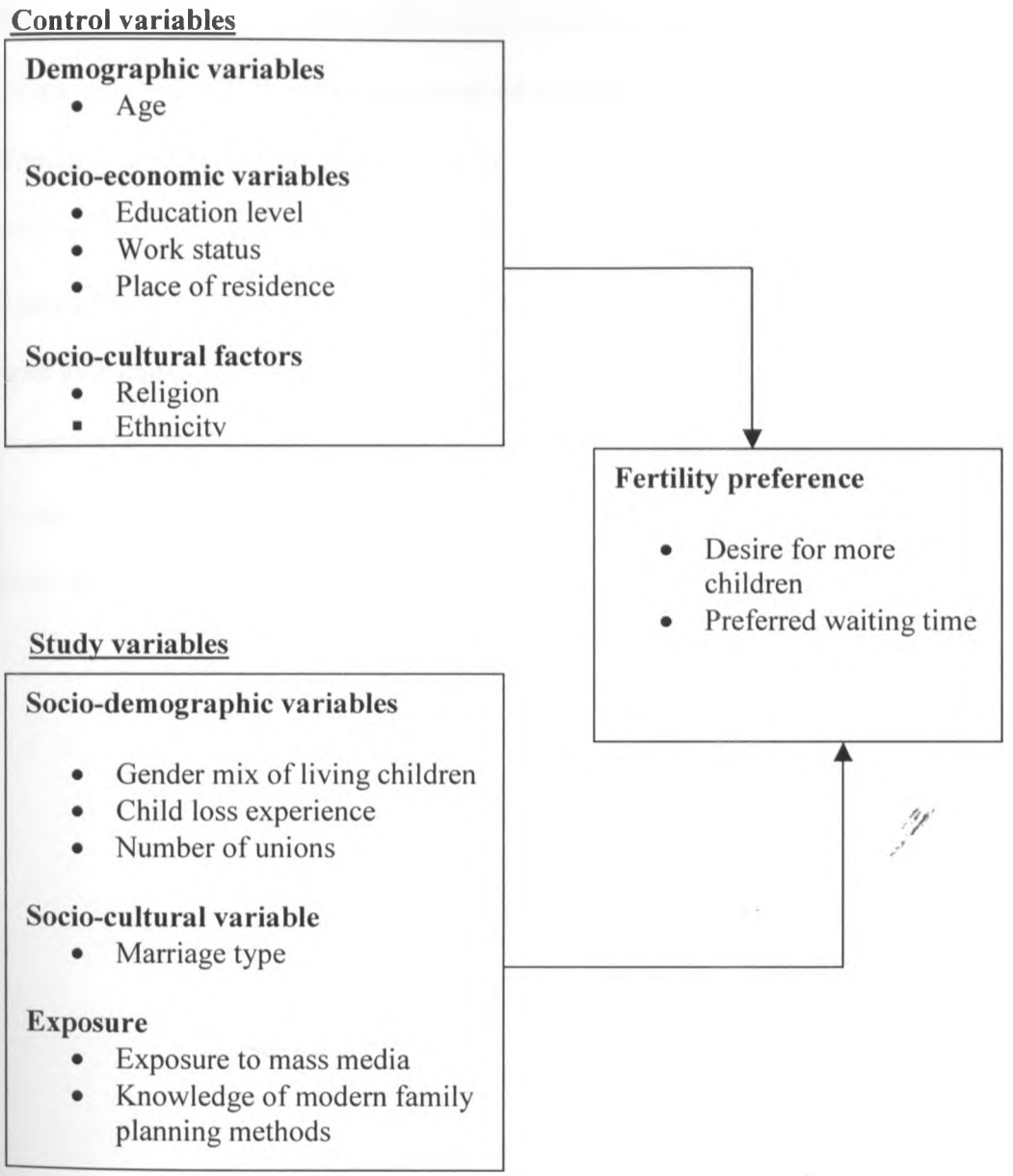
1. Fertility preference of women is likely to be significantly influenced by socio-Economic characteristics.
2. Fertility preference is likely to be significantly influenced by socio-cultural factors
3. Socio-demographic factors are likely to significantly influence fertility preferences.
4. Exposure to mass media and knowledge of family planning methods are likely to significantly influence fertility preferences.

2.7 Operational model

The operational model employed in this study shows the association between selected socio-economic, socio-cultural, socio- demographic and exposure variables and the dependent variable. However the interest of this study lies in testing how these variables influence fertility preference, which is designated by desire for more children and preferred waiting time. Literature shows that factors like age of the woman, education level attained, work status, ethnic background, religious affiliation, region and place of residence influence fertility preference. However the effect of other factors like gender preference, marital instability, infant and child mortality, marriage type, programme factors like exposure to

mass media and knowledge of family planning methods is inconclusive. Figure 2.2 shows the operationalised variables with background characteristics indicated as control factors.

2.2 Operational model



Source: Modified from Pullum, 1980

2.8 Research Hypotheses

- Women in polygamous unions are less likely to desire more children compared to those in monogamous unions.
- Women who have been married more than once are more likely to desire for more children compared to women who have been married only once.
- Women who have experienced a Child loss experience are likely to desire additional children.
- Women who have more daughters are more likely to desire additional children compared to those with equal boys to girls.
- Women who are more exposed to mass media are less likely to desire additional children.
- Women who know more modern methods of family planning are less likely to desire additional children.

CHAPTER THREE: DATA SOURCES AND METHODOLOGY

3.0 Introduction

This chapter presents the source of data and the methodology employed in data analysis for this study. The data utilized are obtained from the recent Kenya demographic and health survey (KDHS 1998). The study intends to use both bivariate and multivariate analyses to determine the association between desire for additional children and the selected independent variables as well as assessing the determinants of desire for more children. As a summary multiple classification analysis as applied to logistic regression is used to obtain the proportions desiring more children for each of the categories of the significant variables from the logistic regression results. Finally variables used in the analysis are briefly described in form of a table.

3.1 Data source

Kenya demographic and health survey which is the source of the data used in this study is a national survey which was carried out by the National Council for Population and Development. It was national in scope but excluded all the three districts in north-eastern province and four other districts. (Turkana, Samburu, Isiolo and Marsabit). Together the excluded areas account for less than four percent of Kenya's population. The principal aim of the 1998 KDHS project was to provide up to date information on fertility and childhood mortality levels, nuptiality, fertility preferences, awareness and use of family planning methods, use of maternal and child health services, knowledge and behaviour related to HIV/AIDS and other STDs. It was designed as a follow up to the 1989 and 1993 , National-level Surveys of similar size and scope.

3.1.1 Sample Size and Design

The 1998 Kenya Demographic and Health Survey utilised a two-stage, stratified sampling approach. The first step involved selecting sample points or clusters while the second stage involved selecting households. The sample points were selected from a national matter sample (sampling frame) maintained by the central bureau of statistics. From this matter sample (NASSEP-3) 536 sample points were drawn but only 530 were completed thus included in the survey. A total of 9465 households were selected from these sample points where all women aged 15-49 in each of the selected household and all men aged 15-54 in every second households were identified. 8233 eligible women were identified and 7881 were successfully interviewed yielding a response rate 89 percent (KDHS1998).

Unlike previous Surveys which asked the question of desire for more children to only currently married women, 1998 Survey asked this question to all men and women interviewed. However for purposes of this study, only currently married women were included such that out of a total of 7881 women, only 4847 currently married women are considered with 141 cases excluded because of missing data narrowing down the study sample size to 4706.

3.1.2 Instruments of Data Collection

Three types of questionnaires were used in the 1998 Kenya Demographic and Health Survey. The household questionnaire, the women's questionnaire, and the men's questionnaire. The analysis in this study is based on the data collected using the women's questionnaire, which included questions on various topics among them background characteristics (age, education,

religion etc.), reproductive history, marriage and sexual activity and of key interest to this study a topic on fertility preference among others.

3.1.3 Fertility preference data.

Women and men were asked a series of questions to ascertain their fertility preferences, that is, their desire to have another child, the length of time they would like to wait before having a child and the number of children considered to be ideal. This data made the quantification of fertility preferences possible. On desire for more children, men and women in the Kenya Demographic and Health Survey were asked, would you like to have a (another) child or would you prefer not to have any (more) children? Women who said they wanted to have another child were then asked how long they would like to wait before the birth of the next child. The responses to these questions constituted the data used in this study relating to the dependent variable. Other data used in this study related to the different set of independent variables hypothesized to affect fertility preference (KDHS 1998).

As mentioned earlier there are several difficulties that are associated with the measurement of this variable. Some investigators have suggested that responses to questions about ultimate family sizes and intentions are meaningless or at best unreliable. They argue that many women in developing countries are not accustomed to planning their families or are uninformed about how to affect the number of births they will eventually have. Questions on fertility intentions contain significant hypothetical components since women cannot choose family sizes without a cost since they must imagine alternative life cycles that involve different family sizes. The variable is also characterized by numerous non-responses since some women still believe that its up to God regarding the children they are to have.

According to 1998 KDHS these problems were not of high magnitude and therefore did not need adjustments or modifications.

3.2 Methods of analysis

3.2.1. Bivariate analysis

Bivariate analytical tools such as cross tabulation tables and chi-square tests were used to determine the association between desire for more children and some selected socio-economic, socio-demographic and exposure factors. These associations were examined by using the column percentages of the cross tabulation tables. Differences in such percentages indicated the level of association. To determine whether these associations were significant, a chi-square test was undertaken. It is one of the simplest and most widely used in statistical analysis. The chi-square describes the degree of difference between theory and observation. If the chi-square value is zero, this implies that the observed the expected frequencies completely coincide. The greater the value of chi-square the greater will be the discrepancy between observed and expected frequencies. Chi-square test determines the statistical significance of the association where the null hypothesis and alternative hypothesis are stated as follows,

H_o- states that the two variables are independent.

H_1 - states that the two variables are dependent.

The researcher then confirms or disconfirms H_o at a given level of significance by comparing the computed chi-square value with the table value of chi-square for given degrees of freedom. The observed level of significance is $\alpha = 0.01$ and $\alpha = 0.05$ for a two tailed test, the

null hypothesis of independence is rejected and the alternative hypothesis is accepted as the Chi-Square value at these chosen levels falls within the rejection area.

3.2.2 Logistic Regression

A logistic regression analysis is a multivariate statistical technique that can be used to obtain the relationship between factors when the dependent or outcome variable is binary or dichotomous. The model estimates the probability that an event will happen (in this case desire for more children) given certain conditions (that is explanatory /independent factors). The fitting of a logistic regression model is undertaken in the same way as that of any model-building technique such as linear regression. The issue is to find the best fitting model to describe the relationship between the dependent variable and a set of explanatory variables. The interest however is not to estimate the value of the dependent variable but to estimate the probability of a given event or more specifically how a series of exogenous variables influence the underlying probabilities of a particular event (Hanbel and Jackson, 1994).

Since the study deals with a set of independent variables and not just one, multiple logistic regression model is appropriate. The logistic model is usually presented in terms of the log of odds or logits that transforms the general logistic distribution into the formula form of the multiple linear regression model and may be expressed as follows:

$$L = \ln (p / 1-p) = B0+B_1x_1+B_2X_2.... B_n X_n \quad \textbf{Equation 1}$$

Where

L - refers to the logit or the log of the odds. An odds is defined as the ratio of the probability that an event will occur p to the probability that it will not occur 1-p

B_o - refers to the intercept of the logistic regression model. B_1 is the logistic regression coefficient, which may be interpreted as the change in the log odds of the occurrence of an event, associated with a one-unit change in the independent variable Xi holding constant all other variables.

Positive values of regression coefficients indicate that the independent variables or their interactions raise the log odds of the dependent variable while negative values indicate lowering of log odds of the dependent variable. Since it is easier to think of odds rather than log odds the logistic equation will be written in terms of odds as

P(event) $= e^{b_0+b_1x_1 \ldots\ldots b_nx_n}$ / P(no event) $= e^{b}0+e^{b_1x_1}+e^{b_nx_n}$ ..... (2)

Then e raised to power bi is the factor by which the odds change when i^{th} independent variable increases by one unit. If Bi is positive the factor by which the odds change will be greater than one and if Bi is negative, this factor will be less than one meaning the odds are decreased. When Bi is zero the factor equals one that is, it leaves the odds unchanged. However, the magnitude of the estimate of the regression coefficients do not tell which variable is more important than the other in explaining desire for more children.

Alternatively, logit analysis could be seen as a probability regression model, which expresses the dependent variable Yi as a non-linear function of the explanatory variable Xi and can be interpreted as the probability that an even will occur or not given the explanatory variables.

In this case:

$P = (e^{B_0+B_1X_1 \ldots\ldots B_nX_n}) / (1+e^{B_0+B_1X_1 \ldots\ldots B_nX_n})$ 3

Where B_0 and B_i are coefficients

X_1 to X_n are independent variables

While e represents the base of the natural logarithm, approximately 2.718.

This means that the probability of an event occurring (P) depends on the independent variables. Thus in this study, the probability of an individual with characteristics X_1 X_2.. X_n desiring more children is given by equation 2.

The parameters of the model are estimated using the maximum –likelihood method. That is, the coefficients that make our observed results most likely are selected. Since the logistic regression model is non linear, an interactive algorithm is necessary for parameter estimation. In general, if the estimated probability of the event is less than 0.5, we predict that the event will not occur while if the probability is greater than 0.5, the prediction is that the event will occur.

3.2.3 MCA Adapted to Logit Regression.

When multiple classification analysis (MCA) is adapted to logit regression, both unadjusted and adjusted values of the response variable (in this case desire for more children) can be calculated. The unadjusted values are based on logit regressions that incorporate one predictor variable at a time and the adjusted values are based on the complete model including all predictor variables simultaneously. This study concentrates on the adjusted values since the intention in this case is to obtain the net effect of the variables on the dependent variable. The proportions desiring more children are then calculated for the significant predictor variables obtained in the regression analysis.

The model is given by:

$$\Omega = e^{a + b_1 x_1 \ldots b_n x_n} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 4$$

Where

a … Constant in the regression model.

$b_1 \ldots b_n$ - Coefficients of the predictor variables

$X_1 \ldots X_n$ - Values of the predictor variables.

The proportions desiring more children are then given by

$$P = \Omega / 1+\Omega \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 5$$

In the case of adjusted values, the value of Ω for each explanatory/predictor variable is calculated by setting all other variables to their mean levels which is given by the proportion of women in that category. Statistical computing packages such as SPSS/PC+ do not include MCA programs for logit regression, thus the researcher computed the MCA tables from the underlying logit regressions.

3.3 Description of variables used in the analysis.

In order to test the study hypotheses the following operational variables will be used in the analysis. Some variables act, as control factors while the rest are the factors under investigation. The variables are described in the table below.

ble 3.1 Description of variables used in the analysis.

Variable	Measurement	name	Remarks
Desire for more children	0 1	Desires no more Desires more	Outcome variable
Marriage type	0 1	Monogamy Polygamy	Ascertains if a husband has any other wife.
Number of unions	0 1	Married once More than once	Indicator of marital stability/instability.
Gender mix of living children	0 1 2	More daughters Equal mix More sons	Measures the extent of gender preference of children
Child loss experience	0 1	Yes No	Measure of infant and child mortality.

Exposure to mass media	0 1 2	No exposure Semi-exposure Full exposure	Three forms of mass media are considered Radio, television and newspaper. No exposure refers to having access to none, semi-exposure refers to having access to one of them, while full exposure refers to access to all the three methods.
Knowledge of modern methods of family planning	0 1 2	Knows<3 methods Knows3-4 methods Knows>4 methods	Measures knowledge of family planning.
Age	0 1 2 3 4	15-19 20-24 25-29 30-35 35+	Demographic indicator
Education	0 1 2	No education Primary education Secondary education	Socio-economic indicator
Work status	0 1	Yes working No not working	Socio-economic indicator
Ethnicity	1 2 3 4	kalenjin Kamba/meru/embu/kikuyu Kisii/luo/luhya Others	Socio-cultural indicator
Religion	1 2 3 4	Muslim Protestant Catholic Others	Socio-cultural indicator
Region	1 2 3 4 5 6 7	Coast Central Nairobi Eastern Nyanza Rift valley Western	Socio-cultural indicator
Place of residence	1 2	Rural Urban	Socio-economic indicator

CHAPTER FOUR: LEVELS AND DIFFERENTIALS OF FERTILITY PREFERENCE

4.0 Introduction

This chapter addresses two objectives of the study. These are to determine the level of fertility preference based on some basic data on desire for more children in Kenya and secondly to investigate differentials in fertility preference according to the selected socio-economic, socio-cultural, socio-demographic and exposure factors relating to the study population. It's hypothesized that there exists differentials according to these characteristics. On the basis of these objectives and hypothesis, cross tabulation as well as frequency descriptions have been presented.

The following chapter therefore presents the basic characteristics of the study population, levels and differentials of fertility preference. The distribution is based on a set of 4847 currently married women. However due to missing cases in some variables the number of cases may fall slightly below the total of 4847.

4.1 Characteristics of the study population

It is clear from the results of frequency distribution shown in Table 4.1 that the majority of women in the 1998 KDHS data expressed a clear interest to want no more children. 60.3 percent of the women did not want more children and these included those who were sterilized and those that had been declared in fecund. 39.7 percent of all the women expressed a desire for more children. This category of women included all who did not have a clear wish to stop child bearing, for example, the undecided and those who wanted more but were unsure of the timing.

Looking at the distribution of the sample population by region of residence, in a decreasing order 25.5 percent were from Rift Valley province, 18.1 percent fron Nyanza, 15.5 from coast, 14.5 percent from Eastern, 12.0 percent from Western, 9.9 percent from Central, and only 4.6 percent are from Nairobi Province. Further distribution by place of residence revealed that majority of the women representing 82.7 percent of the total study population lived in rural areas. Only 17.3 percent lived in urban areas. Examining the distribution of the study population by age, 38.4 percent of the women are aged between 25-35 years, 36.1 percent are aged 35 and above and only 25.5 percent are less than 25 years of age.

Regarding their ethnic background, the majority of the respondents belonged to the Kisii/Luo/Luyha ethnic group which included 35.7 percent of the population, Kamba/Kikuyu/Meru/Embu ethnic group accounted for 32.1 percent, Kalenjin ethnic group the alone accounted for 16.7 percent while all the other ethnic groups not included in the above categorization accounted for a minority of 15.5 percent. Majority of the respondents reported themselves to be Christians where 63.8 percent reported to be Protestants and other Christians and 26.3 were Catholics. Muslims accounted for 5.1 percent and other religions not in the above categories only accounted for 4.8 percent of all the women included in the study.

Examining the distribution of respondents by marriage type, the majority of the women (83.7 percent) reported being in monogamous unions, which means that the husband does not have any other wife. The remaining 16.3 percent reported their husbands to have another wife. The same pattern was observed for the distribution of respondents by the number of unions. Women were asked how many times one has been married including current union. 92.5 percent

reported to have been married only once while only 7.5 percent reported having been married more than once.

With respect to the gender mix of living children, almost half of the women (44.7 percent) reported having an equal number of sons and daughters. 28.1 percent reported to have more sons than daughters and 27.2 percent had more daughters than sons. Majority of the women had not had any child loss experience (72.8) percent), only 27.2 percent reported having experienced a child loss. This is a general indication of the falling infant and child mortality but we cannot also overlook the fact that majority of women do not like talking about their dead children and may lead to an underestimation of the phenomenon.

A large majority of the respondents have had at least some education with 58.7 percent having primary education and 25.6 percent having had secondary and above education. Only 15.7 percent reported to have had no education at all. The same pattern is observed for the work status of the respondents. 56.7 percent reported to be currently working while 43.3 percent reported not to be working. Work in this case was taken to be involvement in a wide range of activities including working in the shamba and self-employment as well as formal employment and only excluding household duties of a woman.

The percentage distribution of respondents by how many modern methods of family planning they know revealed an almost universal knowledge of family planning methods. Majority of the women accounting for 87.3 percent reported knowing more than four modern methods while only 8.2 percent and 4.5 percent reported knowing 3-4 methods and less than 3 methods respectively.

Examining the distribution of respondents by exposure to mass media, majority representing 42.1 percent have semi-exposure, 32.9 percent have no exposure at all while a

minority of 25.0 percent have full exposure. Mass media in this study is taken to represent watching TV, reading a newspaper and listening to a Radio with some frequency. Full exposure means having access to all the three types of mass media, semi-exposure means having access to one of the three media's while no exposure refers to having access to none of them.

Table 4.1 Percent distribution of the respondents by different characteristics

Variable	frequency	valid percentage
Desire for more children		
No	2924	60.3
Yes	1923	39.7
Gender mix of living children		
Equal mix	2167	44.7
More daughters	1320	27.2
More sons	1360	28.1
Child loss experience		
No	3528	72.8
Yes	1319	27.2
Exposure to mass media		
Semi exposure	2026	42.1
No exposure	1587	32.9
Full exposure	1204	25.0
Marriage type		
Monogamy.	4057	83.7
Polygamy	790	16.3
Number of unions		
Once	4484	92.5
More than once.	363	7.5
Knowledge of modern FP		
More than 4 methods		
3-4 methods	4230	87.3
Less than 3 methods	400	8.3
	217	4.5
Level of education		
No education	762	15.7
Primary	2843	58.7
Secondary +	1242	25.6
Age of the respondent		
15-24	1234	25.5
25-34	1861	38.4
35+	1749	36.1
Respondent working		
No	2095	43.3
Yes	2745	56.7

Place of residence	4009	82.7
Rural	838	17.3
Urban		
Religion		
Catholic	1271	26.3
Protestant	3089	63.8
Muslim	281	5.8
Other	206	4.3
Region		
Nairobi	222	4.6
Central	481	9.9
Coast	753	15.5
Eastern	702	14.5
Nyanza	875	18.1
R.Valley	1234	25.5
Western	580	12.0
Ethnicity		
Kalenjin	808	16.7
Kamba/Kikuyu/Meru/Emb	1554	32.1
Kisii/Luyha/Luo	1732	35.7
Others	753	15.5
Total	4847	100

N.B. Some totals do not add up to 4847 due to missing cases.

Source: computed from 1998 KDHS data set.

4.2 Level of fertility preferences in Kenya

The first objective of this study was to establish the level of fertility preferences in Kenya. To achieve this, the general features of fertility preference based on some basic data on desire for more children are presented and discussed. The desire for more children has been used to designate

the dependent variable while preferred waiting time is used to counter check the results on the desire for more children later in the regression analysis.

Table 4.2 presents fertility desires among women as reported in the survey. According to these results while 39.8 percent of currently married women would like to have another child, only 13.4 percent want one soon (within two years). 25.3 percent would like to space their children, meaning they would like to wait for two or more years before the next child. A minority of 1.1 percent are undecided when to have their next child. Over one-half (55.8 percent) of married women say either they want no more children (47.3 percent), have already been sterilized and therefore wish to limit their family to its current size (5.9 percent), Only 2.6 reported they had been declared themselves infecund and therefore could not bear any children. 4.5 percent could not declare their stand regarding their fertility desires hence were undecided. It's clear from table 4.2 that a large majority of women (78 percent) want either to space their next birth or to end childbearing altogether.

Table 4.2 Fertility preferences among currently married women aged 15-49.

Desire for more children	Cases	Percentage
Wants within 2 years	647	13.4
Wants after 2 years	1225	25.3
Wants unsure timing	51	1.1
Undecided	216	4.5
Wants no more	2291	47.3
Sterilized	287	5.9
Declared in fecund	124	2.6
Total	4841	100

To present a more precise picture of the level of fertility preference in Kenya, The number of children desired by parity is presented. Table 4.3 presents fertility desires by number of living children. According to this table the desire for more children decrease sharply with increasing number of living children. For example, 71 percent of married

women with no children desire to have another child soon as compared to only 1.4 percent of women with six or more children. The reverse is observed for women desiring no more children with only 2 percent among married women with no children to as high as 75 percent among women with six or more children.

ble 4.3 **Fertility preferences according to the number of living children**

Desire for more Children / Number of Living Children	0	1	2	3	4	5	6+	Total
Wants within 2 years	71.2	27.3	14.9	11.9	6.8	3.1	1.4	13.8
Wants after 2 years	12.1	58.8	43.7	27.9	13.3	9.3	2.9	25.0
Wants undecided when	5.2	1.4	0.9	1.3	1.4	0.4	0.2	1.1
Undecided	2.4	2.5	5.2	5.0	5.0	5.2	3.2	4.2
Sterilized	0.0	0.3	0.9	3.5	8.0	12.3	13.8	6.2
Declared in fecund	0.3	1.7	1.3	1.9	1.3	3.5	3.5	2.4
Wants no more	1.7	7.8	32.9	48.3	64.3	66.1	74.9	47.1

Source: 1998 KDHS data set

4.3 Fertility preference differentials

The second objective of the study is to investigate the differentials in desire for more children according to selected characteristics of women. Table 4.4 shows the percent distribution of currently married women according to their desire for more children and selected background characteristics, together with the Chi-square test results. The results have been discussed in the following section.

4.3.1 Socio-demographic Characteristics.

These included gender mix of living children, child loss experience, type of marriage, the number of unions and the age of the respondent. The desire for more children was recorded to be higher for women in monogamous marriages (45.2 percent) as compared to women in polygamous marriages (39.0 percent). This association between marriage type and desire for more children was highly significant. The finding is in conformity with the hypothesis, which states that the marriage type of a woman is likely to influence desire for more children.

There is almost no difference in the level of the desire for more children among women who have been married once and those who have been married more than once, although there is a slightly higher level of desire for more children among women who have been married more than once (45.0) percent) as compared to 44.1 percent among women who have been married only once. The desire for more children is not significantly related to the number of unions a woman has been into. The Chi-square test therefore refutes the hypothesis, which states that number of unions affects desire for more children. However, due to the importance attached to this variable for policy implication, the variable has been carried on to regression despite its insignificance at Chi-square level.

The desire for more children was higher among women with a child loss experience (47.6 percent) as compared to women who had no child loss experience (35.1percent). The Chi-square test shows that child loss experience is significantly related to desire to for more children.

The proportion of women desiring more children was highest for women who reported having more daughters than sons (47.2 percent). The proportion desiring more children for women who had more sons than daughters and those who had an equal number of sons to

daughters was 43.6 and 42.7 percent respectively. The differences in desire for more children according to gender mix of their living children were observed to be significant at 95 percent level of confidence.

As expected, desire for more children declines sharply with age. The highest proportion of women desiring more children was recorded in the youngest age group of 15-19 years (91.6 percent). This declines to 78.1, 56.2 , 38.4, 18.8,11.5 and the lowest of 4.6 percent for age groups 20-24, 25-29, 30-34, 35-39, 40-44 and 45+ respectively. Differences in desire for more children according to the different age groups were found to be highly significantly.

4.3.2 Knowledge of modern family planning and exposure to mass media.

Knowledge of modern family planning methods, indicated how many modern methods a woman spontaneously knows by count while exposure to mass media included, full exposure representing exposure to three form of mass media namely radio, television and newspaper. Semi-exposure as described earlier refers to exposure to one of these and no exposure refers to having access to none of these three forms of mass media. The highest proportion of women desiring more children was recorded for women who had no exposure at all (43.0 percent). There is almost no difference however between women who were semi exposed and those full exposed. The proportions desiring more children in these two categories were 38.5 and 38.9 percent respectively. Desire for more children was found to be significantly related to exposure to mass media thus confirming the hypothesis stated in Chapter two that exposure to mass media is associated with desire for more children.

As expected, desire for more children declines with higher knowledge of modern family planning methods. The desire for more children was recorded to be highest for women who knew less than three methods (52.5 percent). 48.0 percent of women with knowledge of 3-4 methods desired more children while fewer women with knowledge of more than four modern methods (43.2 percent) desired more children. Results of Chi-square test show that knowledge of modern methods of family planning is significantly associated with desire for more children. This confirms the hypothesis that women with a higher knowledge of modern family planning methods are less likely to desire additional children.

4.3.3 Socio-economic Characteristics

These included education level and work status of the woman. Generally the desire for more children is expected to be lower for the educated women as compared to women with no education. Results from this data set however revealed otherwise. Women with secondary education and above had a higher level of desire for more children (42.8 percent) as compared to 41.1 percent and 29.3 percent for women with primary education and no education respectively. The desire for more children as expected was found to be higher for non-working women (43.5 percent) as compared to those who were working (36.8 percent). It is generally expected that a workingwoman is less likely to desire more children as compared to a woman who is not working due to the high opportunity costs incurred by a workingwoman in the bearing and rearing of a child. This is true for Kenyan women. It is further confirmed that work status of the woman is significantly associated with desire for more children.

4.3.4 Religious affiliation and ethnicity.

The religious affiliation and ethnic background of the respondent were each considered in this study. There seems to be no difference in the level of desire for more children among the Catholic and Protestant women. These two groups also expressed the least desire for more children (42.0 percent and 43.4 percent) respectively. Muslims had the highest level of desire for more children (56.6 percent) while all other religious groups not in the three categories above had a slightly lower level of desire for more children (52.4 percent). Desire for more children was found to be significantly associated with religious affiliation of the woman.

Like religion, women from different ethnic groups expressed differences in desire for more children. Results in Table 4.4 indicates that the lowest proportion of women desiring more children belonged to the Kamba/ Kikuyu/ Embu/ Meru ethnic groups category (38.1 percent), followed by Kalenjin community (44.4 percent), Luo /Luyha/ Kisii category (46.0 percent). The highest level was recorded for the category including all other tribes (52.4 percent) that were not included in the above categorization.

4.3.5 Region and type of place of residence.

Seven regions were considered in this study, these included, Central, Nairobi, Eastern, and Western, Rift. Valley, Coast and Nyanza. Type of place of residence included either urban or rural. There was no difference in level of desire for more children recorded in Central and Eastern Provinces, which are the two regions with the lowest level. Each had a proportion of

32.2 percent of women desiring more children. Others included Rift Valley (37.6 percent), Nyanza (41.5 percent), Nairobi 42.3 percent, Western 43.4 percent). Coast recorded the highest level of 49.0 percent. A larger proportion of urban women desired more children as compared to rural women. 45.0 percent of urban women reported a desire for more children a compared to only 38.6 percent of rural woman. Controlling for the number of living children the reverse is recorded where for example among women with one to three children 67.9 percent of rural women desired more children as compared to 57.4 of urban women. The case was also true for women with four children and above. Differences in desire for more children according to region and type of place of residence were observed to be statistically significant.

ble 4.4 **Percentage distributions of respondents by desire for more children**

Variable	No	Yes	Count	Total
Marriage Type				
Monogamous	54.8	45.2	4052	
Polygamous	61.0	39.0	789	4841
$X^2 = 10.131$, df = 1, $p<0.01$				
Number of unions				
Once	55.9	44.1	4484	
More than once	55.0	45.0	315	4799
$X^2 = 0.113$, df = 1, $p>0.05$				
Child loss experience				
Yes	52.4	47.6	1319	
No	64.9	35.1	3528	4847
$X^2 = 60.645$, df = 1, $p<0.01$				
Gender mix of living children				
Equal daughters to sons	57.3	42.7	2167	
More daughters	52.8	47.2	1320	
More sons	56.4	43.6	1360	4847
$X^2 = 6.935$, df = 2, $p<0.05$				
Exposure to mass media				
Full exposure	61.0	38.9	1587	
Semi exposure	61.5	38.5	2026	
No exposure	57.0	43.0	1204	4817
$X^2 = 7.417$, df = 2 $p<0.05$				
Knowledge of modern FP methods				
Less than 3	47.5	52.5	217	
3-4	52.0	48.0	400	
4+ methods	56.8	43.2	4230	4847
$X^2 = 7.132$, df = 2, $p<0.05$				
Age of the respondents				
15-19	8.4	91.6	285	
20-24	21.9	78.1	948	
25-29	43.8	56.2	1069	
30-34	61.6	38.4	822	
35-39	81.2	18.8	832	
40-45	88.5	11.5	511	
45+	95.4	4.6	365	4847
$X^2 = 1468.3$, df 6, $p < 0.01$				

Education level of respondents				
No education	70.7	29.3	762	
Primary education	58.9	41.1	2843	
Secondary +	57.2	42.8	1242	4847
$X^2 = 41.895$, d.f 2, $p < 0.01$				
Place of residence				
Urban	55.0	45.0	838	
Rural	61.4	38.6	4009	4847
$X^2 = 11.954$, df=1, $p<0.01$				
Region				
Nairobi	57.7	42.3	222	
Central	67.8	32.2	481	
Coast	51.0	49.0	753	
Eastern	67.8	32.2	702	
Nyanza	58.5	41.5	875	
R. Valley	62.4	37.6	1234	
Western	56.6	43.4	580	4847
$X^2 = 62.479$, df= 6, $p<0.01$				
Ethnicity				
Kalenjin	55.6	44.4	808	
Kamba/Kikuyu/Meru/Embu	61.9	38.1	1554	
Luo/Luyha/Kisii	54.0	46.0	1732	
Other	47.6	52.4	358	4452
$X^2 = 46.115$, df = 3, $p<0.01$				
Religion				
Catholic	58.0	42.0	1269	
Protestant	56.6	43.4	3085	
Muslim	43.4	56.6	281	
Others	47.6	52.4	206	4841
$X^2 = 22.407$, df=3, $p<0.001$				
Respondents work status				
No	56.5	43.5	2094	
Yes	63.2	36.8	2745	4839
$X^2 = 22.780$ df =1 $p<0.01$				

Source: computed from 1998 K.D.H.S data set.
NB. Some totals do not add up to 4847 due to missing cases.

4.3.6 Conclusion

From the preceding section it is clear that there exists an association between the dependent and the explanatory variables considered. The association was found to be statistically significant for all the variables with the exception of number of unions. However up to this level it was not possible to establish the magnitude of the relationship or even the direction of the association. To achieve this, further analysis is necessary in which case regression analysis is the level of analysis at which these objectives can be achieved. The aim is to find the best fitting model that describes the relationship between the dependent and the independent variables. Since the dependent variable under consideration is dichotomous logistic regression analysis is appropriate model to use.

CHAPTER FIVE: DETERMINANTS OF FERTILITY PREFERENCE

5.0 Introduction.

This chapter addresses the remaining objectives of the study, namely, to establish the socio-demographic, socio-economic, social-cultural and exposure factors determining fertility preferences in Kenya. The intention is to determine the direction as well as the magnitude of the relationship between desire for more children and selected factors. It was hypothesized that marriage type, the number of unions, child loss experience, gender mix of living children, exposure to mass media and knowledge of modern family planning methods are all responsible for differences in desire for more children.

In order to quantity the effect of these characteristics on desire for more children logistic regression was used. Three models were fitted whereby the first model included the gross effect of the study variables on desire for more children. The second model included control factors into the first model thus giving the effect of study variables net of control factors. In the final model variables that were found took be highly correlated were dropped out to ensure better and more accurate results.

This chapter is organized as follows. First the results of the three regression models are presented and discussed and then the determinants of fertility preference are compared with the determinants of preferred waiting time.

5.1 Determinants of the desire for more children

Enter method was used in the logistic regression. In such a model all the variables are included in the equation and entered all at the same time. As mentioned three models have been fitted and the results discussed in this section.

Table 5.1 presents the odds ratios and the level of significance of the three regression models of desire for more children. The odds ratios are the exponential of the regression co-efficients and are meant to assess the likely effects of the independent variables on the dependent variables. All the independent variables used in the regression are categorical hence the parameter estimates may be interpreted as the effect of each of these variables on the log odds of the dependent variables when the explanatory variable takes a different value from the reference category. The full logistic regression results are presented in appendices I, II and III.

The first model indicates that out of the six study variables included only the number of marital unions was found to have an insignificant effect on desire for more children. These results are consistent with the results of the bivariate analysis, whereby as shown in Chapter Four, results of cross tabulation revealed that only the number of unions did not have a significant association with the desire for more children.

According to Model 1, full exposure was found to have a significant increasing effect on the desire for more children. Women who were fully exposed to mass media were 1.1159 times more likely to desire more children as compared to women who had no exposure at all. These results could be explained by the fact that exposure to mass media not coupled with increasing levels of education could not possibly reduce women's desire for more children. When control factors were introduced into the regression as indicated by model 1 and 2, different results were obtained. Women who were semi-exposed and those who were fully exposed were 0 .8834 and

0.8941 times less likely to desire more children as compared to those who had no exposure at all. This indicates a reducing effect of exposure to mass media especially in the presence of factors such as education level. However exposure to mass media lost significance in explaining difference in the desire for more children indicating that it is not an important determinant of desire for more children

The gender mix of living children was found to have a significant effect on the desire for more children. Results indicate that women who had an equal number of sons to daughters and those with more sons than daughters were respectively 0.8343 and 0 .8470 times less likely to desire more children as compared to those with more with more daughters than sons. Notably this variable retained its significance across all models with only a slight change in its reducing effect on desire for more children. Women with equal sons to daughters and those with more sons than daughters according to model 3 are 0.8167 and 0.8080 times less likely to desire more children.

Model 1 further shows that knowledge of more than four methods of family planning has significant effect on desire for more children. Women who reported knowing more than four modern methods of family planning were 0.6313 times less likely to desire more children as compared to women who knew less than three methods. When control factors are introduced into the regression, the direction is maintained but this variable ceases to be significant in explaining differences in desire for more children. This may imply that the effect of this variable on desire for more children may be captured by some of the control factors. The same pattern is also observed for the variable exposure to mass media. Full exposure ceases to be a significant factor when control factors are included in the model .It can therefore be deduced that much of the effects of exposure to mass media and knowledge of

family planning are being captured by other socio-economic variables in the final model such the two factors have no significant net effects on desire for more children. Further analysis shows that age explains much of the differences in desire for more children such that the exclusion of it in the model results to significance of these factors. Exposure to mass media and knowledge of modern methods of family planning are therefore not very important in explaining differences in desire for more children.

According to results of the first model, marriage type specifically polygamous marriage was found to have a significant negative effect on desire for more children. Women in polygamous marriages were 0.8298 times less likely to desire more children compared to women in monogamous unions. Notably this factor lost significance and the direction of the effect changed to a positive one on introduction of control factors. This pattern is also observed with the variable child loss experience. This variable has a significant effect on desire for more children at least before control factors are introduced. On introduction of control factors the direction of the relationship changes while the factor seizes to be important. It is possible that age, ethnicity, religion and region of residence are mainly responsible for the insignificance of these two variables in mode 1 and 2. These factors were found to capture much of the effects of marriage type and child loss experience to the extent that their inclusion in the regression results leads to the insignificance of the two factors.

The number of unions, which in this study was used to measure marital stability, was the only factor that was found to have no direct relationship with desire for more children according to model 1. However. According to the results of model 2 and 3 it had a significant effect on desire for more children net of control factors. Women who were married once were 0.8682 times less likely desire more children compared to those married more than once. This reduced

to 0.6694 and 0.6590 times when control factors are introduced. It is possible that women who have been married more than once have a higher desire for more children due to the tendency to want to have at least more children with every new partner to maintain the link. The differences are statistically significant at 99 percent. It can be derived from these results that number of unions can only act through the control factors to explain differences in desire for more children, it therefore remains an important factor in explaining differences in desires for more children at least in the presence of other factors indicating that it has an indirect significant effect on desire for more children.

Results show that across all models, current age of the respondent has a small but the most significant effect on the desire for more children. As predicted, older women are less likely to desire more children. It is important to note here that age captures most of the effects of other factors. Urban residence is significantly related to desire for more children and only becomes insignificant when region of residence is excluded in the model. The net predictive power of respondents education on desire for more children is insignificant when considered together with other factors such as exposure to mass media and knowledge of family planning methods. The possible explanation could be that education may act on the desire for more children through exposure factors. Educated women are more likely to be exposed to mass media as well as having better knowledge of modern family planning methods. Ethnicity has been seen to be an important in explaining differences in desire for more children, women from the Kikuyu/ Kamba/ Embu/ Meru ethnic group and other ethnic groups have been reported to have significant differences in desire for more children relative to the Kalenjin ethic group.

In all, only two study factors were found to be significant in explaining differences in desire for more children net of control factors. These were gender mix of living children and

number of unions. Other factors found significant were age and ethnicity. The results either confirm or disconfirm the conceptual and theoretical models as well as the study hypotheses, for example, in the conceptual framework it was stated that socio-economic, socio-demographic, socio-cultural factors and exposure factors might affect desire for more children. This statement has been partly confirmed by the study results. Gender mix of living children, number of unions, age and ethnicity have a significant influence on desire for more children while the rest of the factors have an insignificant effect net of other factors.

Gender mix of living children and number of unions play a crucial role in influencing the desire for more children as explained by the differences between models 1, 2 and 3. Infact results do show that gender mix of living children and specifically preference for an equal mix of living children is a crucial issue in the preferences of Kenyan women. Son preference has been noted in the study where women who have more daughters than sons tend to desire more children. Likewise marital instability contributes to desire for additional children.

Table 5.1 Odd ratios of desire for more children and level of significance.

Variable	Model 1	Model 2	Model 3
Exposure to mass media	1.0000	1.0000	1.0000
No exposure (R)	0.9548	0.8834	0.8767
Semi exposure	1.1159*	0.8941	0.8939
Full exposure			
Gender mix of living children	1.0000	1.0000	1.0000
More daughters (R)	0.8343*	0.8208*	0.8167*
Equal mix	0.8470*	0.8085*	0.8080*
More sons			
Knowledge of modern F.P methods	1.0000	1.0000	1.0000
<3 (R)	0.8078	0.7774	0.7815
3-4	0.6313*	0.8205	0.8247
>4			
Marriage type			
Monogamous (R)	1.0000	1.0000	1.0000
Polygamous	0.8298*	1.0758	1.0745
Number of unions			
More than once(R)	1.0000	1.0000	1.0000
Once	0.8682	0.6694**	0.6590**
Child loss experience	1.0000	1.0000	1.0000
Yes (R)	1.6321**	0.9482	0.9452
No			
Age			
15-19 (R)		1.0000	1.0000
20-24		0.3300***	0.3277***
25-29		0.1148***	0.1149***
30-34		0.0536***	0.0538***
35+		0.0124***	0.0125***
Education level			
No education (R)		1.0000	1.0000
Primary education		0.8760	0.8712
Secondary+ education		1.2502	1.2404
Type of place of residence		1.0000	1.0000
Rural (R)		0.7347**	0.8586
Urban			

Variable	Model 1	Model 2	Model 3
Work status			
Yes (R)		1.0000	1.0000
No		0.9614	0.9718
Religion			
Muslim (R)		1.0000	1.0000
Protestant		0.7403	0.7549
Catholic		0.6947*	0.7012*
Others		0.9504	1.0051
Ethnicity			
Kalenjin (R)		1.0000	1.0000
Kamba/Kikuyu/Meru /Embu		1.0250	0.8001**
Luo/Luyha/Kisii		1.1001	1.1144
Others		1.2060	1.4389**
Region			
Coast (R)		1.0000	
Central		0.5940**	
Nairobi		0.8930	
Eastern		0.5032**	
Nyanza		0.7935	
Rift valley		0.7617	
Western		0.7743	

Source: computed from 1998 KDHS.
R Reference category
* Significant .10
** Significant .05
*** Significant .01

5.2 Determinants of the preferred waiting time for the next child

As mentioned earlier, the desire for more children was used to designate the dependent variable. However, the study has gone further to compare the determinants of desire for more children with those of a different indicator of fertility preference namely preferred waiting time to establish if there is any consistency between the two. Women who expressed a desire for more

children were asked how long they would like to wait before the birth of their next child. Preferred waiting time therefore captures only those women who said they desired more children (2125 currently married women). Further the respondents were categorized into those who wanted another child soon (2 years and below) or those who wanted later (more than two years).

The frequency distribution showed that 44.7 percent of the women desiring to have another child would like to have one soon while 55.3 percent would want to have a child later. Bivariate analysis revealed that like the desire more children, preferred waiting time had a statistically significant association with all the variables in the study with the exception of exposure to mass media. The desire for more children was only found to be insignificantly associated with the number of marital unions.

Regression results revealed slightly different results from those obtained using desire for more children. Table 5.3 shows that among the study variables included in the regression and before controlling for background characteristics, only child loss experience and marriage type were found to be significant in explaining differences in desire for more children, at least at 95 % and 99% level of confidence respectively. The Gender mix of living children and number of marital unions were found to be significant at 90% level of confidence. Exposure to mass media and knowledge of family planning methods were found to bear no direct influence on preferred waiting time.

When control factors are introduced into the regression as shown in model 2 and 3 child loss experience seizes to be an important factor in explaining differences in preferred waiting time. This was the case observed in desire for more children. Its therefore clear that child loss

experience despite having a direct association with preferred waiting time, has its effects being captured by other control factors and therefore it seizes to be significant.

The gender mix of living children and the number of marital unions are the two factors that continue to be important in explaining differences in preferred waiting time but in this case only at 90 percent level of confidence. These two factors were also found to be significantly related with desire for more children. In addition, marriage type which was found to have only a direct link with desire for more children maintained its significance in determining preferred waiting time even after control factors are introduced. Polygamous women were found to be more likely to want a child soon as compared to monogamous women. e.g. (in model 3, of Table 5.3), polygamous women are 1.3845 times more likely to prefer a child soon as compared to women in monogamous unions.

It can therefore be concluded from the results that those factors found to be insignificant in explaining differences in desire for more children like exposure to mass media, knowledge of modern Family Planning and child loss experience; are basically unimportant in further determining how soon women want to have more children. Similarly, the factors found to be important determinants of desire for more children are also found to be important in explaining differences in preferred waiting time. These are gender mix of living children and number of unions. Marriage type in addition was found to be an important determinant of preferred waiting time.

Odd ratios of preferred waiting time and level of significance

Variable	Model 1	Model 2	Model 3
Exposure to mass media			
No exposure (R)	1.0000	1.0000	1.0000
Semi exposure	1.0129	1.0324	1.0316
Full exposure	0.9917	1.0024	0.9947
Gender mix of living children			
More daughters (R)	1.0000	1.0000	1.0000
Equal mix	1.2109*	1.2059*	1.1910*
More sons	0.9268	0.9267	0.9174
Knowledge of modern			
<3 (R)	1.0000	1.0000	1.0000
3-4	1.2880	1.3947	1.4608
>4	0.8007	0.9081	0.9270
Marriage type			
Monogamous (R)	1.0000	1.0000	1.0000
Polygamous	1.5099***	1.3460**	1.3845**
Number of unions			
Once (R)			
More than once	0.7358*	0.7224*	0.7555*
Child loss experience			
No (R)	1.0000	1.0000	1.0000
Yes	0.7998**	0.8905	0.8569
Age			
15-19 (R)		1.0000	1.0000
20-24		0.6664***	0.6747***
25-29		0.5940***	0.5964***
30-34		0.8898	0.8867
35+		0.9532	0.9581
Education level			
No education (R)		1.0000	1.0000
Primary education		0.6598*	0.6856*
Secondary+ education		0.6869*	0.7065
Type of place of residence		1.0000	1.0000
Urban (R)		1.1913	1.3114**
Rural			
Work status			
Yes (R)		1.0000	1.0000
No		1.1117	1.1436
Religion			
Muslim (R)		1.0000	1.0000
Protestant		0.8065	0.7836
Catholic		0.9676	0.9466
Others		0.8785	0.8967

TABLE 5.2 CONTINUED

Variable	Model 1	Model 2	Model 3
Ethnicity			
Kalenjin (R)		1.0000	1.0000
Kamba/kikuyu/meru /embu		0.8035	1.2594
Others		1.0558	1.5201***
Region		0.6767	1.0918
Coast (R)		1.0000	
Central		1.1847	
Nairobi		1.0022	
Eastern		0.8360	
Nyanza		1.0926	
Rift valley		0.5686**	
Western		0.5862**	

Source: computed from 1998 KDHS.

@ Reference category
* Significant .10
** Significant .05
*** Significant .01

5.3 Multiple Classification Analyses.

As a summary of the regression results, multiple classification analyses (MCA) has been done as applies to logistic regression. The aim is to get the net effect of each category of the predictor variables on the dependent variable when all others are set to their mean levels. From these values proportions desiring more children can be calculated for each category. Adjusted values of the odds of desire for more children were calculated for the estimated model.

$$P = e^{a+b_1x_1+b_2x_2+\ldots\ldots b_nx_n} \quad \ldots\ldots\ldots\ldots\ldots\ldots (6)$$

The values are derived from the results of the regression results where

a - constant
b_{is} - regression coefficients
x_{is} –predictor variables

The results of multiple classification analysis are presented in figures 5.1 to 5.4. The four graphs represent the proportion of women desiring more children expressed in percentage form for each category of the significant explanatory factors in explaining differences in desire for more children. Full multiple classification analysis results are shown in appendix IV.

Fig 5.1 shows that there exist differences in desire for more children according to the number of unions. While 52 percent of those married more than once desire more children, 42 percent of those married once desire more children. This shows that those women leaving their original marriages and entering more unions tend to desire more children due to the pressure of having more children with every new partner. The proportions desiring more

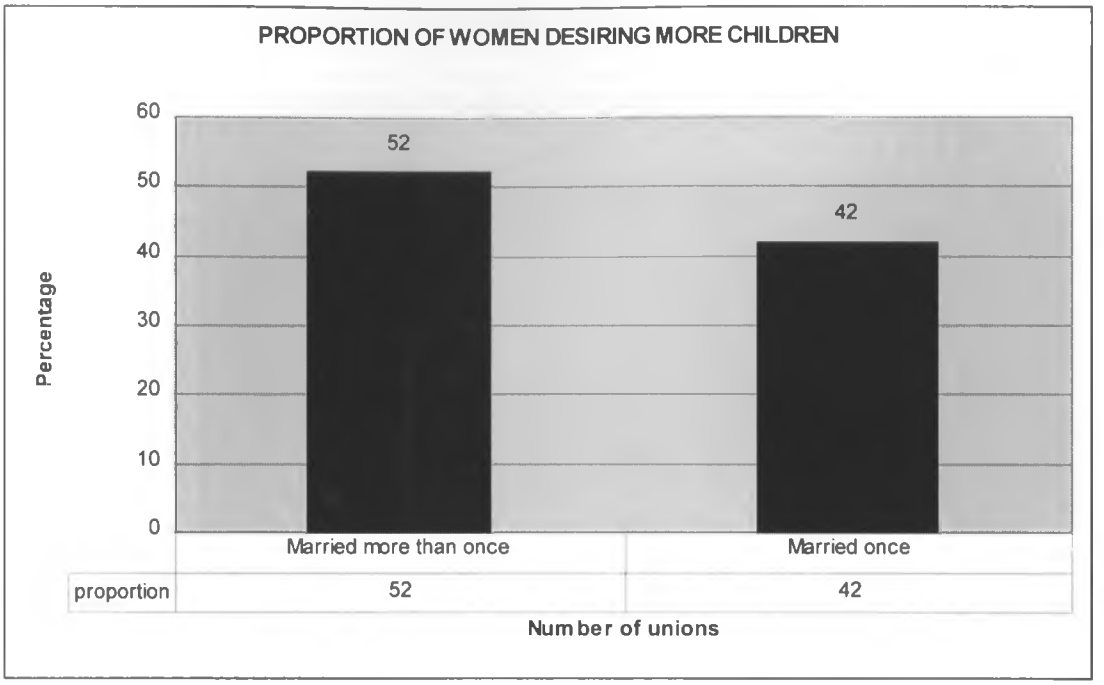
children according to the number of unions is relatively high (over 50 percent) indicating all the more the importance of the variable as a determinant of fertility preferences.

Looking at gender mix of living children and desire for more children, its important to note that there is basically no difference in the proportion of women desiring more children between women with an equal mix of living children and those with more sons. However the proportion desiring more children for women with more daughters is almost twice that of women with more sons. This is a clear indication that son preference is still evident among Kenyan women.

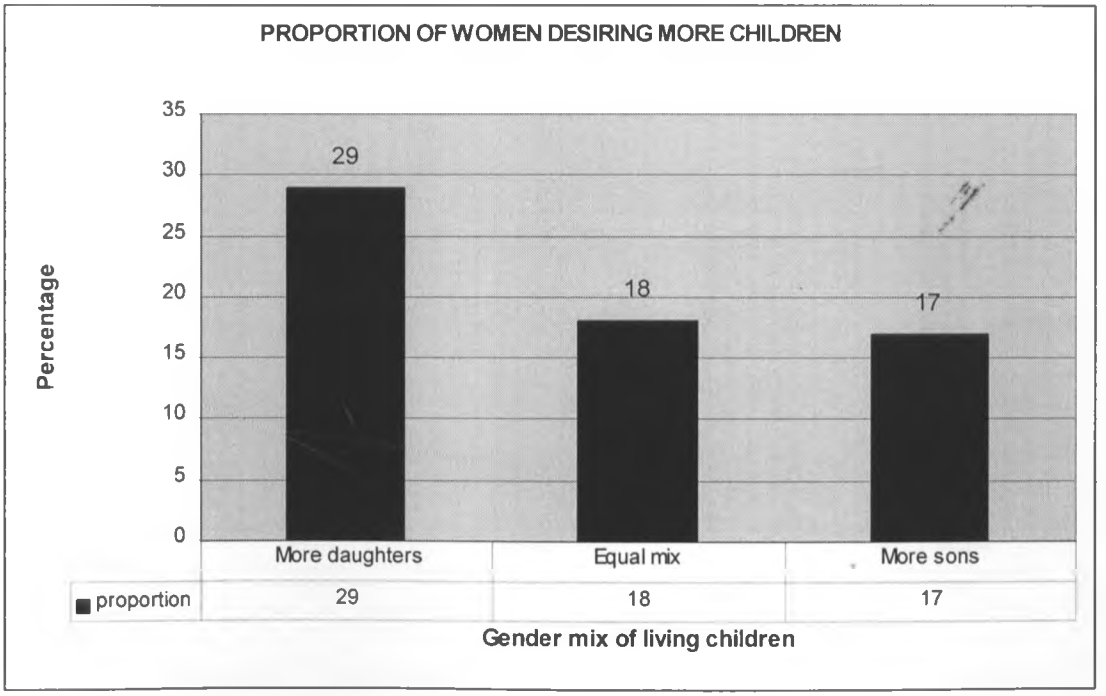
As expected younger women, had the highest proportion desiring more children and older women exhibited the lowest desire. It is true that younger women who are just starting their families would desire more children as opposed to older women who may have already achieved their desired family sizes. The differences in the various age groups in desire for more children are large as expected. For example 72 percent of younger women aged 15-19 desire more children while only 14 percent of women aged 35 years and above desire more children.

There are ethnic differences in desire for more children, which simply reflects differences in cultures regarding desire for more children. The lowest proportion is recorded among the Kikuyu/Kamba/Meru/Embu ethnic groups while the highest is recorded among women belonging to minority ethnic groups classified under others in this study. These ethnic differences in desire for more children could also be linked with the differences according to gender mix of living children where different ethnic groups could have differences in desire for a particular gender mix of living children.

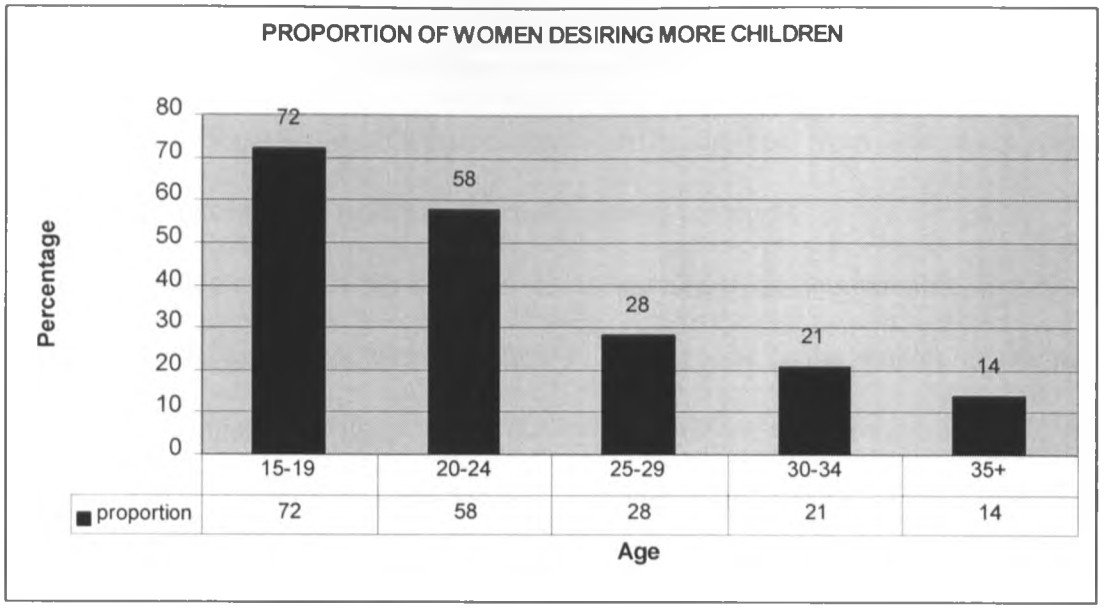
Proportion desiring more children(number of unions)



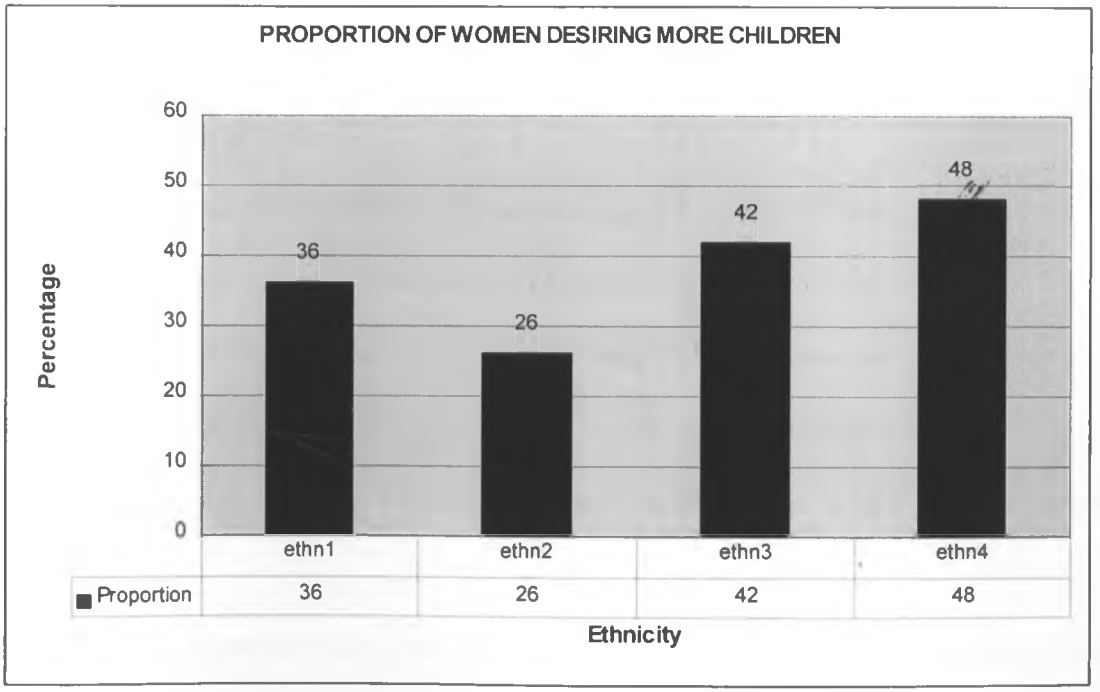
Proportion desiring more children(gender mix of living children)



Proportion desiring more children(age)



Proportion desiring more children(Ethnicity)



Ethn1 Kalenjin
Ethn2 kikuyu/Kamba/Meru/Embu
Ethn3 Luo/Luhya/Kisii
Ethn4 Other ethnic groups

CHAPTER SIX: SUMMARY CONCLUSIONS AND RECOMMENDATIONS

6.0 Introduction

This chapter is subdivided into three sections. The first section summarizes the findings; Section two addresses the conclusions that can be derived from this study and finally recommendations both for policy and further research are made.

This study examined the extent to which selected socio-demographic, socio-economic and exposure factors affect women's fertility preferences. Some studies in the past have examined the subject of fertility preference but from different dimensions. Establishing the determinants of fertility preference is very important particularly for policy implications, to be able to determine and to design adequate intervention measures. Such action is only possible when factors are properly identified. The study set out to achieve several objectives. The main one was to examine the role of selected socio-demographic socio-economic and exposure factors determining fertility preferences of Kenyan women.

Specific objectives were:

- To establish the levels and differentials of fertility preferences in Kenya.
- To examine the socio-demographic factors determining fertility preference.
- To examine the socio-economic factors determining fertility preference.
- To establish the exposure factors determining fertility preferences in Kenya.

To guide the study, several hypotheses were formulated and tested. These include the following:

- Women in polygamous unions are less likely to desire more children compared to those in monogamous unions.

- Women married more than once are more likely to desire more children compared to women who have been married only once.
- Women with a child loss experience are likely to desire additional children.
- Women who have more daughters are more likely to desire additional children compared to those with equal boys to girls.
- Women who have more sons are less likely to desire additional children compared to those with more daughters.
- Women with much exposure to mass media are less likely to desire additional children.
- Women who have a higher knowledge of modern methods of family planning are less likely to desire additional children.

Methodology of analysis included cross tabulation, which was used to determine the association between the independent variables and the dependent variable; further a Chi-square test was carried out to establish if the association is statistically significant. The tests were examined at both 99 and 95 percent levels of confidence. Finally, logistic regression was used and in this case, the model was to estimate the probability of desire for more children given the explanatory factors. The dependent variable fertility preference was designated by desire for more children and later compared with preferred waiting time. The independent variables were categorized into two where key study variables included, marriage type, number of unions, child loss experience, and exposure to mass media, knowledge of modern family planning methods and gender mix of living children. The control factors included were age, education level, respondents work status, ethnicity religion, place and region of residence.

6.1 Summary of Findings

To meet the first objective of the study, the general features of fertility preference based on desire for more children were presented. The findings indicate that generally, women in Kenya do have an intention to either stop childbearing or at least to space their children (47 percent and 25 percent) respectively. Only a minority of women indicated a desire to have another child soon (14 percent). The remaining 14 percent are either undecided, sterilized or declared infecund. It was also established that women with no children or those with fewer children expressed the greatest desire for more children while those with higher number of children were seen to express the least desire for more children. The reverse was noted for desire for no more children, which increased with increasing number of living children.

The first objective also sought to establish fertility preference differentials. To meet this, cross tabulation and Chi-Square test were done. It was established that there are differentials in desire for more children across all characteristics of women. Factors that were found to bear a significant association with desire for more children included, marriage type, child loss experience, gender mix of living children, exposure to mass media, knowledge of modern family planning methods, age, education religion, ethnicity region and place of residence. Only the number of marital unions was found to bear no significant association with desire for more children.

The other objectives of this study were to establish the socio-economic, socio-demographic and exposure factors determining fertility preference. To achieve this, logistic regression was performed using enter method and three models developed. It is clear from the findings that all the study variables included in model 1 with the exception of number of unions were found to significantly influence desire for more children. This was taken to be

the gross effect. Number of unions was found to have no direct influence on desire for more children. When control factors were introduced, only the gender mix of living children and the number of marital unions were found to be significant in explaining differences in the desire for more children. Other factors found to be important determinants of desire for more children were age and ethnicity. It is generally expected that alder women are less likely to desire more children compared to younger women and that different ethnic groups hold different values that could largely account for differences in desire for more children.

When determinants of the desire for more children are compared with those of preferred waiting time, some consistency is observed. Gender mix of living children and number of unions continue to be important factors in explaining differences in preferred waiting time, after introducing control factors. The type of marriage was found to be an important factor in determining preferred waiting time. Like in the case of desire for more children, exposure to mass media and knowledge of family planning are found not to be very important determinants of preferred waiting time. It can therefore be concluded that at least majority of the factors determining desire for more children hold even for a different measure (preferred waiting time in this case).

6.2 Conclusion

Kenya experienced an unprecedented rise in fertility levels in the 1960s and 1970s. However in recent years, it is one of the countries in sub-Saharan Africa that has registered an irreversible fertility decline. This is especially evident from the results of the most recent surveys carried out in the country.

Several factors have been responsible for this decline among them are socio-economic development programmes, for example, improvement in the education and general status of women. The family planning programme leading to widespread use of contraceptives has also contributed to the decline. The decline in reproductive performance could also be attributed largely to changes in reproductive behaviour and attitudes. Despite this decline, it is evident that the economic, social and political climate in Kenya is still very conducive for further changes and especially to meet the targets of fertility reduction set for the years to come. There is a need to further control the rate of population growth to realize sustainable socio-economic as well as other forms of development required in the country.

The key issue in this study is the mechanism of influencing reproductive behaviour attitudes that goes further to change actual reproductive performance. It is evident that actual and desired fertility are positively associated (Pullum, 1980; Lightbourne and MacDonald, 1982; Deep, 1988) and can be explained by the fact that women with high initial preferences proceed to have many children while those with low preferences have successfully controlled their fertility these are referred to as the rationalization and implementation effects. Emphasis should therefore be placed on relevant policy measures that aim at changing the traditional social structure that promote high fertility preferences. Preference should be given to breaking cultural attitudes that favor son preference at the expense of daughters. This can be enhanced by promotion of female education and creation of employment for women coupled by a general enhancement of women status. Priority should also be given to stabilization of marital unions, promotion of family planning, reduction of infant mortality through provision of basic health care among other issues.

Several gaps have been identified in this study and in line with this background; policy makers must create and strengthen conditions that enhance low fertility preferences. The following section provides some recommendations to policy makers to either establish or strengthen the already existing policies for sustainable development.

6.3 Recommendations

In this section recommendations have been made both for policy and further research following the findings of this study.

6.3.1 Recommendations for further Research.

- The key issue in the study of fertility preference is the importance attached to it with regard to actual fertility. Further research should be carried out to interrelate the two and particularly to follow women across their reproductive career to establish if stated preferences are translated into actual behaviour.
- A comparative analysis should be done to find out factors responsible for differences in fertility preference, for example, a comparative analysis at regional level should be done to find out the particular factors responsible for such major differences.
- Despite the fact the 1998 KDHS data included responses of men regarding fertility preference, this study concentrated on the responses of women. Further research should include men and their fertility desires as well as a comparison between the two.
- Further research should be done on the determinants of increased family instability and violence, which was found to be a key determinant of women's desire for additional children.

6.3.2 Recommendations for Policy.

The findings of this study indicate that gender preference is evident in Kenya either in favour of an equal mix of living children or better still in favour of sons. This kind of preference has contributed to high fertility preferences especially among women with more daughters. Although the contribution of various segments of the population in social and economic development in the country is recognized, there exists various gender disparities especially where women are concerned. There are disparities in literacy and education attainment coupled with retrogressive social cultural practices, which have resulted in low participation and representation of women in the decision-making positions and lack of access to economic opportunities. These among other things have led to a strong preference for sons among parents whereby they may look at their sons as their source of social status as well as old age security.

It is also argued that families either consciously or unconsciously desire sons for economic, social, cultural and religious reasons and that they will exceed the desired overall family size in order to achieve the desired number of sons. Should opportunities be equally open to girls as to boys, such that in the end, girls are equally able to deliver as boys do, then a parent would not really care if she gets a boy or a girl. This scenario demands that more efforts be made to address the existing gender disparities so as to fully integrate gender concerns into the development process. This kind of a shift can occur within a milieu of broad social, economic and cultural change involving changes in the role of women education, economic structure, family structure and more particularly changes in social and cultural beliefs and traits that favour men hence

disadvantaging women lending to a low preference for girls among parents.

The study also found that marital instability is a major contributory factor to higher fertility preferences. Policy measures should be geared towards promotion of marital stability. The government of Kenya affirms that the family is the basic unit of the society. The roles and responsibilities played by each member of a family stability could be strengthened by supporting and promoting equality of opportunities for all family members through researching into the determinants of increasing family instability and violence and secondly through expanding, diversifying and intensifying guidance and counselling programmes to promote the welfare of the family.

Policies should also aim at reducing polygamy and the practice of paying bride wealth together with nucleation of the family and increased emphasis on conjugal bonds. This leads to a change in women's views of themselves and their family roles resulting to a reduction of parental influence on marriages a leading cause of marital instability. Marriage becomes a more private affair enhancing doors to a greater husband-wife communication and to a greater influence of the wife in making decision on fertility and family size.Bearing in mind that the young generations of today are the parents of tomorrow, population and family life education should be incorporated into formal and vocational training to assist young people to prepare themselves for responsible parenthood also providing information and public education on the consequences of unplanned families and adolescent pregnancies.

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APPENDICES

Appendix 1 **Full logistic regression results model 1**

Variables	B	S.EB	WALD	CASES
Semi-exposure	-.0462	.0702	.4344	2002
Full exposure	.1078	.0804	1.8625	1186
3-4 methods	-.2134	.2128	1.0059	398
>4 methods	-.4599	.1909	5.8014	4197
Equal daughters to sons	-.1812	.0718	6.3731	2105
More sons	-.1660	.0796	4.3548	1316
Polygamous	-.1866	.0839	4.9455	754
Married once	-.1413	.1143	1.5273	4359
No Child loss	.4899	.0693	50.0439	3422
Constant	.0999	.2272	.1934	

-2 log likelihood x^2 6384.4 Goodness of fit x^2 4818.3 model x^2 87.3 DF 9 Sig .0000

Appendix II Full logistic regression results: Model 2

Variables	B	S.E.B	Wald	Cases
Semi-exposure	-0.1240	0.0863	2.0623	1999
Full exposure	-0.1119	0.1062	1.1108	1105
Knows 3-4 methods	0.2558	0.2638	0.9405	398
Knows >4 methods	0.1978	0.2405	0.6768	4149
Equal mix	0.1974	0.0862	5.2411	2103
More sons	0.2125	0.0949	5.0124	1.312
Polygamous	0.0730	0.1030	0.5029	754
Married once	-0.4014	0.1354	8.7926	353
No child loss	0.0532	0.0875	0.3699	3417
20-24	1.1086	0.2301	23.2018	930
25-29	2.1646	0.2265	91.3351	-1019
30-34	2.9255	0.2312	160.0765	792
35+	4.3868	0.2330	354.5007	1694
Primary education	0.1324	0.1239	1.1421	2827
Sec + Educ	0.2233	0.1436	7.1310	1219
Protestant	0.3007	0.1870	2.5846	3019
Catholic	0.3643	0.1949	3.4944	1234
Others	-0.0508	0.2411	0.444	188
Kamba/Kikuyu/Meru/Emb	0.0247	0.1674	0.0217	1527
Kisii/Luo/Luyha	0.0954	0.1624	0.3452	1705
Other	0.1873	0.2069	0.8196	709
Working	0.0394	0.0754	0.2721	2690
Urban	0.3084	0.1244	6.1438	802

Central	-0.5209	0.2192	5.6481	472
Nairobi	-0.1132	0.2265	0.2499	220
Eastern	-0.6868	0.2096	107349	696
Nyanza	-0.2312	0.2073	1.2446	889
R. Valley	-0.2723	0.1919	2.0136	1161
Western	-0.2558	0.2081	1.5115	576
Constant	-3.8611	0.4391	77.3212	4706

-2 log likelihood x^2 4960 Goodness of fit x^2 4793.6 model x^2 1541.9 DF 9 Sig .0000

Appendix III. Full Logistic Regression results: Model 3

Variable	B	S.EB	Wald	Cases
Semi exposure	-0.1316	0.0858	2.3550	1999
Full exposure	-0.1122	0.1052	0.1376	1105
Knows 3-4	-0.2466	0.251	0.8653	398
Knows >4	-0.1927	0.2418	0.6355	4149
Equal Mix	-0.2025	0.0860	5.5420	2103
More sons	-0.2132	0.0947	5.0707	1312
Polygamous	0.0718	0.1026	0.4905	754
Married once	-0.4171	0.1347	9.5905	353
No child loss	-0.0563	0.0867	0.4215	3417
20-24	-1.1156	0.2298	23.5706	930
25-29	-2.1634	0.2260	91.5995	1019
30-34	-2.9224	0.2307	160.5087	792
35+	-4.3830	0.2325	355.4796	1694

Primary Education.	-0.1379	0.1234	1.2487	2827
Sec+ Education	0.2155	0.1426	2.2827	1219
Protestant	-0.2812	0.1853	2.30229	3019
Catholic	-0.3549	0.932	3.3737	1234
Others	0.0051	0.2397	0.0004	188
Kamba/Embu/Meru	-0.2230	0.1100	4.1094	1527
Kisii/Luo/Luyha	0.1083	0.1085	0.9969	1.705
Others	0.3639	0.1458	6.2245	709
Working	-0.0286	0.0740	0.1500	2690
Urban	-0.1524	0.1024	2.1928	802
Constant	3.5831	0.4055	78.0886	4706

-2 log likelihood x^2 4917.7 Goodness of fit x^2 4761.9 model x^2 1553.8 DF 9 Sig .0000

Appendix IV. Results of multiple classification analysis. (Proportions desiring more children.)

Variable	Log odds	P (%) adjusted
More than once	1.1172	52
Once	0.7370	42
More daughters	0.4197	29
Equal mix	0.2172	18
More sons	0.2065	17
15-19	2.5113	72
20-24	1.3957	58
25-29	0.3957	28
30-34	0.2714	21
35+	0.1625	14
Kalenjin	0.5859	36
Kikuyu/Kamba/meru/embu	0.3491	26
Luo/luyha/kisii	0.7186	42
Others	0.9465	48