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PATTERNS AND DIFFERENTIALS IN NUPTIALITY
AND FERTILITY IN KENYA

ISHMAEL KALULE-SABITI

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Thesis submitted for the Ph.D. degree in the Faculty of
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of Durham

March 1983



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ABSTRACT

PATTERNS AND DIFFERENTIALS IN NUPTIALITY AND FERTILITY IN KENYA

This thesis is a study of patterns and differentials in nuptiality and marital fertility in Kenya using data from the Kenya Fertility Survey undertaken in 1977/78 jointly by the Central Bureau of Statistics, Government of Kenya and the World Fertility Survey, London of the International Statistical Institute. Such a survey as this, like many others carried out by the World Fertility Survey in both developing and developed countries, has provided an unprecedented opportunity for greater understanding of the relationship between nuptiality and fertility on the one hand and nuptiality, fertility and socio-economic factors on the other. Such information is very crucial in the formulation and implementation of socio-economic and cultural development plans.

The results of this study have confirmed that marriage is a universal and stable institution and that women marry young. Median age at marriage is 18.7 with education having the greatest influence on age at marriage as it provides alternative options to early marriage. However, polygamy is still widespread, accounting for about 30 per cent among all married women in the childbearing age range. Associated with this cultural phenomenon, most Kenyan women marry only once while men often marry women much younger than themselves and with either similar or lower level of education.

The study has also confirmed that inspite of the recent rise in age at marriage especially among the young population during the last 15-20 years, corresponding to the expansion in education services and to increased urbanization, fertility remains one of the highest in the world. However, education and urbanization appear to have the greatest influence on fertility. Women with secondary and higher education experience the lowest fertility and women with lower primary education, the highest. Rural-urban differentials in fertility were found to be even more marked, with metropolitan women having, on average, one child less than rural residents.

This seems to be one of the few African countries south of the Sahara where there is convincing evidence of rural-urban differential in fertility in the expected direction. Polygamous women, too, were found to have lower fertility than their monogamous counterparts.

The study of the proximate determinants of fertility (intermediate fertility variables) using Bongaarts model suggested that the proportion married among the population, level of use of contraception and postpartum infecundability (influenced by breastfeeding) are significant in explaining marital fertility differentials. Modernization in the form of education and urbanization has had offsetting effects upon the intermediate variables by reducing lactation and increasing contraception. However, the proportion using contraception (limited mainly among those with secondary and higher education and the metropolitan residents) is too small to have any significant impact on the overall level of fertility. The lower level of fertility observed particularly among the metropolitan, coast and muslim categories of population may be accounted for by the prevalence of venereal diseases, unreported contraception and induced abortion.

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DEDICATION

This thesis is dedicated to my late
dear mother Fatmah Kisimwa Namatovu, my father
Kasule Sabiti and to the following:

My beloved wife	Jannat Nakityo Kalule-Sabiti
my son	Saami Kasujja Kalule-Sabiti
my daughter	Fatmah Nakaiza Kalule-Sabiti
and my son	Salah-Din Kasule Kalule-Sabiti

CHAPTER ONE

INTRODUCTION

1.1 Research Problem And Objectives of The Study

The study of the interrelationship between demographic factors and socio-economic conditions in developing countries has occupied a central position in population studies, particularly following the 1974 World Population Conference and numerous symposia and conferences. High population growth rates resulting from remarkably low death rates and sustained high birth rates have often been blamed for the slow nature of the socio-economic and cultural development in these countries. It is also acknowledged that very low levels of education and literacy, rural poverty, low per capita incomes, unemployment and overcrowdedness in urban centres are closely related to rapid population growth rates. For that reason, there is increasing awareness of the crucial role that demographic factors may play in socio-economic development, and that development may have on demographic factors. This is reflected in the increased acceptance of population policies as an integral part of development planning in several developing countries in recent times. There is thus a recognition among scholars, population and socio-economic development planners and policy makers that a better understanding of the interrelationships between nuptiality and fertility on the one hand and nuptiality, fertility and socio-economic variables on the other, is of paramount importance. The availability from the World Fertility Survey Programme of the relevant data provides an opportunity for a greater understanding of this relationship.

Thus within the general framework of development and socio-economic change, this present study addresses itself to the study of patterns and differentials in nuptiality and fertility in Kenya utilizing data from the Kenya Fertility Survey (KFS) carried out in 1977/78. The principal



objectives of this study are:

1. The study of patterns and differentials in nuptiality, which includes:
 - a) factors affecting age at marriage, and trends and differentials in age at first marriage;
 - b) the relationship between education and marriage patterns; and
 - c) the study of polygamy, exploring the factors which favoured the emergence of polygamous institutions in Kenya; differentials in polygamy; polygamy and the characteristics of the husband, and polygamy and age difference between husband and wife.
2. Investigation of patterns and differentials in fertility among the heterogeneous population of Kenya using cross-tabulation analysis:
 - a) fertility and selected socio-economic variables;
 - b) effect on fertility of husband's and wife's education; and
 - c) the relationship of fertility and nuptiality.
3. Using multiple regression analysis to examine the effect of selected socio-economic variables on marital fertility (cumulative and late fertility).
4. Quantifying the effects of the proximate determinants of Kenyan fertility, to find out whether we can account for the level of fertility, both at national and sub-national levels, by intermediate fertility variables using Bongaarts model.

1.2 Country Perspectives

Kenya occupies an area of approximately 583,800 sq kms of which about 13,000 sq kms are covered by water. Lying astride the equator on the East coast of Africa extending approximately 4° North and 4° South, it may be divided into four physical regions: the narrow coastal belt, the semi-arid region of the West and North, the highlands including the Rift Valley and the plateau around Lake Victoria. Administratively, it consists of eight provinces (the boundaries of which are shown in Figure 1) with a diversity of ethnic composition and languages. With three-fifths of its northern area under arid conditions and very sparsely inhabited, about 85 per cent of Kenya's 17.9 million people (1982 estimates) live in the southern two-fifths of the country endowed with natural potentials of fertile soils and rainfall to support the three-quarters of the total population who are engaged in agriculture.

The average density of population for the country was about 11 persons per sq km in 1969 (Table 1.1). By province, the density ranged from 2 persons per sq km for the North eastern to 169 for Nyanza province. Nyanza, Western and Central provinces have the highest population densities (169, 179 and 181 persons per sq km respectively), as well as the highest densities per sq km of arable land.

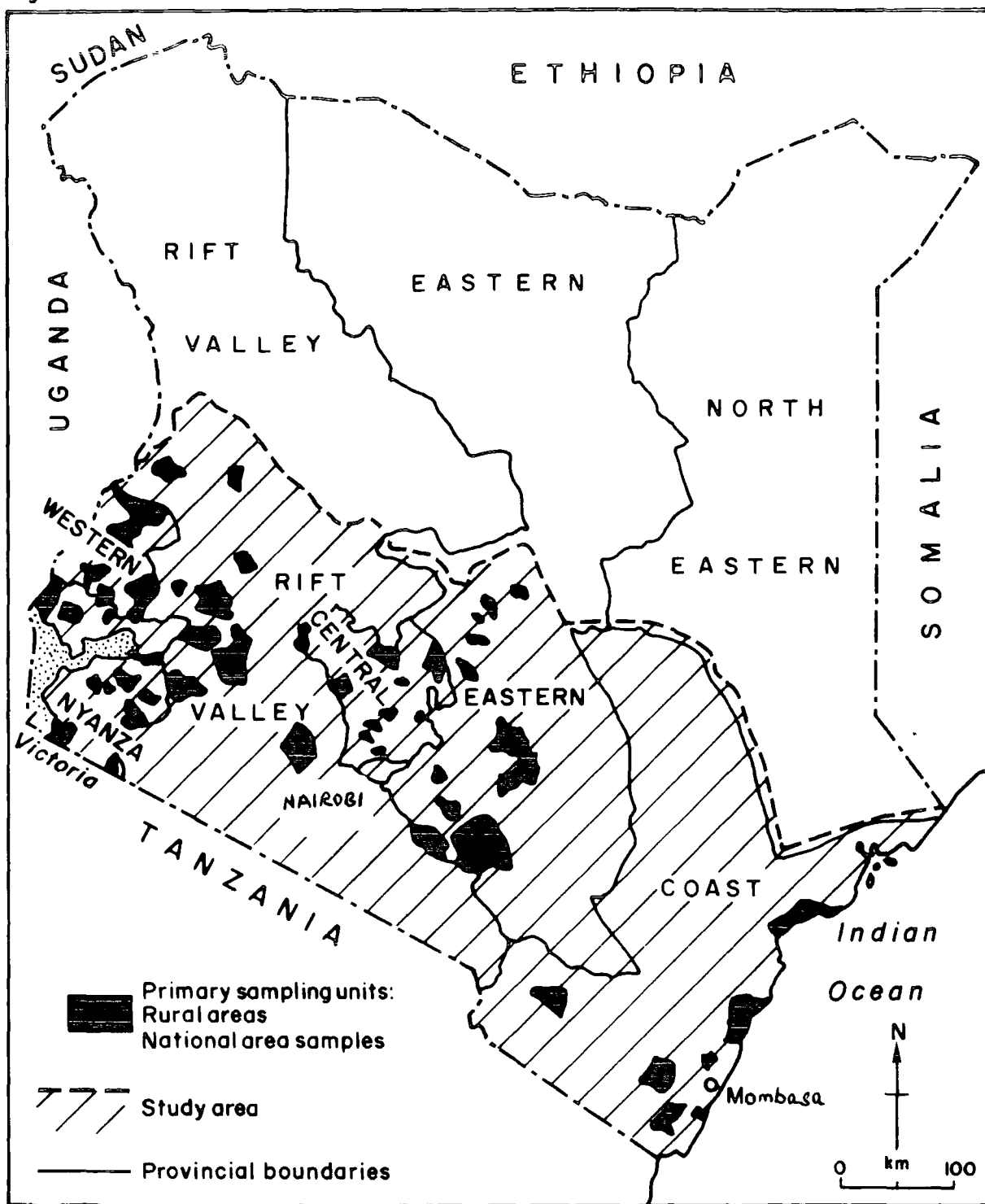
1.2.1 Population perspectives

Data on vital statistics in Kenya are obtainable from the vital statistics Registration Office, the census reports and demographic surveys. Registration statistics, however, are grossly inadequate, as the system was, for a long time, restricted to urban areas and confined to Europeans and Asians.

The Kenyan African population was estimated at about 2.5 millions by the turn of the nineteenth century and close to 4 millions just

REPUBLIC OF KENYA

Figure 1



Source: Central Bureau of Statistics, 1980, P.6

Table 1.1 : Population, total and arable land area and population density, by province, census 1969

Province	Total Population ('000)	Area (sq. km)		Density (per sq. km)	
		Total	Arable *	Total	Arable
Kenya	10,943	569,249	99,050	19	133
Nairobi	509	684	-	745	-
Central	1,676	13,173	9,240	127	181
Coast	944	83,041	11,480	11	61 ⁺
Eastern	1,907	154,540	26,920	12	71
N.Eastern	246	126,902	-	2	-
Nyanza	2,122	12,525	12,520	169	169
Rift	2,210	70,162	31,480	13	70
Western	1,328	8,223	7,410	162	179

Source : The 1969 Census

* Rounded to the nearest 10 sq km

+ Excludes Mombasa Municipality of 210 sq km

before World War II (Republic of Kenya, 1962 and 1969). Censuses prior to 1948 (in 1911, 1921, 1926 and 1931) had been confined to non-African populations. The 1948 census did not cover all sections of the country. But the two censuses that followed, one held in 1962 and the other in 1969, were considered relatively better organized although the 1962 census in particular had serious shortcomings of both an administrative and a political nature. Table 1.2 gives the total populations at the time of the censuses of 1948, 1962 and 1969. Based on the results of these sources, there has been an estimated increase in total population of about 60 per cent between 1948 and 1962 (with an annual growth rate of about 3 per cent) and of 27 per cent between 1962 and 1969 (with an annual growth rate of 3.3 per cent).

Birth and death rates were estimated at about 50 and 20 per 1000 of population and 50 and 17 per 1000 of population in 1962 and 1969 respectively. By 1977 the birth rate had risen to 54 per 1000 of population and the death rate had dropped to 14 per 1000 (NDS, 1977). Infant mortality had been estimated at 190 and 120 per 1000 live births in 1948 and 1969 respectively, but had declined to 80 per 1000 live births by 1979. Life expectancy at birth also increased from around 36 years in 1948 to 49 years in 1969 and 53 years in 1977 (for both sexes). Table 1.3 gives estimates of birth, death and infant mortality rates by province at the 1969 census. Central, Western and Nyanza had the highest fertility (TFR) and Nairobi and the Coast provinces the lowest. Nyanza, Western and the Coast provinces have among the highest crude death and infant mortality rates.

Completed fertility (i.e. average number of children born alive to a Kenyan African woman reaching the end of her reproductive life

*These estimates were based on the records of tax payers and should therefore be used with caution.

Table 1.2 : Kenya's population at the time of the censuses 1948,
1962 and 1969

Population	1948	1962	1969
African	5,251,120	8,365,942	10,733,202
Non-African	154,846	270,321	209,503
Asian	97,687	176,613	139,037
European	29,660	55,769	40,593
Arab	24,174	34,048	27,886
Others	3,325	3,901	1,987
Total	5,405,966	8,636,263	10,942,705

Source : Statistical abstract, 1971.

Table 1.3 :

Estimated fertility and mortality rates by province 1969 census

Province	Crude birth Rate (CBR) (per 1000 pop)	Total fertility Rate (TFR)	Crude death rate (CDR) (per 1000 pop)	Infant mortality rate		Expectancy of life at birth	
				Male	Female	Male	Female
Kenya	50.0	7.6	17.0	126	112	47.0	51.0
Nairobi	40.8	5.5	10.0	79	62	54.0	58.0
Central	51.0	8.7	14.0	81	66	54.4	61.0
Coast	42.2	5.6	17.0	152	136	46.3	49.4
Eastern	44.4	6.7	16.0	115	100	50.0	55.8
N.Eastern	41.0	6.6	16.0	121	107	45.4	50.1
Nyanza	52.5	7.9	19.5	183	168	42.6	45.6
Rift	44.2	6.6	13.0	94	77	53.1	57.2
Western	54.2	8.6	17.0	150	131	48.5	50.1

Source : The 1969 Census

assumed to be 45-49) has also been increasing from 5.90 and 6.69 in 1962 and 1969 respectively to 7.46 in 1977 (Central Bureau of Statistics, 1977 and Republic of Kenya, 1969). Also, about 46 per cent of the population are aged under 15 and only 5-6 per cent are aged over 60. Such a composition is characteristic of most African populations and is a direct result of high birth rates and sharply declining infant and child mortality rates. It is anticipated that the population of Kenya will double in 18 years by the year 2000 (Central Bureau of Statistics, 1980:8).

1.2.2 Socio-economic perspectives

Agriculture is the backbone of Kenya's economy with the bulk of the country's labour force engaged in peasant farming. The manufacturing sector, however, is also becoming an increasingly important sector of the economy. About 30 per cent (approximately K£621 millions) of the GNP was accounted for in the agricultural sector in 1977. Cash crops such as coffee, tea, pyrethrum and sisal make the core of the country's economic activity. The contribution of the manufacturing sector was only about 15 per cent of the GNP.

The percentage of population of working age (15-64) was put at 50 in 1977 (World Bank, 1979). The labour force is now estimated at well over 4.5 million people. The percentage of labour force in agriculture dropped from 86 per cent in 1966 to 79 per cent in 1977. During the same period the percentage in industry increased from 9 in 1960 to 12 per cent in 1966 (World Bank, 1979). In 1970 about 25-30 per cent of the total labour force was considered unemployed (Scandinavian Institute of African Studies, 1972).

The distribution in 1976 of the monetary labour force according to occupational group by sector and sex (Table 1.4) shows that female participation in the monetary sector lagged behind that of males. It accounted for about 18 and 16 per cent labour force in the public and private sectors

Table 1.4 : Per cent distribution of monetary labour force according to occupational group, by sector and sex , 1976

Occupational Group	Public sector		Private sector	
	Males	Females	Males	Females
Casual employees	9.0	5.3	16.1	36.1
Unskilled workers	42.0	18.5	60.0	49.0
Skilled manual workers	10.9	8.2	12.7	2.7
Technician and supervisors	2.1	0.4	1.5	0.4
Shop assistants, sales personnel	0.1	0.1	1.3	0.0
Clerical workers	9.1	4.0	4.7	2.9
Secretarial workers	0.2	8.2	0.2	6.6
Middle level executives	2.4	1.0	1.8	0.7
General managers	0.3	0.0	0.6	0.1
Teachers	22.0	51.5	0.5	0.9
Architects, engineers and surveyors	0.3	0.0	0.1	0.0
Medical, dental and veterinary	0.5	2.4	0.0	0.2
Other professions	1.0	0.3	0.6	0.4
Monetary labour force	288,263	62,433	390,045	72,510

Source : Labour Enumeration Survey, 1976.

respectively. The majority of females employed in the private sector (about 85 per cent) are either casual employees or unskilled workers. In the public sector, on the contrary, majority of the females are employed as teachers.

Economically, Kenya has enjoyed one of the most rapidly growing economies among its Black African counterparts. Its GNP was calculated at K 975, 1,125, 1,374 and 1,762 in the years 1974, 1975, 1976 and 1977 respectively (World Bank Country Economic Report, 1975). However, there are great regional inequalities in income distribution, with the rapid growth of economy concentrated largely in urban and metropolitan centres (Nairobi and Mombasa). This has resulted in relative poverty among the mass of people, the greater majority of whom live in rural areas.

The urban population is still very small in Kenya, increasing from 7 to 12 per cent between 1960 and 1975. However, annual urban growth has been increasing rapidly, from 6.6 per cent in the period 1960-1970 to 7.0 per cent in the period 1970-75 through high natural increase and rural-urban migration. About 40 per cent of the urban population lived in Nairobi in 1960, but this rose to 53 per cent in 1975. It should be mentioned here that such a high rate of urban growth is far ahead of the development of urban facilities, creating a lot of social and economic problems. By implication, the low general level of urbanization in Kenya, as in most African countries south of the Sahara, cannot have a strong impact on fertility reduction although urban women have been found to have lower fertility than rural women (see Chapter 4).

School enrolment in Kenya has also been increasing rapidly. Total numbers enrolled in primary school as a percentage of age group increased by 100 per cent from 1960 to 1976. Male numbers had similar increase, while female numbers increased three-fold in the same period. Numbers

enrolled in secondary schools as a percentage of the age group only from 2 in 1960 to 15 by 1976. The adult literacy rate also increased from 20 per cent in 1960 to 40 per cent in 1976 (World Bank Report, 1979).

The percentage of female students in primary schools rose from 34 per cent in 1963 to 47 per cent in 1977 (Table 1.5). Female enrolment in secondary schools also rose from 32 per cent in 1963 to 38 per cent in 1977, an increase of only 6 per cent. Thus, while enrolment for females in primary schools is almost comparable with that of males, at secondary school level female enrolment lags behind that of males. Also, while acknowledging the government's success in trying to step up enrolment in both primary and secondary schools as well as in other institutions (Republic of Kenya, Plan 1974-78), Kenya's educational system has been criticised for being too urban-oriented (Scandinavian Institute of African Studies, 1972). The majority of school leavers and educated people live in urban areas, but this is a common phenomenon in almost all African countries south of the Sahara. Table 1.6 summarizes some of the demographic and socio-economic characteristics of Kenya in the recent past.

1.3 Methodology And Organization Of The Kenya Fertility Survey

The Kenya Fertility Survey (KFS) was conducted in 1977/78 jointly by the World Fertility Survey of the International Statistical Institute and the Central Bureau of Statistics of the Kenya Government. It was done on a nationally representative sample of 10,000 women between the ages 15-50. The sample was a sub-national sample of the National Integrated Sample Survey Programme (NISSP) which covered the period 1974-79 and was designed to cover one and two per cent of the rural and urban populations respectively. These percentages were based on the 1974 national data as projected from the 1969 population census. The NISSP sample covered a total of 30,000 households based on a stratified

Table 1.5 : Enrolment in primary and secondary schools and percent females, 1963-1977

Year	Total enrolment in primary schools	Percentage females	Total enrolment in secondary schools	Percentage females
1963	891,553	34	30,120	32
1964	1,014,719	35	35,921	30
1965	1,042,146	36	47,976	28
1966	1,043,416	39	63,193	26
1967	1,133,179	40	88,779	25
1968	1,209,680	41	101,361	26
1969	1,282,297	41	115,246	28
1970	1,427,589	43	126,855	30
1971	1,525,498	43	140,722	30
1972	1,675,919	43	161,910	31
1973	1,816,017	45	174,767	33
1974	2,704,878	45	195,832	34
1975	2,881,155	46	226,835	36
1976	2,894,617	46	280,388	37
1977	2,971,239	47	319,982	38

Source : Ministry of Education Annual Reports.

Table 1.6 : Some demographic and socio-economic characteristics of Kenya, 1960 and 1977

<u>Demographic/socio-economic characteristics</u>	<u>1960</u>	<u>1977</u>
Population (in millions)	-	14.6
Crude birth rate per thousand population	51	51
Crude death rate per thousand population	19	14
Average annual growth of population (per cent)	3.4 (1960-70)	3.8 (1970-77)
Infant mortality rate per thousand live births	126	126
Life expectancy at birth in years	47	53
Total fertility rate	-	7.8
Percentage of women in reproductive age group (15-44)	-	41
Percentage of married women using contraceptives (1970)	2	4
Percentage of population of working age (15-64)	51	50
Percentage of labour force in:		
Agriculture	86	79
Industry	5	9
Services	9	12
Average annual growth of labour force	3.3 (1960-70)	2.8 (1970-77)
Percentage of total population urban	7	12 (1975)
Average annual growth (percent) of urban population	6.6 (1960-70)	7.0 (1970-75)
Gross National Produce per capita (in US dollars)	-	270
Average annual growth (per cent)	2.5 (1960-77)	
Adult literacy rate (per cent)	20	40 (1975)

Source : World Bank, World Development Report, 1979.

multi-stage cluster sample design.

Like most World Fertility Surveys, KFS was based on enumeration and exhaustive interview of individual eligible women (aged 15-50). However, the questionnaire also provided a household schedule for the collection of information on members of each household. This was included to identify all women resident in the household on the previous night and who were considered eligible for individual interview. The household schedule collected information on household members on de facto and de jure bases. Information such as relationship with the head of household, age, sex, residence and date of birth was collected from any responsible member of the household. The individual questionnaire collected detailed information from each individual eligible woman who had been identified in the household schedule. All the questions were answered directly by the woman and in almost all cases, privacy was ensured. Overall, 8,891 households were successfully enumerated and a total of 8,100 women interviewed. The product response rate was 92.8 per cent and eligible response rate 95.8 per cent giving an overall response rate of 88.9 per cent. The details of the organization and methodology of the survey are contained in Chapter Two of the First Report, Volume One, of the Kenya Fertility Survey 1977-78 (pp. 21-41).

The questionnaire was divided into seven sections as follows:

Section 1 - Respondent's background in terms of residence, age, education, ethnicity and religion.

Section 2 Respondent's maternity histories (births and pregnancies experienced)

Section 3 Marriage history of the respondent (i.e. number and duration of all marriages)

Section 4 Respondent's knowledge of contraception and its use.

Section 5 Factors related to the open and the closed pregnancy interval* : duration of lactation, abstinence, amenorrhoea, temporary separation of spouses and contraception as well as fertility preferences.

Section 6 Respondent's work history .

Section 7 Respondent's husband's current (or last) background level of education, employment and residence.

The questionnaire was printed in 10 languages, namely English, Kikuyu, Kamba, Luhya, Kalenjin, Luo, Mijikenda, Meru, Kisii and Swahili. It was pre-tested to ensure that the objectives are fulfilled. A sample of the questionnaire is included as Appendix 1.

The Kenya Fertility Survey was conducted with the following objectives (Central Bureau of Statistics, 1980:4) :

- (1) to collect data on fertility levels and trends;
 - (2) to facilitate investigations into the differing patterns and determinants of fertility among Kenya's heterogeneous population;
 - (3) to provide the Kenya Government with a body of demographic data which can be used for socio-economic planning and policy-making purposes;
 - (4) to institutionalize the capacity of carrying out high quality surveys and demographic research;
- and (5) to provide internationally comparable data within the framework of the World Fertility Survey Programme.

* The open pregnancy interval was defined as the length of time between termination of the last pregnancy and the date of interview. The last closed interval was defined as the length of time between the termination of the last-but-one and the last pregnancy (see Central Bureau of Statistics, 1980:26).

1.4 Organization Of The Study

This study consists of seven chapters. Following the first introductory chapter, Chapter Two deals with the characteristics of the population surveyed. The findings are contained in Chapters Three to Six, Chapter Three dealing with patterns and differentials in nuptiality, Chapter Four with a detailed analysis of the patterns and differentials in fertility and Chapter Five with a multiple linear regression analysis. Chapter Six is devoted to an analysis of proximate determinants of marital fertility using Bongaarts Model. In the last Chapter Seven, we attempt both to summarize the findings of the previous chapters and to draw specific conclusions emerging from the study and considerations of policy implications.

REFERENCES

- Central Bureau of Statistics, Kenya Fertility Survey 1977-78, First Report, Volume 1, Ministry of Economic Planning and Development, Nairobi, Kenya, 1980.
- Central Bureau of Statistics, Ministry of Economic Planning and Development, The National Demographic Survey, 1977.
- Republic of Kenya, Kenya Development Plan 1974-78.
- Republic of Kenya, Ministry of Economic Planning and Development, Central Bureau of Statistics, Population Census 1962 and 1969, Volume IV, Analytical Reports.
- Scandinavian Institute of African Studies, Research Report, No.12, Uppsala, 1972.
- World Bank, World Development Report, 1979.
- World Bank Country Economic Report, Kenya : Into The Second Decade, The John Hopkins University Press, Baltimore And London, 1975.

CHARACTERISTICS OF THE POPULATION SURVEYED

2.1 Introduction

This short chapter outlines the basic demographic and socio-economic characteristics of the surveyed population to provide appropriate background information for the subsequent analysis in the succeeding chapters. It will also provide a constructive and critical understanding of the findings in the next chapters.

As mentioned in the previous chapter, the Kenya Fertility Survey had two components, namely the household schedule which collected information on all members of the household (i.e. age, sex, residence and relationship with the head of the household), and the individual questionnaire which collected detailed information on each individual woman.

2.2 Demographic Characteristics

The age-sex composition of a population is important in demographic analysis not only as far as its implications upon reproduction, household formation, school attendance and manpower supply are concerned, but also at any particular time it reflects the population's past experience in vital demographic events. Consequently the age-sex composition has a bearing on the current levels of fertility, mortality and migration as well as the rate of growth of population.

Table 2.1 gives the percentage distribution of the de facto population enumerated in the Kenya Fertility Survey household schedule according to age and sex. For comparative purposes the percentage distribution of the population enumerated in the National Demographic Survey (NDS) is included in the same table. About 37 per cent of the population in the KFS was aged under 10 and 52 per cent under 15,

Table 2.1 Percentage distribution of de facto population enumerated in KFS and in NDS, according to age and sex

Age	KFS				NDS			
	Males	Females	Both Sexes	Sex Ratio	Males	Females	Both Sexes	Sex Ratio
0-4	20.1	19.7	19.9	0.99	20.6	18.9	19.7	1.03
5-9	17.8	17.3	17.5	1.00	18.0	17.1	17.6	0.99
10-14	14.7	15.4	15.1	0.93	14.8	14.0	14.4	1.00
15-19	9.7	9.0	9.4	1.05	9.7	9.8	9.8	0.94
20-24	5.9	6.7	6.3	0.86	6.4	7.6	7.0	0.79
25-29	6.3	7.0	6.6	0.87	5.9	7.1	6.5	0.79
30-34	4.4	4.7	4.6	0.93	4.9	5.1	5.0	0.90
35-39	4.0	4.3	4.2	0.91	4.1	4.7	4.4	0.85
40-44	3.5	2.9	3.2	1.15	1.15	3.3	3.3	0.91
45-49	3.1	3.0	3.0	1.02	3.3	3.2	3.2	0.98
50-54	2.6	2.9	2.7	0.87	2.2	2.5	2.4	0.85
55-59	1.9	2.4	2.1	0.76	1.9	1.9	1.9	0.95
60-64	1.9	1.7	1.8	1.06	1.6	1.7	1.6	0.90
65-69	1.3	1.2	1.3	1.04	1.3	1.2	1.2	0.99
70-74	1.2	0.9	1.0	1.39	0.9	0.8	0.9	1.05
75+	1.4	1.0	1.2	1.39	1.2	1.0	1.1	1.07
TOTAL	100.0	100.0	100.0	0.97	100.0	100.0	100.0	0.94

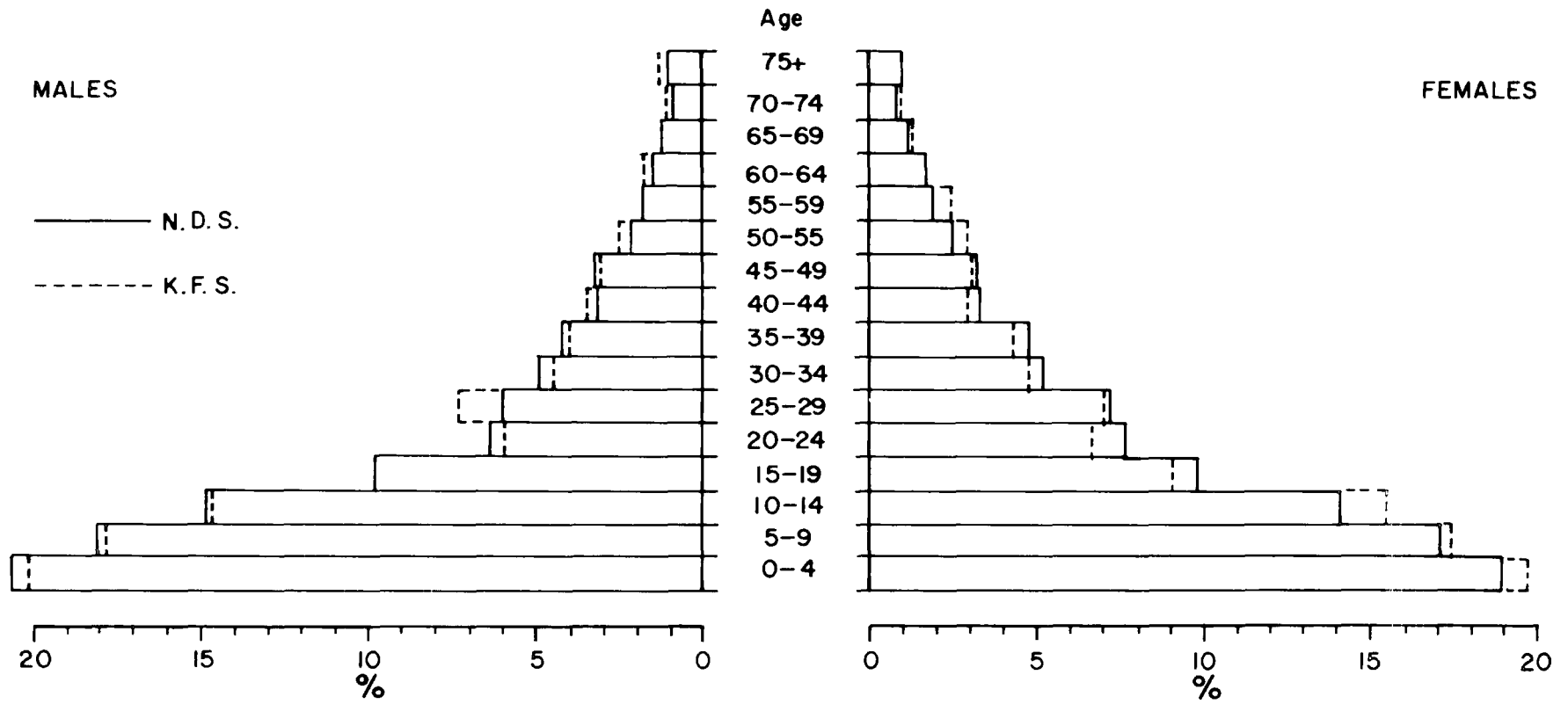
Source : Central Bureau of Statistics Vol.1, 1980, p.45 (KFS First Report)

indicating the extreme youth of the population (Fig. 2). A comparatively large number of the population was reported as 0-9 in both surveys (37.3 - 37.4 per cent) followed by a sharp drop in the next age group 10-19 (24.2 - 24.5 per cent) and thereafter the population decreases gradually with age. This has been a common feature of many African censuses/surveys and the causes remain unclear. But, given the drastic decline in the levels of infant and child mortality allowing large numbers to survive to these ages, this pattern in age distribution in Kenya and in many African censuses/surveys may, in part, be genuine. This, however, is not conclusive given the following facts (Kpedekpo and Serunjogi, Unpublished) :

- (a) the large ~~proportion~~ reported as 0-9 appear to be a feature of almost all the reported age distributions irrespective of the date of the censuses/surveys ;
- (b) in countries where data for more than one census are available, there seems to be no tendency for the bulge to move into the 10-14 and 15-19 age groups, with the exception of Malagasy Republic where the standard of age reporting is higher than in most other African countries ;
- (c) a similar pattern of age distribution has been observed in Asian countries (e.g. Indian 1901 and 1911 censuses, when relatively little improvement in levels of infant and child mortality had been effected) with longer histories of census taking.

In the 1969 Uganda census, a similar distortion was attributed largely to age-misstatement (Kpedekpo and Serunjogi, Unpublished). This explanation might be generalized to all African Censuses/Surveys including the Kenya Fertility Survey/National Demographic Survey. "The

Figure 2 AGE-SEX DISTRIBUTION OF POPULATION ENUMERATED IN K.F.S. and N.D.S.



Source: Table II.1.a. and unpublished N.D.S. Table

difference in the sex ratio between the two surveys 0.97 and 0.94 from the KFS and NDS respectively probably reflect more successful enumeration in the KFS of men especially the young unmarried ones in the urban areas; it may also reflect the differences in the procedures adopted in the weighting of the data" (Central Bureau of Statistics, 1980:45). The number of females in the age group 10-14 is higher in the KFS than in the NDS probably reflecting that females' ages in this age group were under-estimated.

2.3 Background Socio-Economic Variables Used in the Kenya Fertility Survey and the Rationale for Selection of Sub-set of Variables For our Analysis

The core of our investigation of our present study is the patterns and differentials in nuptiality and fertility. These form our dependent variables. "The study of nuptiality deals with the frequency of marriage, i.e. unions between persons of opposite sexes which involve rights and obligations fixed by law and customs; with the characteristics of persons united in marriage; and with the dissolution of such unions" (UN,1958:31). In studying nuptiality emphasis is put mainly on major aspects: age at first marriage, frequency of marriage and type of union especially polygamy.

Fertility is defined as "the actual reproductive performance - whether applied to an individual or to a group" (UN, 1958:35). The measure of fertility used in our analysis is the children ever born alive to women in their lifetime. However, the major setback of this measure is the mis-reporting by women of the actual number of children born alive, either deliberately (because some children are dead or not living with them) or due to memory lapse especially among the old women. Another possibility of mis-reporting may arise from the inability of women to state their ages correctly, especially among the illiterate populations.

Diverse socio-economic conditions have been postulated to have an effect on the above dependent variables (UN, 1973) and specific interactions between different socio-economic and cultural variables have been widely investigated (Coale, 1967; Palmore and Bin Marzuki, 1969; Kohli, 1977). In this respect KFS used a wide range of background variables : (1) education of spouses, (2) type of place of residence, (3) region of residence, (4) religious affiliation, (5) ethnic group, (6) husband's occupation, (7) type of union, (8) number of wives in a union, (9) number of times married, (10) wife rank in the marriage (polygamous), (11) wife's occupation before union, (12) last occupation since union, (13) wife's work status before union, (14) wife's last work status since union, (15) wife's place of work since union, (16) wife's work pattern and (17) husband's work pattern, (18) literacy of spouses, (19) childhood place of residence of spouses.

However, for this analysis only a sub-set of variables was selected. Apart from focussing our attention on a sub-set of socio-economic and cultural variables of interest and considered relevant to our present study, there were other theoretical and practical considerations. The theoretical consideration was based on the fact that some socio-economic and cultural factors were found to be more important than others in explaining the patterns and differentials in nuptiality and fertility (UN, 1973). The practical consideration was based on the inadequacies of the variables themselves by way of providing relevant and detailed information. For instance women's work variables do not tell us anything about the income gained and the standard of living and they ignore non-cash employment. They also tell us nothing about child employment.

In view of the above observations, only the first 10 background variables were selected for this analysis to investigate the specific interaction between them and their relationship with the dependent variables. It should be pointed out, however, that even the selected

sub-set of variables are not without analytical problems and inadequacies. Region of residence and rural-urban residence, for instance, refer only to current residence and ignore the factor of migration. Husband's occupation is represented by broad categories and is a relatively poor indicator of wealth, income or social status. A detailed description for the selected background variables is given elsewhere (Central Bureau of Statistics, 1980:59-69):

- (1) Education of spouses - in the survey, all women in the sample were asked to state the highest level of education attained, and on the basis of the response, women were grouped into 4 categories, namely no formal schooling (44 per cent), primary schooling with 1-4 years completed (18 per cent), primary schooling with 5-8 years completed (27 per cent) and secondary or higher education with 9 or more years of schooling (10 per cent).

Information on the highest level of education attained by husbands was collected from all ever married women. Again on the basis of the results obtained, a similar classification was used in this analysis. Since major education expansion has occurred only during the years following Kenya's independence in 1963, education in Kenya is strongly related to age (the young being more educated than the old). In the whole sample for instance, among women aged less than 25, accounting for about 41 per cent, 22 per cent had no schooling, 35 per cent had 1-4 years of schooling, 64 per cent had 5-8 years of education and 78 per cent had 9 or more years of schooling* (Central Bureau of Statistics, 1980:61).

* Calculated as percentage of all age groups in each category of education.

(2) Type of place of residence - All respondents were classified into three categories according to the usual place of residence, namely rural, urban and metropolitan. The metropolitan sector consists of the two major cities of Nairobi and Mombasa. The urban and metropolitan sectors accounted for about 12 per cent of the total sample. The relationship between type of place of residence and age is not as marked as in the case of education. About 54 and 51 per cent of the urban and metropolitan women respectively were aged less than 25 compared to 40 per cent of the rural respondents. Because education facilities in Kenya are very much biased in favour of urban and metropolitan centres, as mentioned in the previous chapter, type of place of residence is strongly related to education, husband's occupation and a woman's pattern of work.

(3 and 5) Region of residence and ethnic group - Respondents lived in one of the 8 administrative regions (see Figure 1, Chapter 1), and were also classified into 9 major ethnic groups: Kikuyu, Luo, Luhya, Kamba, Kisii, Meru/Embu, Mijikenda, Kalenjin and other. Two of the closely related ethnic groups of Meru and Embu were combined into one category Meru/Embu due to the small number of respondents. The Kalenjin category consists of six different closely related small tribes, namely the Kipsigis, Nandi, Tegu/Cherangani, Elgeyo, Pokot and Marakwet. The category 'other' consists of the respondents belonging to small tribes such as Masai, Kuria, Taita and others, unrelated to the 8 major ethnic groups named above.

The distribution of ethnic groups in various regions is as follows: the Central region (Kikuyu), Western region (Luhya), Coast region (Mijikenda accounting for about 60 per cent and Kamba 16 per cent); Nyanza region (Luo accounting for about 67 per cent with Kisii 27 per cent); Eastern and North-Eastern region (Kamba and Meru/Embu); Rift region (Kikuyu accounting for some 38 per cent, Kalenjin 36 per cent, Luhya 7 per cent and other 14 per cent), Nairobi region (mixture of mainly Kikuyu, Luo, Luhya and Kamba). Nairobi region has a youthful population and is the best educated with some 65 per cent having at least 5 years of formal schooling. The Coast has the lowest percentage in terms of formal schooling with only 21 per cent. Other regions fall in between the two extremes.

(4) Religion - On the basis of religious affiliation, five categories occur, namely protestants and other churches (53 per cent), catholics (36 per cent), muslims (5 per cent), non-religious faith (5 per cent) and other religions (1 per cent). Among the protestants and catholics, 56 and 64 per cent respectively have received less than 5 years of schooling. About 70 per cent of the muslim women are concentrated in the Coast region of whom 58 per cent belong to the Mijikenda tribe. Some 17 per cent of the muslim women belonged to the Luhya of the Western region. In terms of education, about 88 per cent of all muslim women had received less than 5 years of education.

(6) Husband's occupation - A question on the husband's occupation was directed ^{only} to ever married women and in all 10 categories of women were classified (Central Bureau of Statistics, 1980) :

Professional

Clerical

Sales Workers

Service Workers - private household

other service workers

Agricultural Workers - self employed farmers

(i.e. owning or renting land)

- agricultural employees

Manual Workers - skilled

- unskilled

Never Worked - (including mainly owners of land who
saw no need to work and those seeking
a job but unable to find one)

- (7) Type of union - The question on whether the husband had other wives was asked to currently married women only. It was intended to study the extent of polygamy and the effect it has on fertility. About 30 per cent of all current marriages* were of a polygamous nature.

It should be pointed out at this stage that the socio-economic and cultural factors named above do not operate independently. They are interrelated and the relationship between fertility and any of the above factors is only partial. This may explain why statistical relationships between fertility and some socio-economic variables sometimes have low statistical significance (see Chapter 5). For further indication of the interrelations among selected variables and between selected and omitted variables see Chapter 4.

It is, however, worth noting that educational attainment is of paramount importance in this respect. The effect on nuptiality and

* in the age range 15-50.

fertility of any other socio-economic and cultural variables is not independent of education. One's economic and social well-being, housing conditions, levels of hygiene, nutrition and mortality (all of which exert influence on fertility) are related to education. In this respect, in Kenya, like many other developing countries, the traditional pattern of ignoring female education in preference to male education, which prevailed only until recently, seems to be changing. As indicated in the preceding Chapter (sub-section 1.2.2), attainment of literacy and higher education are becoming a main goal among Kenya females especially the young ones.

REFERENCES

- Central Bureau of Statistics, Ministry of Economic Planning and Development, Kenya Fertility Survey 1977-78, First Report, Volume 1, Nairobi, Kenya, 1980; see also The National Demographic Survey, 1977.
- Coale, A., "Factors Associated with The Development of Low Fertility: An Historic Summary", Proceedings of The World Population Conference, Belgrade 1965 (New York : UN, 1965), pp.205-9.
- Kohli, K.L., "Regional Variations of Fertility In Iraq and Factors Affecting it", Journal of Bio-Social Science, 9(2), 1977, pp.175-82.
- Kpedekpo, G.M.K. and Serunjogi, M.S., The Population of Uganda, (Unpublished).
- Palmore, J.A. and Bin Marzuki, A., "Marriage Patterns and Cumulative Fertility In West Malaysia 1966-1967", Demography, 6, 1969, pp.383-401.
- United Nations, Department of Economic and Social Affairs, Multilingual Demographic Dictionary, Population Studies No.29, United Nations, New York, 1958.
- United Nations, Department of Economic and Social Affairs, The Determinants and Consequences of Population Trends, Population studies, No. 50, Volume 1, United Nations, New York, 1973.

CHAPTER THREE

PATTERNS AND DIFFERENTIALS IN NUPTIALITY

3.1 Introduction

Marriage is of great importance to the demographer, in that most childbearing occurs within marriage and changes in marital patterns can greatly affect fertility (Caldwell, 1976: 359-371). Marriage status variables like age at marriage, the proportion marrying, the prevalence of different types of marital unions (polygamy, consensual unions, etc.), the frequency of widowhood and divorce and the extent of re-marriage all influence fertility in a population (Seetheram and Duza, 1976: 348). The proportion marrying in any population is largely affected by two factors: the extent of widowhood and divorce, and the prevalence of subsequent remarriage. However, it is also affected by the practice of polygamy.

For the above reasons, this chapter is divided into two major parts. Sections 3.2 - 3.7 study the prevalence of marriage, followed by a detailed analysis of age at first marriage, in particular whether there have been any significant changes that have occurred and to examine any differentials in age at marriage based on a number of selected background variables; this will be followed by an examination of the effects of education on marriage patterns. Section 3.8 will be devoted to a detailed analysis of the institution of polygamy.

3.2 Prevalence Of Marriage

The percentage distribution of all women by current age and marital status (Table 3.1) reveals that marriage is a very important and universal institution in Kenyan society. It starts quite early, so much so that by age 25 almost all women are married. Looking at data on proportion never married, there is a sharp drop from 72 per cent for women aged less

than 20 to 21 per cent for the age group 20-25 and then sharply down to 4 per cent for women aged 25-29. After age 29 the proportion never married is very small. This situation is expected in a society like Kenya as in many other sub-Saharan African societies with low socio-economic and educational development.

The same Table also shows that the proportions divorced and widowed are very small, probably due to rapid remarriage.

3.3 Proportion Never Married By Education

As expected, there is a relationship between the proportion never married and the level of education. Table 3.2 shows a high incidence of early marriage among young uneducated women and among those who drop out of school early (after 1-4 years of formal schooling). By age 25 almost every one of these women is married. But women with some secondary or higher education will tend to delay their marriage until after completion of their studies and therefore most of them will tend to marry between ages 25-34.

3.4 Marriage Dissolution

Marriage dissolution may occur as a result of either divorce or widowhood. It may have an indirect effect on fertility in a population through shortening the fertile period of women. But its effect will depend on the age at which a woman enters that state and how long she remains in it, for the situation can be reversed when she remarries and resumes her normal sexual life (Sivamurthy, 1979). Generally, Kenyan traditional society approves of divorce, and remarriage of both the divorced and widowed is acceptable. For this reason, the effect of marriage dissolution on fertility in Kenya is not substantial, as indicated by the data on divorce and widowhood in Table 3.1. While divorce tends to remain low and constant after age 24 and non-existent

Table 3.1 : Percentage distribution of women according to current age and marital status (1977/78)

Current age	Never married	Married	Widowed	Separated	Divorced	Total
< 20	72.4	26.1	0.2	0.8	0.6	100.0
20-24	21.0	73.2	0.6	2.8	2.4	100.0
25-29	4.3	88.6	1.5	2.4	3.2	100.0
30-34	1.4	90.8	2.3	2.3	3.2	100.0
35-39	0.7	91.4	4.5	1.9	1.5	100.0
40-44	0.8	87.7	6.9	2.2	2.4	100.0
45-49	0.3	84.6	12.1	2.0	0.9	100.0
50	0.8	85.1	14.1	-	-	100.0
All	21.9	71.3	2.0	2.0	1.9	100.0
Total number of women	1,774	5,771	231	158	159	8,092

Table 3.2 : Proportion of single women by level of education and current age

Current age	Level of Education					Number of single women
	None	1-4	5-8	9+	All	
< 25	21.5	44.2	58.8	77.7	50.3	1,682
25-34	2.0	1.7	4.3	11.4	3.1	77
35-44	0.6	0.6	3.0	-	0.8	12
45+	0.2	-	5.6	-	0.4	3
All	5.5	16.3	39.0	62.6	21.9	
Number of single women	198	242	864	507		1,774

at age 50, widowhood increases with age, increasing slowly in younger ages below 35 and rapidly after age 35 from 4 per cent to 14 per cent among women aged 50. This may be due to high male adult mortality in Kenya. Some marriages in Kenya are dissolved at an early age, a reflection of the possibility that some women are married to much older husbands than themselves, but on the whole Kenya marriages are stable, dissolution accounting for only about 7 per cent of all current marriages.*

3.5 Divorce And Education

Uneducated women and those with 1-4 years of education experience higher incidence of divorce than their counterparts with secondary and higher education (Table 3.3). Highly educated women married to husbands of the same level of education experience much less incidence of divorce, a reflection perhaps of better communication between couples.

3.6 Age At First Marriage

Although childbearing is not confined to marriage, in most African countries south of Sahara and in Latin American Societies, the majority of childbirth occurs in marriage, and for this reason age at marriage has been recognised as a major influence on fertility.

"The initial timing of marriage, the tempo with which it continues and the proportion who ultimately marry will affect the fertility level " (Coal, 1971:193).

Age at marriage may also have implications in socio-economic development planning in particular production and distribution of housing requirements and other services (Sivamurthy and Seetheram, 1976:286). For this reason, any moves intended to raise age at marriage so as to bring about a reduction in levels of fertility, family size and consequently rate of population growth have to run concurrently with other socio-economic changes conducive to altering attitudes, practice,

* in the age range 15-50.

Table 3.3 : Percentage distribution of women whose first marriage ended in divorce according to education of wife and of husband (taken as proportion of ever married)

Education of wife	Education of husband					Number of divorced women
	None	1-4	5-8	9+	All	
None	7.8	7.1	7.1	5.6	7.4	243
1-4	11.1	8.4	7.6	4.5	8.3	101
5-8	9.3	7.8	6.0	4.5	5.9	79
9+	12.5	-	7.1	1.5	2.7	9
All	8.4	7.5	6.9	3.6	7.0	
Number of women	159	80	157	34		431

norms and traditions regarding marriage." (Driver, 1963).

Before analyzing age at marriage, it is worth noting the major difficulties in studying marriage patterns in Africa, south of the Sahara. One of the main problems is related to the concept of marriage. Given a situation where cohabitation before marriage is common and informal unions widespread, it poses a methodological difficulty in defining clearly in a demographic sense not only married status, but also the exact time when marriage starts. Such a situation does not exist among the Arab neighbours to the north, where Sivamurthy and Seetharam (1976 : 287) identified three clearly defined stages in which marriage takes place : (a) the engagement; (b) the signing of the contract (including the specification of the amount of Mahr or brideprice); and (c) the wedding ceremony. These facilitate demographic analysis in terms of both fixing the exact date of onset of marriage and when it is terminated, if other than by death.

In the context of Africa, south of the Sahara, on the other hand, Van de Walle (1968 : 183-238) identified different types of marital unions : (a) casual unions; (b) consensual unions; (c) marriage on approval; and (d) formal marriages. While the last can be defined easily as it involves either customary, religious, civil or other registration rites, the first three are difficult to define. For demographic purposes, however, WFS defined marriage following the definition adopted in Kenya during the censuses of 1962 and 1969 and in the National Demographic Survey of 1977. It "included both unions which had been sanctioned by religious or civil law and less formal unions which simply entailed living together in a more or less stable sexual partnership" (Central Bureau of Statistics, 1980 : 75). In the light of the *above* observations, this kind of definition leaves a lot to be desired when it comes to determining the exact beginning of married life. Faced with such a

practical difficulty, it is also worth bearing in mind that the reporting of age at first marriage (like data on current age, particularly in societies with high illiteracy rates) is generally subject to considerable reporting errors in all the various types of marriages mentioned above.

3.6.1 Factors affecting age at first marriage

Age at first marriage is affected by both demographic and non-demographic factors. The demographic factor affects age at marriage directly; this refers to the deficit of persons of the opposite sex in the marriageable ages, sometimes referred to as marriage "squeeze" (Sivamurthy and Seetharam, 1976 : 292). This may result directly from polygamy and age-sex selective mortality and migration, or conscription for military service. Education is the main non-demographic factor which affects age at marriage both directly through postponing marriage and indirectly through transforming values and attitudes towards marriage. The influence of religion on age at marriage is difficult to establish, as any observed differences between religious groups may be attributable to differences in education.

It is not intended to examine here the effect of the demographic factor upon age at marriage; we are more concerned with the investigation of the exact ages at first union and the differences in age at marriage based on a number of selected socio-economic variables.

3.6.2 Trend in age at first marriage

In order to investigate whether there has been a change in age at marriage, two techniques have been used, marriage cohort and age cohort approaches. The results are presented in Tables 3.4 and 3.5. Conscious of the quality of reporting age at marriage and current age and a truncation bias among women who married over 30 years ago (women

marrying prior to 1947 at ages 20 or more are automatically excluded from the sample because they must be aged over 50 at the date of the survey), there seems to be a clear evidence that age at marriage has risen gradually among older women who married 20 or more years ago and rapidly among young women who first married 5-15 years ago (Table 3.4) and are themselves aged less than 35. The data in Table 3.5(a) reveals a similar picture. The median age at marriage for all women aged 20-24 and 30-34 is 18.1 and 17.1. And although the picture is less clear in Table 3.5(b), there is a general reduction in the percentages from older to younger cohorts, supporting the conclusion that there is a rise in age at marriage particularly among the young cohorts. The same Table clearly shows that significant changes have occurred only recently in the past 10-15 years before the survey. Irregularities in the trend among older cohorts of women (i.e. higher medians in Table 3.5(a) and higher percentages in Table 3.5(b) among older women) may be explained in terms of errors in reporting age at marriage and current age (see also Central Bureau of Statistics, 1980:72). The above conclusions are further confirmed by the data on proportions never married in the censuses of 1962 and 1969 and the Kenya Fertility Survey of 1977/78 First Report (Table 3.6). The percentage of single women has increased from 55 to 72 among women aged 15-19 and from 13 to 21 among women aged 20-24.

3.6.3 Differentials in age at first marriage

Recent changes in age at first marriage we have just noted coincide with the improvement in literacy and development in education and other socio-economic services that have followed Kenya's independence in the early 1960s. It is thus the younger cohorts whose marriages have been postponed and their attitudes towards marriage transformed due to education and urban environment. If it is hypothesized that such changes in socio-economic development as literacy and education as well as urban and

Table 3.4 : Median age at first marriage by marriage cohort approach

Year of marriage	Median age at first marriage	Number of ever married women
Prior 1947	15.1	318
1948-1952	16.5	622
1953-1957	16.6	732
1958-1962	16.7	989
1963-1967	16.8	1,117
1968-1972	17.5	1,227
1973-1977	18.0	1,314
All ever married	17.05	6,319

Table 3.5(a) : Median age at first marriage for all women by age cohort approach

Age cohort	Median age at first marriage for all women	Number of women
20-24	18.1	1,436
25-29	17.5	1,479
30-34	17.1	1,011
35-39	17.1	926
40-44	17.2	614
45-49	17.8	644
50	17.4	75
All		6,185

Table 3.5(b) : Percentage of women by age cohort marrying by specified ages

Age cohort	Specified age at first marriage				Proportion ever married women
	<15	<20	<25	<30	
15-19	5.7	27.6	-	-	27.6
20-24	12.8	64.7	79.0	-	79.0
25-29	16.3	70.8	93.5	95.7	95.8
30-34	20.5	77.7	95.3	98.6	98.6
35-39	21.6	75.3	94.6	98.6	99.4
40-44	19.1	74.3	93.8	97.7	99.2
45-49	15.5	66.8	92.6	97.2	99.8
50	14.7	72.0	96.0	98.7	100.0

- No cases

Table 3.6 : Percentage of never married women aged less than 30 at the time of censuses and the Kenya Fertility Survey by current age

Age at the time of census/survey	Census of 1962	Census of 1969	Kenya Fertility Survey of 1977/78
15-19	55	63.6	72.4
20-24	13	18.4	21.0
25-29	5	6.4	4.3

Source : Census Reports of 1962 and 1969 Volumes 3 and 4 and Kenya Fertility Survey Data of 1977/78 (see also Central Bureau of Statistics, KFS, 1980).

metropolitan settings have affected age at marriage, as it has been found true for "most of the developing countries for which detailed survey results are available" (de Graft-Johnson, 1980:11), then it is appropriate to examine differentials in age at marriage in the context of Kenya according to a number of socio-economic variables : level of education of women, their type of place of residence, region of residence, ethnic group, religious affiliation, polygamous or monogamous union and wife order. This kind of analysis has another significance; it can help in identifying the socio-economic variables which planners and policy makers, devoted to bringing about a reduction in the rate of population growth and in fertility, should manipulate in order to bring about changes in age at marriage. It should be noted at this point, however, that "a number of international meetings have made various recommendations with respect to raising age at marriage" (de Graft-Johnson, 1980:11).

Education has been singled out as the major variable to raise female status to make women increase their contribution to the development of society while at the same time giving them a responsible attitude to marriage and reproduction (de Graft-Johnson, 1980:13). The difference in age at marriage between women with no education and those with secondary and higher education is about 5.4 years for relatively younger women aged 20-29 and 3.1 years for older women aged 30 to 50 (Table 3.7).

Table 3.7 also shows that among the relatively younger women aged 20-29, age at marriage is higher for those living in metropolitan areas than women living in either urban or rural areas. But there is no difference in age at marriage among women aged 30-50 by type of place of residence. This is probably a further confirmation that urban environment has not changed the attitude of the old women towards marriage. It is possible that these old women might have migrated to urban and metropolitan areas recently. Women in the Eastern, Nairobi and Central

Table 3.7 : Variation in median age at first marriage of all women by selected socio-economic variables

Socio-economic variables	Current age		Number of women
	20-29	30-50	
	Median	Median	
<u>LEVEL OF EDUCATION</u>			
None	16.5	17.0	3,245
1-4	16.9	17.4	1,200
5-8	18.3	18.4	1,291
9+	21.9	20.3	444
All	17.8	17.3	6,180
<u>RESIDENCE</u>			
Rural	17.6	17.3	5,429
Urban	18.5	16.6	269
Metropolitan	18.6	17.3	489
All	17.8	17.3	6,180
<u>REGION</u>			
Nairobi	19.4	18.2	320
Central	19.1	18.5	932
Coast	16.4	16.3	548
Nyanza	16.6	16.5	1,368
Rift	17.6	17.4	1,140
Western	17.2	16.6	813
Eastern + N. Eastern	19.5	18.0	1,049
<u>RELIGION</u>			
Christians	18.0	17.3	5,471
Muslims	16.3	16.1	315
No Religion	15.9	17.3	393
<u>ETHNIC GROUP</u>			
Kikuyu	19.1	18.3	1,541
Luo	16.3	16.0	1,086
Luhya	17.4	16.5	899
Kamba	19.5	17.8	766
Kisii	17.7	17.8	416
Meru/Embu	19.4	18.2	425
Mijikenda	15.8	15.9	338
Kalenjin	17.5	17.5	394
Other	16.5	16.8	320

Provinces tend to marry later than their counterparts in other regions, the Coast women marrying much younger at an average age of 16. The regional differences reflect variations among the ethnic groups; the Kamba, the Kikuyu and the Meru/Embu marry late, while the Mijikenda of the coast marry very early. Religious differences in age at marriage are also apparent, being markedly higher for christians than for either muslims or those with no religion.

The type of marriage seems also to have an effect on age at marriage. This view is supported by the data in Table 3.8 where it is apparent that marriages occur earlier in polygamous than in monogamous unions. This pattern is expected as polygamous women are more likely to be illiterate and less educated. Thus in the "absence of any schooling or occupational constraints any women after puberty may soon get married" (de Graft-Johnson, 1980). Another characteristic of polygamy in respect to age at marriage is that first wives experience earlier marriages than second wives, but third and higher order polygamous wives marry at the same or even younger ages than first wives. This, again, is not surprising since polygamy is more common among older men who may take on other wives because their earlier wives are either getting old or are childless. Higher order wives are, therefore, much younger than the first wives and the husbands themselves.

3.7 Education And Marriage Patterns

3.7.1 Education and age at marriage

Having identified the differentials in age at marriage according to the level of education, type of place of residence, region of residence, religion, ethnic grouping, type of union and wife order, specific attention must now be given to the importance of education in influencing age at marriage; particularly whether the differentials

Table 3.8 : Variation in median age at first marriage by current age and type of union and by wife order

	Current age		Total number of women
	20-29	30-50	
<u>Type of Union</u>			
Polygamous	16.5	17.0	1,585*
Monogamous	17.4	17.4	3,686*
All	17.8	17.3	6,185**
<u>Wife Order</u> (Polygamous only)			
First wife	15.8	16.8	576
Second wife	16.9	17.4	763
Third or higher order wife	16.4	16.7	248

* refer to currently married women

** refer to all women (married and single).

identified according to the above socio-economic and cultural variables persist when related to the education of women, as shown in Table 3.9. However, it must be stressed that inferences drawn from these particular data should be treated with some caution in the light of the small sample of women in certain cells. Nevertheless, there seems to be a clear indication of the influence of education regardless of the type of place of residence, religious affiliations or ethnic group. The differences in age at marriage between rural, urban and metropolitan residence among women of the same education (Table 3.9(A)) are very small, and the relatively lower ages at marriage among the older women in the urban areas are hard to explain but this could probably be attributed to age-sex, selective migration to metropolitan areas. Differentials in age at marriage among women in the same type of residence but different level of education are quite marked, age at marriage increasing with education. Differentials in age at marriage among women of the same educational attainment but different religion (Table 3.9(B)) are less apparent because of the smaller number of muslim women and those submitting to traditional religion with some primary or higher education. However, differences among christians according to education are apparent. They are also apparent according to the type of place of residence (Table 3.9(c). Ethnic differences among rural women still persist within the same levels of education (Table 3.9 (D)), perhaps reflecting the differences in the impact of cultural and traditional attitudes.

It might be of interest at this point to ask the question "to what extent are rural-urban-metropolitan and ethnic variations in age at marriage noted above, explained by differing educational levels amongst these groups?" In Table 3.9 (A) after standardizing for educational composition (i.e. assuming that women in each age group had the same level of education, would age at marriage remain the same for

Table 3.9 : Variation in median age at first marriage of all women according to the female's level of education and other socio-economic variables combined

(A) Education and types of place of residence

Age/residence	Level of education					All stand-ardized for educational composition	Number of respondents
	None	1-4	5-8	9+	All		
20-29							
Rural	16.5	16.8	18.3	22.1	17.6	17.9	2,415
Urban	17.3	17.0	18.0	21.3	18.5	18.0	176
Metropolitan	16.4	16.7	17.9	22.1	18.6	17.7	324
30-50							
Rural	17.0	17.4	18.5	19.5	17.3	17.2	3,014
Urban	15.8	16.7	17.5	*	16.6	16.6	91
Metropolitan	16.0	18.3	18.5	20.8	17.3	16.8	165

(B) Education and religion

Age/Religion	None	1-4	5-8	9+	All	All stand-ardized for educational composition	Number of respondents
20-29							
Christians	16.8	16.9	18.3	21.9	18.0	-	2,601
Muslims	16.2	*	17.80	*	16.4	-	166
No religion	15.7	*	*	*	15.9	-	145
30-50							
Christians	16.9	17.4	18.5	20.4	17.3	-	2,870
Muslims	16.0	17.3	*	*	16.3	-	149
No religion	17.1	*	*	*	17.3	-	248

(C) Religion and Type of Place of residence

	Christians	Muslims	No Religion	All
20-29				
Rural	17.8	16.3	15.9	17.6
Urban	18.4	*	*	18.5
Metropolitan	19.1	16.8	*	18.6
30-50				
Rural	17.3	16.3	17.3	17.3
Urban	16.7	*	*	16.6
Metropolitan	18.2	16.0	*	17.3

(D) Education and ethnic group... (looks at rural women only)

Age/ethnic group	Level of education					All stand-ardized for educational composition	Number of respondents
	None	1-4	5-8	9+	All		
20-29							
Kikuyu	18.0	17.7	19.2	23.5	18.9	18.9	549
Luo	15.4	16.1	16.6	19.7	16.2	16.3	385
Luhya	16.2	16.0	17.4	20.6	17.2	17.0	379
Kamba	17.0	17.4	19.9	24.5	19.1	18.7	281
Kisii	17.0	16.8	17.6	22.5	17.6	17.7	188
Meru/Embu	17.8	18.0	20.0	*	19.4	16.7*	177
Mijikenda	15.8	*	16.5	*	15.9	11.4	127
Kalenjin	17.6	16.8	17.9	23.0	17.6	18.01	212
Other	16.2	16.5	17.8	20.5	16.5	17.0	117
30-50							
Kikuyu	18.0	18.1	19.3	*	18.3	-	758
Luo	15.9	16.3	16.7	*	16.0	-	549
Luhya	16.2	16.2	17.8	*	16.5	-	403
Kamba	17.5	17.5	20.3	*	17.8	-	406
Kisii	17.6	18.8	*	*	17.7	-	219
Meru/Embu	17.9	18.2	18.6	*	18.2	-	238
Mijikenda	15.6	*	*	*	15.8	-	136
Kalenjin	17.7	17.2	*	*	17.6	-	171
Other	17.2	*	*	*	17.1	-	135

* Number of cases less than 20

- Standardization for educational composition was not possible due to the inadequate number of cases with more than 5 years of schooling.

rural, urban and metropolitan areas?), the differentials in median age at marriage among young women (20-29) almost disappear reflecting that slightly higher age at marriage in urban and metropolitan areas are largely explained by increasing levels of education. This should not be surprising since most educational facilities in Kenya, as mentioned in the previous chapter, are concentrated in urban and metropolitan areas. The above conclusion is further confirmed by a Chi-Square test which yielded an estimated Chi-Square value of 166.7 and a tabulated value of 12.59 at 6 degrees of freedom and 95 per cent level of significance, thus rejecting the null hypothesis (i.e. there are significant differences in age at first marriage among educational categories with respect to rural, urban and metropolitan areas). And although the variation in the standardized values is less apparent among rural, urban and metropolitan areas in the old age group (30-50), the Chi-Square test confirmed statistically significant differences in age at marriage among educational categories.

3.7.2 Educational status of partners; education and number of times married

This sub-section studies the effect of education on the selection of partners and the number of times a person marries. Education is considered as one of the most important characteristics for analysing the process of mate selection (Nawar, 1978 : 144).

Most Kenyan men seem to marry women who have either a similar or slightly lower level of education (Table 3.10). Wives with higher education than that of their husbands are rare. It is also noticeable that education has an inverse relationship with the number of times married, the latter decreasing drastically as education increases; but

increasing gradually with age (Table 3.11). Only 8 per cent of ever married women have married more than once.

The above pattern is not surprising, since educated women tend to be more reluctant to live in polygamous unions as co-wives than uneducated women or those with low education. Polygamy, as we shall see later, is associated with marriage instability, and less stable marriages are prevalent among uneducated women and those with low education who also happen to live more in polygamous unions. Thus, it is likely that the socio-economic and cultural factors which are associated with higher ages at marriage particularly education, as we saw in the preceding section, are also associated with greater marital stability. This has been found true in many developing countries such as Indonesia (World Fertility Survey, Indonesian Fertility Survey, 1976).

3.8 Polygamy

The literature on polygamy in East Africa is inadequate. As in the rest of Africa, it concentrates more on the examination of the correlates of cross-cultural variation in the distribution of polygamy (Osmond, 1965; Bohannan, 1963; Molnos, 1973; Mbiti 1966 and 1969) "than with an assessment of its behavioural consequences" (Sween and Clignet, 1978: 565). Yet to a demographer, polygamy is an important aspect of nuptiality, in that it has not only been observed to influence a woman's age at marriage, the proportion married in population and postpartum abstinence, but also through polygamy men are able to father several children, to match with their aspirations. Although several studies (Caldwell, 1976; Van der Walle 1968; Molnos 1973; Kabwegyere and Mbula, 1979; Chojnacka, 1980) have associated lower fertility among polygamous than monogamous unions, the extent to which polygamy affects fertility of women still remains inconclusive (Brass et al., 1968). Some scholars, while acknowledging the suppressing effects of polygamy on fertility, also indicate that polygamy may "nevertheless enhance fertility because

Table 3.10 : Percentage distribution of ever married women by education of wives and husbands

Education of wives	Education of husbands					Total No. of women
	None	1-4	5-8	9+	Total %	
None	46.1	20.8	29.9	3.2	100.0	3,299
1-4	27.6	20.6	46.5	5.3	100.0	1,215
5-8	6.4	9.7	50.4	33.5	100.0	1,334
9+	2.3	0.8	16.5	80.4	100.0	337
All	30.7	17.3	36.8	15.2	100.0	
Number of women	1,901	1,069	2,278	937		6,185

Table 3.11 : Percentage distribution of ever married females who have been married twice or more by age cohort and level of education

Age Cohort	Level of Education of ever married females					Total No. of women married more than once
	None	1-4	5-8	9+	All	
<25	7.4	9.4	2.4	1.0	5.3	88
25-34	10.5	8.7	6.0	2.0	8.5	205
35-44	11.1	7.9	5.2	0.0	9.8	149
45+	14.5	7.2	0.0	0.0	12.4	89
All	10.8	8.5	4.2	1.5	8.4	531
Total No. of all ever married women	3,381	1,247	1,351	338	-	6,317

it obliges women to marry earlier and remarry more promptly after divorcing or losing their initial husbands" (Sween and Clignet, 1978: 566). This contradicts the medical view that the fertility of women in the older ages may be lower due to physiological infertility resulting from very early marriages (Central Bureau of Statistics, 1980). It also contradicts the view that polygamy leads to marked differences in age between spouses resulting in lower fertility of polygamous women (Sween and Clignet, 1978).

On the whole, however, most studies suggest that polygamy suppresses fertility through a number of factors:

- (a) the reduced frequency of sexual intercourse and, thus a greater conformity with existing traditional sexual taboos (Salicier, 1972: 238-49),
- (b) very early marriage (which also lead to early sexual intercourse) common among polygamous women may result in physiological infertility causing lower fertility of polygamous women in older ages,
- (c) additional wives in a polygamous union are often much younger than first wives and the differences in age between husbands and themselves are quite large resulting in reduced fertility among these co-wives,
- (d) the maintenance of sexual taboos, such as the prohibition of sexual intercourse and conception during breastfeeding, induces prolonged postpartum abstinence of co-wives, thus reducing their reproductive period.

If socio-economic development is associated with low fertility and low population growth rates, a view which has been widely publicised (UN, 1973), it is clear that socio-economic development has gathered pace only in those societies where both fertility and population growth rates

are very low. Inspired by this view, some planners and policy makers in Africa have conflicting viewpoints with respect to polygamy. Some may want to discourage it so "as to reduce male competition over marriageable women, raise their age at marriage and hence reduce their reproductive periods" (Sween and Clignet, 1978). Others may want to support it so as to decrease coital frequency of individual co-wives and hence their fertility (Davis and Blake, 1956).

In view of the above, it is intended in this chapter to: (a) examine the circumstances that favoured polygamous institutions in the nineteenth century in East Africa and Kenya in particular; (b) to study the prevalence of polygamy in Kenya; and (c) to analyse the differentials in polygamy based on a number of selected background variables. This will be followed in the next chapter by the analysis of fertility and how some nuptiality status variables, like polygamy, affect fertility.

3.8.1 Factors which favoured polygamous institutions

There is a common agreement among several studies (Mbiti, 1966 and 1969; Kabwegyere and Mbula, 1979; Molnos, 1973) that the high incidence of polygamy in East Africa is due to a number of cultural and traditional customs and beliefs inherent from the past:

- (a) A large and extended family provided a strong economic base to the family and community as a whole through provision of potential labour to ensure firm control of land as well as continued supply of revenue and food. A man acquired such a large family through marrying several wives and fathering several children.
- (b) For the majority of men polygamy was associated with social status and prestige.
- (c) Sexual abstinence (which allowed child spacing) while

breastfeeding was widely observed in several ethnic groups in East Africa and a man with several wives would continue to have sexual intercourse with his other wives while others observed abstinence. Monogamously married women often encouraged their husbands to take on other wives to allow child spacing and to lighten the workload in the family.

- (d) It provided social justice for all women since every woman had to marry, while at the same time ensuring a place for the barren or the childless.
- (e) The practice of inheriting the widows by the brothers or close relatives of the deceased often led to polygamy; and the children born by the inherited wives could, in some cases, be counted as children of the deceased to ensure the line of continuity among the living.

The extent to which the above factors influenced the evolution of polygamous institutions is not easy to quantify, but it depended on attitudes, customs and norms in each community. It is suggested in certain studies that "the reasons behind polygamy are sexual and reproductive rather than economic and productive" (Goody, 1973:198). But such "generalization holds equally for any other marital arrangements" (Fortes, 1978:43).

As reflected in Kabwegyere and Mbula's work among the Akamba of Kenya, socio-economic, political and cultural life was largely centred on marriage and sex. The economy itself was centred around the family and the community. The land was the most important resource over which political, economic and social power converged (Kabwegyere and Mbula, 1979:41-55). Land was in abundance, "but effective control over it was dependent on equally effective control over as large a number of people as could

be provided for" (Molnos, 1973). Thus, a large family was the only means by which it could be achieved and that was most easily achieved through polygamy. "The women and girls did most of the cultivation, while boys looked after cattle, raided cattle to boost the family's livestock wealth and also fought wars"(Kabwegyere and Mbula, 1979:41). Moreover, apart from the prestige for a man to have several wives, women too gained from this traditional practice, as Molnos observed among the Kikuyu:

"Physical satisfaction was a 'good thing', an 'added blessing', but to the women the most important aspect of marriage was whether a man provided a woman security, in the form of land, food and clothing for now, and children for the future" (Molnos, 1973:51).

There was yet another advantage of polygamy. Several wives reared children of varied ages which, as Molnos (1973:47) further explains, "gave differential access to positions of power and control. If an old man could point to such sons as elders, others as junior elders, and others as warriors or uncircumcised young boys, then his parents' future as well as his own was perfectly assured".

Further, given such a situation where diseases, sickness and famine were widespread and reduction of male numbers through brutal raids and warfare very common, it is possible, as some studies may suggest (Molnos, 1973:47), that women outnumbered males in certain societies. Polygamy was therefore one sure way that women could obtain social security and self dignity. However, it is clear from several substantive studies on polygamy in East Africa that not all men could afford to be polygamous. Only those who offered wealth, comfort and social status were able to acquire several wives. The young unmarried and poor men found it difficult to compete in the marriage market.

Childlessness, was also another factor which forced men to acquire

additional wives. Bearing in mind the significance of children, childlessness was not acceptable, although it was tolerated at different levels in various societies, as Kabwegyere and Mbula (1979) noted among the Akamba: "in the circumstance of persistent barrenness, the husband had the right to indemnification, either total by returning the woman to her home with restitution of the bride wealth, or partially by keeping the woman, but receiving aid from her family in acquiring another woman as his second wife".

The sex of the child was another important issue in the family which often has been mentioned in the literature. The status, wealth and security of the family depended, as indicated earlier, on the number of sons, although daughters too were important in their contributions to domestic work and in agriculture. Their bridewealth could also help to pay sons' marriages (Molnos, 1973). Thus, men often acquired additional wives in search for a particular combination of sons and daughters.

Today, although the trend in family structure is towards nuclearization, and polygamy is said to be on the decline it is still widely practised in several parts of East Africa, including Kenya where about 30 per cent of all current marriages are polygamous*. However, attitudes towards polygamy are varied. Generally, men may defend the institution in the fashion Kabwegyere and Mbula described as "African cultural nationalism". "Many monogamously married persons will forcefully defend the institution because they regard the assault on it by the christian missions to have been motivated more by a desire to promote European values than christian ones" (Kabwegyere and Mbula, 1979). Moreover, muslims may defend polygamy because Islam accommodates it. The distribution of polygamy in Kenya varies along ethnic lines, educational attainment, whether a person is living in rural, urban or metropolitan environment, economic status and the type of religion.

* among women in the age range 15-50.

3.8.2 Differentials in polygamy according to selected socio-economic variables

The question on polygamy in the survey was ^{only} asked of women who were currently in union at the time of the survey. The prevalence of polygamy was measured by the number of wives in a union. Of the 5,771 currently married, 1,704 representing 30 per cent lived with co-wives (Table 3.12). There is a positive relationship between polygamy and current age. But this relationship is not surprising since, as we saw in the case of age at marriage, it is the young female cohorts, who are more educated, and, therefore, more influenced by modern values, who are likely to resent co-wives. This assertion is confirmed by data in Table 3.13. It is evident in that Table that 36 and 26 per cent of currently married women with no and 1-4 years of schooling respectively live in polygamous unions as against 22 and 15 per cent with 5-8 and 9 or more years of schooling.

Among the young cohorts aged less than 35 polygamy decreases, without exception, with education. The differences at older ages between 1-4 and 5-8 years of schooling are small and probably not statistically significant. But the reasons for relatively high polygamy among educated women in the older ages may be based on our earlier assumption in this Chapter that the older the women the less they have been exposed to the factors of change - education, urban and metropolitan residence. This assumption is confirmed further by the persistence of higher percentages of polygamous women in the older cohorts even after standardizing for education (Table 3.14). Another possible explanation for higher polygamy among the 5-8 years of education group is that possibly some of these women were made pregnant when they were still at school by some well-to-do married men and then taken as co-wives. This kind of thing is not unusual in East Africa (Kabwegyere, 1979).

Table 3.12 : Percentage of currently married females by type of union and current age

Type of union	Current ages								Total
	<20	20-24	25-29	30-34	35-39	40-44	45-49	50	
Monogamous	76	78	72	72	67	62	58	75	70
Polygamous	24	22	28	28	33	38	42	25	30
All	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total no. of women	498	1,050	1,311	918	846	539	545	64	5,771

Table 3.13 : Percentage of currently married women in polygamous union by age and education

Education	Current age					Number of Women
	< 25	25-34	35-44	45+	All	
None	27.2	35.2	38.6	41.5	35.7	1,093
1-4	23.7	22.3	27.7	37.4	25.7	292
5-8	19.9	21.0	29.7	43.2	21.9	273
9+	12.2	16.7	27.4	23.9	14.7	46

Table 3.14

Percentage of currently married women by current age after standardizing for education

Education (in years)	CURRENT AGE								All age categories combined	
	<25		25-34		35-44		45+			
	(%OBS.)	NO.* EXP.	(%OBS.)	NO. EXP.	(%OBS.)	NO. EXP.	(%OBS.)	NO. EXP.	(% OBS.)	Number of women
None	27.2	297 (157)	35.2	385 (386)	38.6	422 (358)	41.5	454 (192)	35.7	1093
1-4	23.7	69 (63)	22.3	65 (96)	27.7	81 (92)	37.4	109 (42)	25.7	292
5-8	99.9	54 (108)	21.0	57 (118)	29.7	81 (35)	43.2	118 (12)	21.9	273
9+	22.5	10 (20)	16.7	8 (23)	27.4	13 (3)	23.9	11 (0)	14.7	46
All	22.5	430 (348)	28.0	515 (622)	35.2	597 (488)	40.6	692 (246)		
Standardized percentage		25.2		30.2		35.0		40.6		1704

* Number expected

() Number observed

%OBS Percentage observed

When polygamous women were considered on the basis of wife rank, to see whether the educational characteristics of first order polygamous wives differ from those of second or higher order wives, the unstandardized percentages (Table 3.15) show some slight differences. But after carrying out a Chi-Squared test, there was no significant difference in education between these polygamous wives. For a whole sample of women living in polygamous unions (1,704 in all) the Chi-Squared test indicated that at 95 per cent significant level and 6 degrees of freedom the differences were not significant (estimated $x^2 = 9.795$ and tabulated $x^2 = 12.592$). This conclusion persisted even after controlling for age (at the same level of significance and degrees of freedom, estimated $x^2 = 7.844$ and 6.534 for women aged < 30 and 30+ respectively).

Rural women live more in polygamous unions than their urban and metropolitan counterparts. Polygamy is also more common among traditional believers and among muslims than among catholics and protestants (Table 3.16). Differentials between ethnic groups are very apparent, polygamy being more common among the Luo, Mijikenda, Luhya and Kisii than in all other ethnic groups regardless of age (Table 3.17).

3.8.3 Number of times married

Despite the high proportion of polygamy, most Kenyans tend to marry only once - even those living in polygamous unions. The number of times married is, however, higher among polygamous females than their counterparts in monogamous unions. Among the monogamously married, those who married more than once are most probably the childless. Table 3.18 gives data on the number of times people marry. The Mijikenda, Kamba and Luhya, who are among the most polygamous, often marry more than once.

Table 3.15 : Percentage distribution of polygamous women according to wife order number and level of education

Current age	Wife order number	Level of education					No. of women
		None	1-4	5-8	9+	All	
<u>Age < 30</u>							
	First order Polygamous wife	55.5	12.5	28.1	3.9	100.0	135
	Second order Polygamous wife	49.5	18.2	26.4	5.9	100.0	421
	Third or high order Polygamous wife	58.0	18.3	19.3	4.4	100.0	153
	All	52.5	17.1	25.2	5.2	100.0	710
<u>Age 30-50</u>							
	First order Polygamous wife	70.7	18.3	9.9	1.1	100.0	452
	Second order Polygamous wife	75.3	14.6	9.0	1.1	100.0	420
	Third or high order Polygamous wife	68.7	21.6	9.7	0.0	100.0	123
	All	72.4	17.2	9.5	0.9	100.0	994
Total No. of polygamous women		1,093	293	273	46	-	1,704

Table 3.16 : Percentage of currently married women by type of union, place of residence and religion

Type of union	Type of place of residence			Religion				Total %	No. of women
	Rural	Urban	Metro-politan	Catholics	Protest-ants and other churches	Muslims	Other		
Polygamous	30.4	24.8	21.5	26.1	28.2	34.4	54.1	29.5	1,704
Monogamous	69.5	75.2	78.5	73.9	71.7	65.6	46.8	70.5	4,067
All %	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
No. of women	5,124	231	416	2,074	2,985	307	399		5,771

Table 3.17 : Percentage of currently married women in polygamous union by ethnic group and age cohort

Ethnic grouping	Current age				All
	< 25	25-34	35-44	45+	
Kikuyu	5.2	8.9	15.4	29.8	11.8
Luo	35.0	46.8	48.8	45.1	43.3
Luhya	30.2	35.3	39.4	46.4	35.5
Kamba	15.4	22.8	33.7	35.8	26.1
Kisii	17.1	33.8	46.7	37.1	33.1
Meru/Embu	10.4	17.4	29.9	38.8	22.3
Mijikenda	35.1	33.9	47.7	41.9	38.4
Kalenjin	12.6	23.4	33.7	34.4	22.8
Other	22.9	48.6	54.0	71.4	44.9
All	22.5	27.9	35.3	40.4	29.5

Table 3.18 : Percentage of women married twice or more by ethnic group and type of union

Type of union	Kikuyu	Luo	Luhya	Kamba	Kisii	Meru/Embu	Mijikenda	Kalenjin	Other	All
Polygamous	7.8	8.5	16.8	24.9	8.5	11.0	22.0	1.2	4.9	12.1
Monogamous	3.0	8.2	9.6	9.8	4.2	3.8	19.4	0.7	7.6	6.6
All	3.5	8.3	12.1	13.6	5.6	5.2	20.7	1.2	6.6	8.2

3.8.4 Polygamy and the characteristics of the husband

Table 3.19 focuses on the cultural pattern of polygamy according to husband's age and level of education. Data involving age of husband are, however, subject to error and should be interpreted cautiously (Kenya Fertility Survey, First Report, 1980:75). Looking at the last-but-one column of the Table, it is apparent that polygamy generally increases with age of husband and this is true in each individual educational category. Overall, too, polygamy tends to decline with increasing level of education. It drops, for instance, from 41 per cent among husbands with no education to 18 per cent among husbands with some secondary or higher education. But when individual age groups of husbands are considered, the pattern is less clear. The percentage living in polygamous marriages is low and almost constant among husbands aged 25-34 and higher among older husbands aged over 34. What this Table probably reflects is that the age of both wife and husband is more closely associated with the level of polygamy than ^{is} education. This confirms our earlier hypothesis that it is the young persons who are more educated

and therefore more influenced by modern values. They are, therefore, less likely to indulge themselves in polygamous practices than their elders, who even if educated, may still cling to their old-fashioned ideas of society.

A comparison of monogamous and polygamous women in respect of their fertility preferences, duration of breastfeeding and postpartum abstinence in the closed interval is shown by the data in Table 3.20 (a) and (b). The Table is intended to investigate the assumption that polygamous wives are likely to be more traditional in outlook and behaviour than their counterparts in monogamous unions. Among those currently married women giving numerical responses to family size, the percentage stating a desired family size of less than 4 children is very small in both age

Table 3.19 : Proportion of currently married women in polygamous union
by current age and education of husband

Current age of husband	Education of husband				All
	None	1-4	5-8	9+	
17-24	-	8.6	-	-	1.2
25-34	13.7	11.2	13.5	13.8	13.4
35-44	30.7	25.1	28.2	22.7	27.7
45-54	44.4	40.1	36.6	41.5	40.4
55+	57.9	57.8	56.5	60.1	58.1
All	40.5	31.8	24.2	18.3	29.6
No. of women	675	314	506	160	1,694

Table 3.20(a) : Percentage distribution of currently married women according to type of union and stated total number of children desired

Current age / Type of union	Stated total number of children desired						No. of children
	0-3	4-5	6-7	8+	Other answers	All	
<u>< 30</u>							
Polygamous	2.4	27.3	29.5	24.9	16.2	100.0	710
Monogamous	2.7	28.7	29.7	24.9	13.9	100.0	2,149
<u>Over 30</u>							
Polygamous	3.7	14.4	19.3	37.9	24.7	100.0	994
Monogamous	2.4	11.5	20.5	42.5	23.1	100.0	1,915

Table 3.20(b) : Variation in duration of breastfeeding and postpartum abstinence in the last closed interval among currently married women by type of union

Current age / Type of union	Mean duration of breastfeeding	Mean duration of post-partum abstinence
<u>< 30</u>		
Polygamous	13.7	4.0
Monogamous	12.7	3.3
All	12.9	3.5
<u>Over 30</u>		
Polygamous	14.7	4.4
Monogamous	13.7	3.8
All	14.0	4.0

groups for polygamous and monogamous unions (2.4-3.7 per cent). The percentages of women who said they desired 4-5, 6-7 and over 8 children vary slightly among women in both types of unions aged less than 30. In the older ages, however, the percentages desiring more than 5 children are higher among monogamous wives. Older wives, too, generally breastfeed longer and experience longer duration of postpartum abstinence than younger women. Polygamous wives in both age groups have longer duration of breastfeeding and postpartum abstinence than their monogamous counterparts.

A question in the KFS was also asked concerning whether the husband usually lived in the same household as the wife. The differences among polygamous and monogamous women in both age groups are not significant (Table 3.21). About 81 per cent of the young women living in polygamous unions said their husbands stayed with them, compared to 78 per cent for the monogamous women. In the older age groups, 77 per cent of the women living with co-wives said their husbands stayed with them in the same household as opposed to 82 per cent among the monogamous wives. A similar comparison as to whether sexual relations are taking place 'these days' also reveals very little difference between the two types of unions (76 per cent among young monogamously married as compared to 72 per cent among the polygamous women ^{and} no differences among women in the older age groups).

Table 3.22 presents data on variation in polygamy when current age and ethnic group of wife are considered together with the educational attainment of husband. As noted earlier, the Luo, Mijikenda, Luhya and Kisii women live more in polygamous unions than women in other ethnic groups. These high proportions of polygamous women are maintained even after controlling for husband's age, although polygamous practices tend to decline among relatively younger cohorts aged less than 30. In the

Table 3.21 : Percentage distribution of currently married women according to age, type of union, whether husband resides in the same household and whether sexual relations are taking place 'these days'

Current age / Type of union	Husband resides in the same household			Sexual relations taking place these days *		
	Yes	No	All	Yes	No	All
<u><30</u>						
Polygamous	81.4	18.6	100.0	72.5	27.5	100.0
Monogamous	78.1	21.9	100.0	76.0	24.0	100.0
<u>30+</u>						
Polygamous	76.9	23.1	100.0	77.4	22.6	100.0
Monogamous	82.3	17.7	100.0	77.5	22.3	100.0

* Figures refer to women who are currently married, their first union still continuing and who have resumed sex in the open interval; women who have not had a birth are also included.

Table 3.22 : Proportion of currently married women in polygamous union by ethnic group and current age of wife and education of husband

Current age/Education of of wife / husband	Kikuyu	Luo	Luhya	Kamba	Kisii	Meru/Embu	Mijikenda	Kalenjin	Other
<u>Aged <30</u>									
None	23.5	50.3	30.5	55.5	30.0	21.7	37.7	37.2	54.2
1-4	10.4	52.3	43.0	22.7	50.9	23.4	39.4	14.4	29.0
5-8	5.5	33.4	31.7	8.5	26.1	6.8	31.3	12.3	26.4
9+	3.3	32.2	28.2	11.0	8.8	7.4	20.0	5.4	20.4
All	6.9 (39)	38.0 (222)	32.2 (158)	18.5 (52)	25.1 (47)	11.8 (17)	34.5 (68)	17.8 (40)	38.3 (66)
<u>Aged 30-50</u>									
None	19.6	45.1	39.7	46.1	39.8	37.6	41.9	34.7	63.9
1-4	19.9	48.3	38.8	29.1	42.9	16.2	48.7	24.4	22.7
5-8	11.0	57.2	36.9	16.0	42.9	20.7	60.5	27.4	9.4
9+	14.5	38.3	43.3	26.4	25.2	54.1	21.3	26.8	10.1
All	15.8 (115)	48.8 (272)	38.9 (157)	32.0 (112)	40.5 (83)	29.4 (65)	43.6 (68)	30.9 (47)	53.3 (76)

Figures in parenthesis show the number of cases

older ages 30-50, among the same groups of women, the propensity of polygamy is, however, higher among women married to husbands with 5-8 years of education and the 9+ years category in the case of the Luhyas. These are probably the old men with some primary education and rich enough to afford more than one wife. But perhaps more importantly, this pattern reveals that among these ethnic groups where polygamous practices are high, primary education has had little influence in transforming people's attitudes towards polygamy. Elsewhere among the less polygamous ethnic groups namely the Kikuyu, Meru/Embu, Kamba and Kalenjin, polygamy decreases with husband's education, as again Table 3.22 shows.

It would be interesting to see whether the proportions of women living in polygamous unions stay the same (as shown in Table 3.22), supposing the education level of the husband was the same in all ethnic groups. It is revealed, after standardizing for the husband's education (Table 3.23), that the high proportions of polygamous women among the most polygamous ethnic groups - the Luo, Luhya, Kisii and Mijikenda - still persist, probably reflecting the strong impact of traditions regarding polygamy.

Husband's occupation is another factor which affects polygamy (Table 3.24). Among the young women aged less than 30 polygamy is higher among the self-employed farmers, unskilled manual workers, other service workers and sales workers and is lowest among women with husbands who did not work. The differences in polygamy are less pronounced among older women aged over 30.

Young women who grew up in towns live more in polygamous unions than their counterparts with rural and metropolitan upbringing (Table 3.25). This unexpected pattern is probably due to age-sex selective migration, whereby young men of marriageable ages migrate in large numbers from urban centres to metropolitan areas for better work opportunities leaving

Table 3.23 : Ethnic differences in the prevalence of polygamy when education of husband is standardized

Age of/educ- wife /ation of hus- band	Ethnic Grouping																		All edu- cational categories combined
	Kikuyu		Luo		Luhya		Kamba		Kisii		Meru/Embu		Mijikenda		Kalenjin		Other		
<u>Wife aged < 30</u>	%OB	EX.N	%OB	EX.N	%OB	EX.N	%OB	EX.N	%OB	EX.N	%OB	EX.N	%OB	EX.N	%OB	EX.N	%OB	EX.N	Stan.Pop.
None	23.5	51	50.3	109	30.5	66	55.5	120	30.0	65	21.7	22	37.7	82	37.2	81	54.2	118	217
1-4	10.4	12	52.3	62	43.0	51	22.7	27	50.9	61	23.4	28	39.4	47	14.4	17	29.0	35	119
5-8	5.5	14	33.4	84	31.7	80	8.5	21	57.4	145	6.8	17	31.3	79	12.3	31	26.4	67	253
9+	3.3	4	32.2	39	28.2	34	11.0	13	8.8	11	7.4	9	20.0	24	5.4	6	20.4	24	120
All polygamous union observed	6.9		38.0		32.3		18.5		25.1		11.8		34.5		17.8		38.3		709
Expected N		81		294		231		181		282		76		232		135		244	
Standardized %		11.4		41.5		32.6		25.5		39.8		10.7		32.7		19.0		34.4	
<u>Aged 30-50</u>																			
None	19.6	91	45.1	209	39.7	184	46.1	213	39.8	184	37.6	176	41.9	194	34.7	161	63.9	296	463
1-4	19.9	39	48.0	93	38.8	75	29.1	56	42.9	83	16.2	31	48.7	94	24.4	47	22.7	44	194
5-8	11.0	28	57.2	146	38.9	94	16.0	41	42.9	110	20.7	53	60.5	155	27.6	71	9.4	24	256
9+	14.5	12	38.3	31	43.3	35	26.4	21	25.2	20	54.1	44	21.3	17	26.8	22	10.1	8	81
All polygamous union observed	15.8		48.8		38.9		32.0		40.5		29.4		43.6		30.9		53.3		994
Expected N		170		479		388		331		397		302		460		301		372	
Standardized%		17.1		48.2		39.0		33.3		39.8		30.4		46.3		30.3		37.4	

% OB Percentage observed
 EX.N Expected number
 Stan.Pop. Standard population

Table 3.24 : Proportion of currently married women in polygamous union by current age and occupation of husband

Current age of woman	Husbands' occupation										All
	Did not work	Profess- ional	Clerical	Sales	Self- employed Agricul- ture	Non- self- employed agricul- ture	Household worker	Other service	Skilled manual	Unskilled manual	
<u>Aged <30</u>	14.2	23.0	18.4	27.6	29.8	18.4	25.5	28.3	22.2	28.7	24.8
% poly- gamous											(710)
Total %	100.0 (114)	100.0 (321)	100.0 (184)	100.0 (228)	100.0 (743)	100.0 (202)	100.0 (62)	100.0 (293)	100.0 (527)	100.0 (149)	100.0 (2859)
<u>Aged 30-50</u>	29.3	31.8	30.8	37.3	39.4	28.5	30.2	33.4	33.5	2] .7	34.1
% poly- gamous											(994)
Total %	100.0 (103)	100.0 (227)	100.0 (97)	100.0 (210)	100.0 (1002)	100.0 (225)	100.0 (69)	100.0 (261)	100.0 (512)	100.0 (136)	100.0 (2909)

() refer to number of cases

disproportionate numbers of the opposite sex. This is, however, inconclusive since there is no evidence to support such an assertion. In the older age groups, the pattern is as expected, higher polygamy among women with rural background than among those with urban and metropolitan background. The differences according to the current place of residence are less pronounced among women aged less than 30 but the variations are marked among women aged 30-50. Polygamy is least among women living in Nairobi and Mombasa (Metropolitan) and highest among rural women (Table 3.25).

3.8.5 Differences in age between husband and wife for polygamous and monogamous unions

Kenyan men rarely marry women older than themselves. In only 1.6 per cent of all cases, the wife reported herself to be older than her husband. In about 60 per cent of all cases, the wife reported her husband to be 0-10 years older and in another 28 per cent of all cases to be 10-19 years older. Only about 13 per cent of all currently married women reported their husbands to be 20 or more years older than themselves. A comparison of monogamous and polygamous unions for age differences between husband and wife reveals that in most cases monogamous men are 0-10 years older than their wives, while polygamous husbands are often 10-19 years and a majority 20 or more years older than their wives (Table 3.26).

3.9 Concluding Remarks

It has been seen in this chapter that marriage is an important and universal institution and that Kenyan marriages are on the whole stable. Generally, women in Kenya marry at young ages but age at first marriage rose during the 10-15 years prior to the survey, especially among the young and more educated women. Moreover, metropolitan, Kikuyu, Kamba and Meru/Embu women tend to delay their marriages more than other groups.

Table 3.25 : Percentage of currently married women in polygamous union by current age, childhood place of residence and current place of residence

Current age of wife	Childhood place of residence			All per cent
	Rural	Urban	Metro-politan	
Aged <30	24.5	31.4	22.5	24.8
Aged 30-50	34.4	29.0	21.8	34.1
	Current place of residence			
Aged <30	25.4	22.4	21.0	24.8
Aged 30-50	34.8	30.3	22.3	34.1

Table 3.26 : Percentage distribution of currently married women according to type of union and difference in age between themselves and their husbands

Type of union	Difference in age between wife & husband							No. of women
	Nega-tive	0-4	5-9	10-14	15-19	20+	All	
Polyg-amous	1.4	12.4	21.5	21.5	14.1	29.2	100.0	1,704
Monog-amous	1.7	29.0	38.1	17.9	6.8	6.5	100.0	4,064
All	1.6	24.1	33.2	19.0	8.9	13.2	100.0	
No. of women	92	1,389	1,916	1,093	516	762		5,768

Although substantive evidence suggests that in Kenya polygamy was a dominant form of union in the past and is now on the decline, it is still common and accounts for nearly 30 per cent of all current marriages.* The decline has been due to cultural changes in Kenyan traditional values leading to new attitudes towards polygamy and the nuclear family. Such changes have been brought about by various influences; western education; the introduction of christianity which in many cases denounced several traditional practices as pagan (Kabwegyere and Mbula, 1979); and the introduction of the money economy bringing different kinds of demands and pressures on individuals. Polygamy has been strongly associated with lower fertility through :

- (a) reduction of coital frequency because of the "lack of husband-wife intimacy in polygamous relationships" (Whiting, 1977) particularly for older women as new wives come into the household (Mosley et al., 1982);
- (b) very early age at first marriage causing physiological infertility in old age;
- (c) influencing prolonged breastfeeding and postpartum abstinence in some cases; and
- (d) the marked differences in age between husband and wives (especially new wives).

Polygamy has been observed to increase with age but decreases with both wife's and husband's education, particularly among the young people aged less than 35. It is more frequent among rural, Luo, Mijikenda, Luhya and Kisii women and among muslims and traditional believers, who also often marry more than once. Polygamy is also affected by husband's education, occupation and rural-urban residence. As Kenya society continues to change and the factors which favoured the emergence of

* In the age range 15-50.

polygamous institutions weaken and disappear through the development of education and health, monetarization, mechanization and the effective influence of spiritual values, changes in the nature of the family will inevitably follow (similar general conclusions have been drawn in studies on West Africa by Okare, 1976: 253-73; Orubuloye, 1976: 203-17). The quality rather than quantity of children will take top priority among parents; "the balance in the husband-wife relationship will tilt so that women's concerns weigh more heavily than before in the family's decisions" (Kabwegyere and Mbula; 1979:98) and nuclear families and monogamy will be the dominant form of marital unions.

REFERENCES

- Bohannan, P., Social Anthropology, New York, Holt, Rinehart and Winston, 1963.
- Brass, W., et al., The Demography of Tropical Africa, Princeton, N.J., Princeton University Press, 1968.
- Caldwell, J.C., "Marriage, the family and fertility in Sub-Saharan Africa with special reference to research programmes in Ghana and Nigeria", in Huzayyin, S.A. and Acasadi, G.T. (eds.), Family and Marriage in Some African and Asiatic countries, Cairo Demographic Centre, Research Monograph Series, No.6 Cairo 1976, pp.359-71.
- Central Bureau of Statistics, Kenya Fertility Survey 1977-1978, First Report, Volume 1, Ministry of Economic Planning and Development, Nairobi, Kenya, February 1980.
- Coale, A.J., "Age Patterns of Marriage," Population Studies, 25(2), July 1971, p.193.
- Chojnacka, H., "Polygamy and the Rate of Population Growth", Population Studies, 34, (1), March 1980, pp.91-107.
- Davis, K. and Blake, J. "Social Structure and Fertility :An Analytical Framework", Economic Development and Cultural Change, 4, 1956, pp. 211-35.
- De Graft-Johnson, K.T., Family Formation in Developing Countries, World Fertility Survey Conference, Plenary Session, No.4, Wembley Conference Centre London, 7th to 10th July 1980, p.11.
- Driver, E.D., Differential Fertility in Central India, Princeton, N.J. Princeton University Press, 1963.
- Fortes, M., "Family, Marriage and Fertility in West Africa, in Oppong, C. et al. (eds.) Marriage, Fertility and Parenthood in West Africa, Changing African Family Project, No.4, Part 1, Australian National University, Canberra, 1978, pp.17-54.
- Goody, J., "Polygamy, Economy and the Role of Women", in Goody, J. (ed), The Character of Kinship, Cambridge, Cambridge University Press, 1973, p.189.
- Kabwegyere, T., and Mbula, J., A Case of the Akamba of Eastern Kenya, Changing African Project Series, Monograph No.5, Australian National University, Canberra, 1979.

- Molnos, A., Cultural Source Materials for Population Planning in East Africa: Beliefs and Practices, Institute of African Studies, University of Nairobi, vo.111 1973.
- Mosley, W.H. et al., The Dynamics of Birth Spacing and Marital Fertility in Kenya, WFS, Scientific Reports No.30, 1982.
- Mbiti, J.S., Akamba Stories, Oxford University Press, Oxford, 1966.
- _____
African Religion and Philosophy, Heinemann, London and Nairobi, 1969.
- Nawar, L.M., Patterns of Nuptiality Household and Fertility in Urban Egypt: A Case Study in Abbasia, East Cairo, M.Phil Thesis (Unpublished) UN-A. R.E Cairo Demographic Centre, Cairo, August 1978, p.144.
- *
**
- Osmond, M., "Toward Monogamy: A Cross-Cultural Study of Correlates of Type of Marriage," Social Forces, 44 (1), 1965, pp.8-16.
- Radcliffe-Brown, A.R. and Forde, D., African Systems of Kinship and Marriage, Oxford University Press, London, 1960, pp.89-112.
- Salicier, J.F., "Correlates of the Long Postpartum Taboo: Across-Cultural Study," Current Anthropology, 13, 1972, pp.238-49.
- Seetheram, K.S., and Duza, M.B., "Nuptiality and Fertility in Selected Areas of Four Arab and African Cities", in Huzayyin, S.A. and Acsadi, G.T.(eds.), Family and Marriage in some African and Asiatic Countries, Cairo Demographic Centre, Research Monograph Series, No.6, Cairo, 1976, pp.285-309.
- Sivamurthy, M., Nuptiality and Fertility: Some Comparative Features in Two Capital Cities, Seminar on Population Change and Development in some African and Asiatic Countries 15-22 Dec. 1979, UN-A.R.E. Cairo Demographic Centre, Doc. CDC3579/22, 1979, p.31 (Draft Unpublished).
- Sivamurthy, M. and Seetheram, K.S., "Age at Marriage In Selected area of four Arab and African Cities", Family and Marriage In Some African and Asiatic Countries, Huzayyin, S.A. and Acsadi, G.T. (eds.), UN-A.R.E. Cairo Demographic Centre, Research Monograph Series, No.6, Cairo 1976, pp.285-309.

- Sween, J. and Clignet, R. "Female Matrimonial Roles and Fertility in Africa," in Oppong, C. et al. (eds), Marriage, Fertility and Parenthood in West Africa, Changing African Family Project, No.4, Part 2, The Australian National University, Canberra, 1978, pp.565-600.
- United Nations, The Determinants and Consequences of Population Trends, ST/SOA/SER.A/50, Vol.1 United Nations, New York, 1973.
- Van de Walle, E., "Marriage in African Censuses and Inquiries", in Brass, W. et al. (eds.), The Demography of Tropical Africa, Princeton, N.J., Princeton University Press, 1968, pp.183-238.
- Whiting, B., "Changing Life Style in Kenya", Daedalus, Spring 1977, pp.211-25.
- World Fertility Survey Indonesia Fertility Survey, A Summary of Findings, 1976.
- * Okare, A., "The Ibos of Arochukwu in Iwo State, Nigeria", in Lado TRuzicka (ed.), The Economic and Social Supports For High Fertility, Proceedings of the Conference held in Canberra 16-18 November, 1976, Family and Fertility Change, Changing African Family Project Series 2, Australian National University, Canberra, 1976.
- ** Orubuloye, I., "Family obligations and Fertility in Nigeria : The Case of the Yoruba of Western Nigeria", in Lado TRuzicka (ed.), The Economic and Social Supports For High Fertility, Proceedings of the Conference held in Canberra 16-18 November, 1976, Family and Fertility Change, Changing African Family Project Series 2, Australian National University, Canberra, 1976.

CHAPTER FOUR

PATTERNS AND DIFFERENTIALS IN FERTILITY: A CROSS- TABULATION ANALYSIS

4.1 Introduction And Overview

The significance of fertility as one of the demographic components has increased in developing countries in recent decades. The socio-economic, cultural, environmental and biological determinants of fertility are of great concern to demographers, planners and policy makers as well as aid-giving agencies like the United Nations and the World Bank, and have been a focus of concern for many years. The study of fertility differentials in particular is important as a major means of forecasting fertility trends and identifying the socio-economic, cultural and biological factors that may signal future fertility decline, particularly in high fertility countries. It is also important in assessing the factors and prospects of change in the composition of a population in respect of its ethnic, religious and linguistic sub-groups (UN, 1973:97). This should be useful in the formulation and implementation of development plans in general and population programmes in particular. Cumulative fertility differentials reflect the reproductive behaviour of women throughout their lifetime; recent fertility differentials reflect current divergencies in behaviour.

In developing countries (and to a limited extent in developed countries, at least in the earlier stages of demographic transition), the least educated, poor and traditional populations tend to have highest fertility (Cho et al., 1970:2). To some scholars, the reproductive behaviour of these people is "non-rational" (Davis, 1955:37) but to others there are rationalities in decisions regarding family sizes among such groups (Caldwell, 1976, 1977 and 1981; Kabwegyere and Mbula, 1979; Kabwegyere, 1977). In Nigeria, for instance, only a small minority think

of an increase in family size imposing greater hardship, and few in West Africa generally believe that high fertility leads to their economic undoing (Caldwell, 1976:65). The rationale behind a large number of children, as evidenced from the above references, is based on the still dominant parental belief in most tropical African societies that their security ultimately derives from having children. For children have both social and economic values, mutually related (Caldwell, 1976; Kabwegyere, 1977), and childbearing not only guarantees the continuity of the family, clan and society as a whole, but also children themselves accord parents a high social standing. Kabwegyere (1977:190) noted in particular a strong preference for boys among the Kamba of Kenya to the extent that "having no son is regarded as a sign of social incompleteness". Thus, the search for a particular sex may alone have far reaching implications on the average number of children a couple may have.

4.1.1 Analytical objectives

Several estimates of Kenyan fertility have so far been made based on various sources of data, few of which can be regarded as accurate. As mentioned in Chapter Two, vital registration is grossly inadequate (Koesoebjono and Kivuto Ndeti, 1974). Any estimates based on data from censuses prior to 1962 are insufficient. The 1962 Census itself had only two questions on the number of living and dead children. The 1969 Census and the National Demographic Survey (NDS, 1973), on the other hand, had a sequence of questions on the number of boys and girls living at home and away which were summarized to obtain total parity (Central Bureau of Statistics, 1980). The 1962 Census is known to have suffered gross under-coverage and under-reporting of parity (Census Report 1962). The 1969 Census suffered similar defects, but it was better organized. The 1973 National Demographic Survey did not represent a

true cross-section of the Kenyan population (NDS, 1973), so indices and patterns of fertility for the whole of Kenya are unobtainable from this source. In consequence, there remained some uncertainty about the details of fertility patterns and differentials. The analyses in this thesis are fortunately based on one of the most recent and reliable data sets from the Kenya Fertility Survey (1977/78), and are intended to examine differentials in both cumulative and recent fertility, according to socio-economic and cultural variables. Other related analyses based on the same source of data (see for instance Central Bureau of Statistics, First Report, 1980; Henin, 1980 Unpublished) have not fully exploited the range of information available. This chapter, in general terms, is intended to fill in the gaps. More specifically, however, the analytical objective is to identify the differences in fertility levels among sub-groups of cross-combinations of socio-economic and marital status variables. In addition, the study will reveal whether the recent rapid modernization in the form of education and urbanization that followed Kenya's independence (1963), has had any important impact on fertility. The findings of this analysis are contained in two parts. Part one deals with differentials in fertility by selected socio-economic variables. Part two is concerned with differentials in fertility in relation to nuptiality status variables.

4.1.2 Determinants of fertility

Despite the increasing concern for the socio-economic, cultural and biological determinants of fertility which emerged, among other things, from the problem of rapid population growth, particularly in developing countries, there is no consensus among scholars about the determinants. However, the analytical framework of the intermediate variables (direct determinants of fertility), first introduced by Davis and Blake (1956)

and recently modified by Bongaarts (1978), as we shall see in Chapter Six, provides an unexpected opportunity to address this problem with a deeper understanding of how socio-economic, cultural and environmental factors (indirect determinants of fertility) affect fertility through the so-called intermediate variables. The analytical framework, moreover, does not yield definitive conclusions but simply underlines the significance of the need for more detailed research work at a micro-level to answer a number of questions concerning the relationship between the level of fertility and the socio-economic, cultural and environmental factors. This knowledge is vital for deciding the various means and ways best suited to achieving an important objective - fertility reduction.

In this section, only the socio-economic and cultural determinants of fertility (the indirect determinants) will be discussed. The direct determinants (the intermediate fertility variables) of fertility will be dealt with in Chapter Six. The indirect determinants of fertility include : education; employment of women outside their homes; high status occupation of husband; religion; housing; type of place of residence; industrialization; health; desire for children; abstinence; type of union; attitude toward sexual relations; diet; psychological factors; sterilization; cost of rearing children and family systems.

Education is of overriding importance as a factor since the effect on fertility of the other factors like rural-urban residence, employment, occupation, polygamous unions etc., is not independent of educational attainment. Education of both wife and husband plays an important role in transforming the couples attitudes towards marriage and childbearing. Delayed marriage, high use of contraception, stability of unions, low levels of mortality and better communication between wife and husband are particularly associated with better education attainment. Also individuals with better education are most likely to be urban and

metropolitan residents and to be in high status employment and occupation. They are also most likely to be in monogamous unions. Educated females will be most likely to be actively engaged in economic and social activities outside home. They will, therefore, have less time to devote to children. Although it can be argued that a working woman increases the household income which in turn may induce increased fertility, the opportunity cost of children also increases. "It is this substitution effect which may lower fertility", (Abu Gamrah, 1977). Another related factor is the employment of children. This has been found to encourage high fertility (Alvin, 1970), especially in developing countries where the desire of parents for children is greater when child labour is demanded both outside and inside the family. It is however evident that it will be decreased with the development in technology.

The influence of increasing industrialization on the family and on the role of the different members in the family makes it a factor in fertility changes. Such indicators as land area per tractor; use of fertilisers; steel consumption; energy consumption; production of manufactured goods; consumption of cement; and number of commercial vehicles are among those used to measure the level of industrialization. If it is accepted that fertility is low in those societies where radical changes in the level of industrialization have occurred, we can likewise assume that similar trends may occur if the mode of production changes in high fertility societies, the third world countries, which largely depend on peasant farming (Abu Gamrah, 1977).

High mortality, particularly infant mortality, has been associated with high fertility. Couples tend to respond to high infant loss with continued childbearing to replace the lost children. A decline in infant mortality creates an atmosphere favourable to the development of family limitation. The rationale behind this is obvious. As mortality

declines, the increasing numbers of surviving infants and adults are likely to put pressure on the limited families' resources. The theories behind the effect on fertility by polygamous practices have been covered in detail in the previous chapter. The empirical findings on the same subject are presented in Part Two of this chapter.

Given the above observations, it is now generally accepted that socio-economic-cultural development paves the way to a gradual decline in fertility. It should however, be emphasized that the socio-economic-cultural factors mentioned above do not operate in isolation; they are all interrelated and reflect the different aspects of the socio-economic-cultural structure (UN, 1973: 64-106).

4.1.3 Methodology of study

The analysis of cumulative fertility differentials is largely based on ever-married women. The only exception is the analysis in Table 4.1 which is based on all women and the analysis involving type of union (polygamous or monogamous unions) which is based on currently married women. The analysis of recent fertility differentials was limited to children born in the past five years to women who have been continuously married for at least five years before the date of the survey. The rationale behind this decision to restrict attention to the five-year period reflected several considerations as summarized by Rodriguez and Cleland (1980:7): "... on the one hand, widespread fertility declines, perhaps accompanied by shifting patterns of fertility differentials, favoured a short period of observation in order to maximize the contemporary relevancy of findings. However, the shorter the period, the greater would be the random or chance element in the fertility of individual couples and the greater the risk of reference period error. The choice of five year period was thought to be a reasonable compromise between these conflicting factors".

In both analyses, the data were standardized for age at first marriage/marriage duration and for never married women in Table 4.1 to avoid this intervening effect on fertility. These variables together with age are the major demographic control variables in all world fertility surveys. Women who belong to the same birth cohort share many cultural and socializing experiences. They will have been exposed to a similar background of some norms and behaviour patterns. Women marrying about the same historical time constitute a marriage cohort. When there is little pre-marital sexual activity and less marital separation and disruption, marital duration will tend to classify women in the same way as age. This will tend to go through similar changes in introduction of modern contraception and attitudes towards induced abortion. Different marriage cohorts will show variation in their reproductive performance, even within marriage cohorts. Thus in order to clarify the relationship between socio-economic variables of interest and fertility, the intervening effects of the demographic variables sometimes in combination with others, have to be "removed" by the method of standardization. More particularly if complex cross-tabulation analyses involve more than three variables, standardization has the advantage of reducing the data "by eliminating one or more dimensions from a many-way tabulation, while taking into account the role of the dropped variables" (Pullum, 1978). Marriage, however, is not such a good control for fertility. Some women have births before marriage.

The method has its dangers. In the case of Kenyan fertility, in particular, education and other differentials do change in magnitude and even in direction, across marital duration after standardization. In such instances, standardization conceals the original variation and may be inadequate and misleading summarizing device. The hypothetical example is that of a positive relationship between education and fertility at

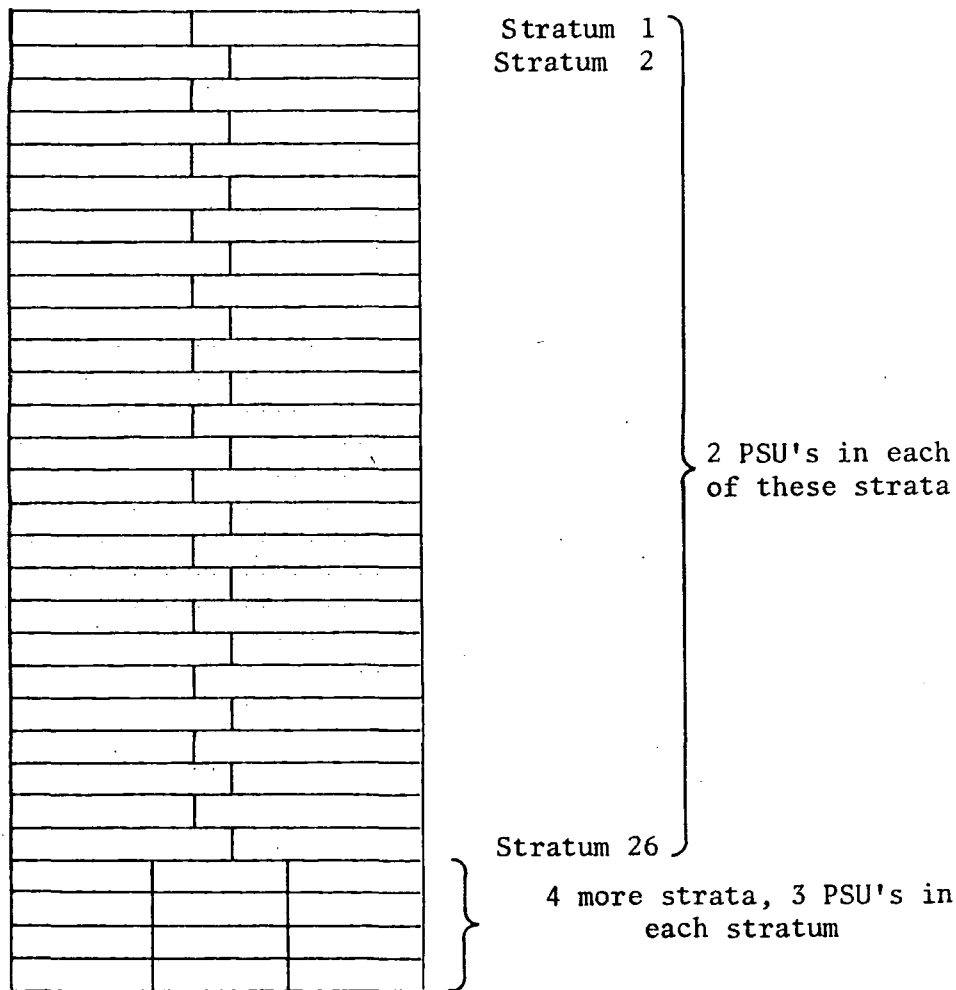
short durations but negative at long durations. The standardized figures should not, however, be regarded as true. Rather they can be regarded to represent "hypothetical parity for each socio-economic variable if women of that category had experienced the same age at marriage pattern as all women in the same birth cohort" (Central Bureau of Statistics, 1980:96). Differences in the actual observed quantities should always take prominence. A detailed technical discussion of standardization is contained elsewhere (Pullum, 1978). Notes summarizing the method of standardization in this analysis are contained as footnotes of a table where appropriate.

Further, many of our figures in this analysis are based on small cells. It is, therefore, thought appropriate to include a brief comment on sampling errors. By sampling error of an estimate we refer to the extent to which the estimate would vary if several possible different samples of women were taken. If one carries out an investigation of interest on a sample rather than the entire population, this results in an error and the imprecision caused by such a limited sample is measured by sampling error. Again, if for any chosen sample, results are presented in the form of detailed cross-tabulations according to several control variables due to the small frequencies involved, sampling errors for individual subclasses will be larger than errors in the estimates based on either the entire sample or on the larger sample bases. In such instances, sampling error for differences between subclass means are particularly useful in the interpretation of fertility differentials that are observed from the survey results. These will indicate whether or not the observed differences between categories of the population are real and not resulting merely from sampling variation. Other errors resulting from, say, misreporting of age are referred to as non-sampling errors and they affect the estimates from the survey in a different way not mentioned here.

Sampling error is commonly measured by standard error (SE). And any procedure for computing standard error (SE) must take into account the actual structure of the sample. The KFS sample was stratified, multi-stage and clustered. Figure 3 presents an outline of the KFS sample design.

Figure 3

KFS sample design



In all, there were 30 strata with 64 primary sampling units. Sampling errors for a number of variables, some of which are used intensively in this analysis, were computed by World Fertility Survey using WFS Package Program CLUSTERS. For further details about sampling errors in the Kenya Fertility Survey together with sampling errors for sub-class (Rural) and sub-class (Urban) and differences between means and standard errors between sub-classes rural and urban see elsewhere (Central Bureau

of Statistics, 1980: 249-257). The detailed technical discussion on sampling error is given by Vijay Verman (1983). In this analysis sampling errors for a few selected estimated means for each subclass (only in Tables 4.5 and 4.12(a)) are shown in brackets. The observed differences between subclasses may be regarded as "statistically significant" if the magnitude of the differences is not smaller than twice its standard error. In other words, the true value of any estimate lies within a range of twice the standard error on either side of the sample value. The range (sample mean) ± 2 (standard error) is called the '95 per cent confidence interval'.

PART ONE

4.2 Differentials In Fertility By Socio-Economic Variables

Following the above general observations, this part of the chapter examines fertility differentials based on the level of education, rural-urban and metropolitan residence, religious affiliation, ethnic group and husband's occupation. It also examines the effect on fertility of education of husband and wife, as well as the impact on fertility of wife's education controlling for rural-urban residence. In all cases the indexes used are of children ever born (in the case of cumulative fertility) and children born in the past five years by women who have been married for at least five years (in the case of recent fertility).

4.2.1 Differentials in cumulative fertility

Results from the Kenyan data confirm the hypothesis of an inverse relationships between education and fertility (Cochrane, 1979; Driver, 1963). The unstandardized figures among women aged less than 25 decrease drastically with increasing level of education, but the differences disappear after standardization (Table 4.1) showing that higher fertility among uneducated women and those with low education is attributed to their early age at marriage. The same is true for women in the age group 25-34. The number of educated women (with 5-8 and 9+ years of formal schooling) in the older age groups over 35 is very small in Kenya and so their fertility is difficult to determine (also see Central Bureau of Statistics, 1980).

Table 4.1 : Mean number of children ever born by current age and selected socio-economic variables unstandardized and standardized by age at marriage

Selected Variables	CURRENT AGE									
	15-24				25-34		35-44		45+	
	All ever married women	Never married	Unst.	St.*	Unst.	St.*	Unst.	St.*	Unst.	St.*
EDUCATION										
None	1.8	0.3	1.5	1.0	4.6	4.4	7.0	6.9	7.7	7.7
1-4 Years	1.9	0.2	1.1	1.0	4.8	4.7	7.6	7.6	8.7	8.5
5-8 "	1.8	0.2	0.9	1.0	4.4	4.6	7.1	7.2	8.3	8.9
9+	1.5	0.2	0.6	0.9	3.3	4.5	-	-	-	-
PLACE OF RESIDENCE										
Rural	1.8	0.2	1.0	1.0	4.6	4.6	7.2	7.2	8.0	8.0
Urban	1.7	0.4	1.1	1.1	4.0	4.2	6.8	6.9	-	-
Metropolitan	1.6	0.3	1.0	1.1	3.8	4.0	6.1	6.0	5.6	5.7
REGION OF RESIDENCE										
Nairobi	1.5	0.2	0.9	0.9	3.9	4.4	7.1	6.8	-	-
Central	1.8	0.2	0.7	1.0	4.6	4.7	7.2	7.5	8.1	8.2
Coast	1.6	0.3	1.2	0.9	4.1	3.8	5.9	5.8	6.0	5.0
Nyanza	1.7	0.1	1.1	0.9	4.6	4.3	7.5	7.3	8.3	8.6
Rift	1.9	0.3	1.1	1.1	4.6	4.6	7.2	7.1	7.6	7.6
Western	1.9	0.2	1.1	1.0	4.7	4.5	7.7	7.5	8.2	7.9
Eastern	2.0	0.3	0.8	1.2	4.4	4.6	6.7	6.8	7.9	7.9
ETHNIC GROUP										
Kikuyu	1.8	0.2	0.8	1.1	4.6	4.9	7.3	7.5	8.1	8.2
Luo	1.7	0.1	1.1	0.8	4.4	4.0	7.3	6.9	8.0	8.0
Luhya	1.8	0.2	1.1	1.0	4.7	4.6	7.9	7.7	8.2	8.0
Kamba	1.9	0.3	0.9	1.1	4.2	4.4	6.7	6.8	7.7	7.7
Kisii	1.7	0.1	0.9	1.8	4.9	5.0	7.4	7.7	8.9	8.7
Meru/Embu	2.0	0.4	0.8	1.2	4.5	4.6	6.7	6.7	7.8	7.7
Mijikenda	1.5	0.2	1.2	0.8	4.2	3.8	5.8	5.5	7.0	5.8
Kalenjin	2.1	0.3	1.2	1.1	4.6	4.6	7.0	6.9	8.3	8.1
Other	2.0	0.3	1.3	1.0	3.8	3.7	6.6	6.3	5.5	5.9
HUSBAND'S OCCUPATION										
(Ever married women only)										
Never worked	1.7	-	-	1.8	4.4	4.3	7.4	7.4	7.4	7.4
Professional	1.8	-	-	2.0	4.3	4.7	7.5	7.6	8.4	8.7
Clerical	1.7	-	-	1.8	4.3	4.4	7.2	7.2	-	-
Sales	1.8	-	-	1.8	4.7	4.7	7.2	7.2	7.8	7.9
Private h/hold workers	1.9	-	-	2.0	4.8	4.4	6.9	6.9	8.5	8.3
Other service workers	1.7	-	-	1.7	4.6	4.6	7.3	7.3	7.4	7.5
Self-employed agric.	1.8	-	-	1.8	4.6	4.5	6.9	7.0	7.9	7.9
Agricultural workers	1.7	-	-	1.7	4.6	4.6	7.2	7.3	8.0	8.1
Skilled manual	1.7	-	-	1.7	4.7	4.7	7.1	7.1	8.6	8.6
Unskilled manual	2.0	-	-	2.0	4.9	4.6	7.7	7.5	6.3	6.2

This table resembles Table 5.11 in the First Report, Volume 1, KFS 1977/78.

- Very few number of cases to compute the fertility rates

* Standardization for age at marriage was done based on the distribution of each entire age group according to age at marriage. The initial data consists of the unstandardized means or marginal means of children ever born for each combination of age at marriage and socio-economic variable. The first step involved multiplying the proportions of women in the entire age group for each category of age at marriage by the unstandardized means in each combination of age at marriage and background variable. The numbers generated are then added across all categories of age at marriage. The result is the standardized means of children ever born for each category of education in that age group. An illustrated example of calculation is contained in the Appendix 2. Standardization for proportion never married was only done for age group 15-24, as the sample size for never married women in the older ages was too small to justify standardization. We saw in the previous chapter that the majority of women marry before age 25.

Women with rural background, generally, are said to have more children than women with urban and metropolitan background (as mentioned in Section 4.1.2). Lower fertility is often associated with higher degrees of urbanization. The data in Table 4.1 reveal more marked contrast in cumulative fertility between rural, urban and metropolitan (Nairobi and Mombasa) women, particularly at older ages, than even for educational categories. Metropolitan fertility is markedly lower in all age groups. This is, I believe, one of the few countries in sub-Saharan Africa where there is convincing evidence of a rural-urban differential in the expected direction. The markedly low metropolitan fertility may be attributed to greater use of contraception among the educated (see Chapter 6). It is also possible that abortion facilities are much more available in metropolitan areas than in rural areas and smaller urban centres. Also of great importance, as we noted in the previous chapter, is the fact that metropolitan women tend to delay their marriages more than the rural and urban women. It should be appreciated at this point that the more modernized sectors need more contraception and induced abortion practices to stop their fertility rising. For, in Africa, the initial effect of increased education (in combination with increased urbanization) is to reduce breastfeeding periods, encourage more stable unions and discourage polygamous practices, all of which tend to favour high fertility. This effect has to be balanced by increased use of contraception and induced abortion. Fertility differentials on the basis of region, husband's occupation and ethnic group are not very marked. Fertility is, however, very low among Nairobi, the Coast, Mijikenda groups.

4.2.2 Differentials in recent fertility

Estimated rates for fertility in the recent past are presented in Table 4.2. The rates are the averages for the five years prior to the survey and represent the number of children ever born by a hypothetical

Table 4.2: Estimated five-year average total fertility rates*
by selected variables

<u>VARIABLE</u>	<u>NONE</u>	<u>1-4</u>	<u>5-8+</u>	<u>9+</u>	<u>ALL</u>
LEVEL OF EDUCATION	8.75	9.04	8.14	7.29	8.16
TYPE OF PLACE OF RESIDENCE		<u>RURAL</u>	<u>URBAN</u>	<u>METROPOLITAN</u>	
		8.37	6.80	5.65	
REGION OF RESIDENCE	<u>NAIROBI</u>	<u>CENTRAL</u>	<u>COAST</u>	<u>NYANZA</u>	<u>RIFT</u>
	6.07	8.59	7.22	7.99	8.75
	<u>WESTERN</u>	<u>EASTERN</u>			
	8.23	8.20			
ETHNIC GROUP	<u>KIKUYU</u>	<u>LUO</u>	<u>LUHYA</u>	<u>KAMBA</u>	<u>KISII</u>
	8.40	7.58	8.31	7.96	8.67
	<u>MERU/EMBU</u>	<u>MIJIKENDA</u>	<u>KALENJIN</u>	<u>OTHER</u>	
	8.22	7.36	8.86	7.80	
RELIGIOUS AFFILIATION	<u>CATHOLICS</u>	<u>PROTESTANTS</u>	<u>MUSLIMS</u>	<u>OTHER</u>	
	8.14	8.34	7.08	7.90	

* Computed from birth history data. The figures correspond to those in Table 5.12 in the First Report, Volume, KFS 1977-78.

woman by age 50 if she experiences the current age-specific rates throughout her reproductive life. Conscious of the possible errors in the dating of births in the birth history, the differentials shown in the Table among sub-groups of population are, as one would expect, marked between education groups and even more marked between rural, urban and metropolitan residence than in the others.

4.2.3 Fertility and the education of wife and of husband

As already mentioned before (Section 4.1.2), education, particularly women's education, has been shown to have a major impact on fertility (Cochrane, 1979). It affects fertility indirectly through transformation of old traditional values into new aspirations and outlook to modern values, and directly through reducing the reproductive period as a result of postponement of marriage. In the short run, however, education is thought to raise the level of fertility through breaking down traditional practices that are known to have a suppressing effect on fertility such as polygamy which influences breastfeeding and abstinence (Mosley et al, 1981).

Although Kenya has made tremendous progress in educational development, the proportion of women with some secondary and higher education is still small. And since this development has been largely during the past 10-20 years, its impact has only been felt among the young people whose marriages have been postponed because they are still at school.

Table 4.3 presents data on the average number of children ever born by ever married women according to the level of education of themselves and of their husbands. Both unstandardized and standardized (for duration of marriage) figures are shown. Fertility first rises and then declines with increasing education of both wife and husband; women with 1-4 years of education seem to have higher fertility than those with no education. This is probably due to the type of marriage (as we shall see

Table 4.3:

Mean number of children ever born by ever married women according to the level of education of themselves and their husbands

Education of Husband	Education of Wife						ALL		Total Effects	St. for wife's education	Net effects
	None		1-4		5+						
	Unst.	St.*	Unst.	St.	Unst.	St.	Unst.	St.			
None	5.68	5.54	5.57	5.92	4.35	6.15	5.60	5.63	+0.97	5.30	+0.70
1-4	5.91	5.52	5.99	5.99	4.04	5.66	5.64	5.68	+1.01	5.44	+0.82
5-8	4.53	4.20	5.13	4.65	3.65	4.44	4.40	4.39	-0.23	4.42	-0.82
9+	4.52	3.41	4.65	3.49	3.26	3.73	3.67	3.64	-0.96	4.21	-0.41
ALL	4.90	4.60	5.35	5.08	3.55	4.32	4.63			4.62	
Total effects	0.27		+0.72		-1.08						
St. for husband's education	4.87		5.10		3.70		4.60				
Net effects	+0.27		+0.5		-0.9						

* Standardization was done following similar steps as in Table 4.1. It was done for duration of marriage basing on the entire distribution wife's level of education.

later in this chapter). Uneducated women are more likely to live in polygamous unions than those with little education. Wives with 5-8 and 9+ years of education were combined to reduce the effect of empty cells and inadequate sample size resulting from the lack of women with some secondary or higher education married to men with no and little education. Kenyan men tend to marry women with either similar education or slightly less than themselves. Women with 5 or more years of schooling married to husbands with similar education have the least number of children with an average of 3 or more children as compared to couples with no and little education with an average of 5-6 children.

The role of both wife's and husband's education is obvious in Table 4.3. The standardized figures correspond more closely to the overall mean than the unstandardized ones. And looking at the total effects, women with 5 or more years of schooling have more children than the national average. The question is whether women of different education levels but married to husbands of similar education have differing fertility. After controlling or 'holding constant' husband's education by standardization, the differences in fertility between women of different education levels are maintained. The conclusion to be drawn from Table 4.3 is that women's education has a much stronger influence on cumulative fertility than that of the husband. The effect of wife's education on fertility in the five years prior to the survey, for currently married women who first married at least five years ago, was also studied. The marginal cross-combination of education of wife and of husband is given in Table 4.4. Because of the small number of married women with some secondary or higher education, (standardization by duration of marriage) examination of results was confined to the following selected groups of the population:

Table 4.4 : Mean number of children born in the five years prior to the survey by currently married women who first married at least five years previously by education of wife and of husband, controlling for duration of marriage

Education/Duration of of Wife / Marriage	Education of Husband				
	None	1-4	5-8	9+	ALL
<u>NONE</u>					
5-9	1.77 (162)	1.90 (85)	1.77 (211)	1.85 (29)	1.80 (486)
10-14	1.58 (207)	1.79 (115)	1.80 (174)	2.40 (24)	1.74 (520)
15-19	1.38 (272)	1.59 (131)	1.57 (145)	1.04 (25)	1.46 (574)
20-24	1.11 (231)	1.31 (106)	1.26 (109)	1.54 (21)	1.21 (468)
25-29	0.80 (221)	0.83 (97)	0.69 (68)	1.37 (12)	0.80 (398)
30+	0.31 (126)	0.38 (46)	0.26 (25)	0.34 (7)	0.32 (204)
					[2649]
<u>1-4 Yrs.</u>					
5-9	1.71 (36)	1.73 (34)	2.02 (116)	2.07 (22)	1.92 (208)
10-14	1.86 (52)	1.94 (34)	1.78 (112)	2.26 (18)	1.87 (216)
15-19	1.66 (52)	1.93 (57)	1.62 (94)	1.44 (19)	1.69 (222)
20-24	1.21 (29)	1.68 (27)	1.59 (63)	0.93 (23)	1.42 (142)
25-29	1.07 (39)	1.25 (36)	0.86 (42)	1.34 (9)	1.07 (126)
30+	0.18 (14)	0.19 (7)	0.19 (11)	0.0 (6)	0.16 (38)
					[952]
<u>5-8 Yrs.</u>					
5-9	2.12 (24)	2.15 (28)	2.10 (185)	2.17 (142)	2.13 (378)
10-14	1.56 (12)	1.67 (26)	1.88 (134)	1.63 (81)	1.77 (254)
15-19	1.22 (9)	1.72 (13)	1.36 (56)	1.24 (24)	1.36 (102)
20-24	1.15 (5)	1.54 (8)	1.03 (22)	0.99 (14)	1.11 (50)
25-29	1.07 (7)	0.0 (3)	0.54 (8)	1.16 (6)	0.76 (25)
30+	0.46 (3)	0.0 (2)	0.0 (4)	0.0 (1)	0.0 (11)
					[819]

Table 4.4 (Cont.)

Education/Duration of of Wife / Marriage	Education of Husband				
	None	1-4	5-8	9+	ALL
<u>9+ Yrs.</u>					
5-9	2.62 (1)	2.00 (1)	2.07 (23)	2.26 (55)	2.21 (80)
10-14	0.0 (-)	0.0 (-)	3.03 (3)	1.86 (30)	1.95 (33)
15-19	0.0 (-)	0.0 (-)	0.0 (-)	0.71 (4)	0.71 (4)
20-24	1.00 (1)	0.0 (-)	0.0 (-)	0.12 (5)	0.22 (6)
25-29	0.0 (-)	0.0 (-)	0.0 (-)	0.0 (-)	0.0 (-)
30+	0.0 (-)	0.0 (-)	0.0 (-)	0.0 (-)	0.0 (-)
					[124]

[] refer to sub total number of cases

- for duration of marriage 5-9 years, we used husband's education 5-8 and 9+ ;
- for duration 10-14 years, we used husband's education 9+ years ;
- for duration 20-24 years, we used husband's education 9+ years

All the other cells were ignored. The rates were calculated as:

$$\frac{\sum \text{subcell number of children} \times \text{whole sample size in subcell}}{\sum \text{whole sample size in all subcells tested above}}$$

Whole sample size in subcells and the sum of whole sample size in all subcells tested above (n), were

<u>Duration of marriage</u>	<u>Husband's education</u>	
	<u>5-8</u>	<u>9+</u>
5-9	535	258
10-14	-	153
15-19	-	72
20-24	-	63

n = 1081

From the above and using the subcell number of children given (see also Table 4.4) the standardized figures for the whole sample were derived:

Wife's Education (Years)	None		1-4		5-8		9+	
Husband's Education (Years)	5-8	9+	5-8	9+	5-8	9+	5-8	9+
Duration of Marriage								
5-9	1.77	1.85	2.02	2.02	2.10	2.17	2.07	2.25
10-14	-	2.40	-	2.26	-	1.63	-	1.86
15-19	-	1.04	-	1.44	-	1.24	-	0.71
20-24	-	1.54	-	0.93	-	0.99	-	0.12
All standardized by duration of marriage on the above selected groups of population	1.82		1.96		1.92		1.87	
All unstandardized	1.75		1.87		1.96		1.98	

Fertility in the recent past is lowest among the non-educated women, highest among women with 1-4 years of schooling, drops among women with 5-8 years and further slightly drops among the secondary or higher education category to form a concave curve as Figure 4 shows.

4.2.4 The relation of education and rural-urban residence to fertility

Data on differential cumulative fertility according to rural-urban residence controlling for education are presented in Table 4.5(a). The data are standardized for duration of marriage to observe the real impact of rural-urban residence and education on marital fertility. As we noted in Chapter 3, highly educated women are younger and often delay their marriages more than uneducated and less educated women and hence have shorter duration of exposure to the risk of conception.

Figure 4

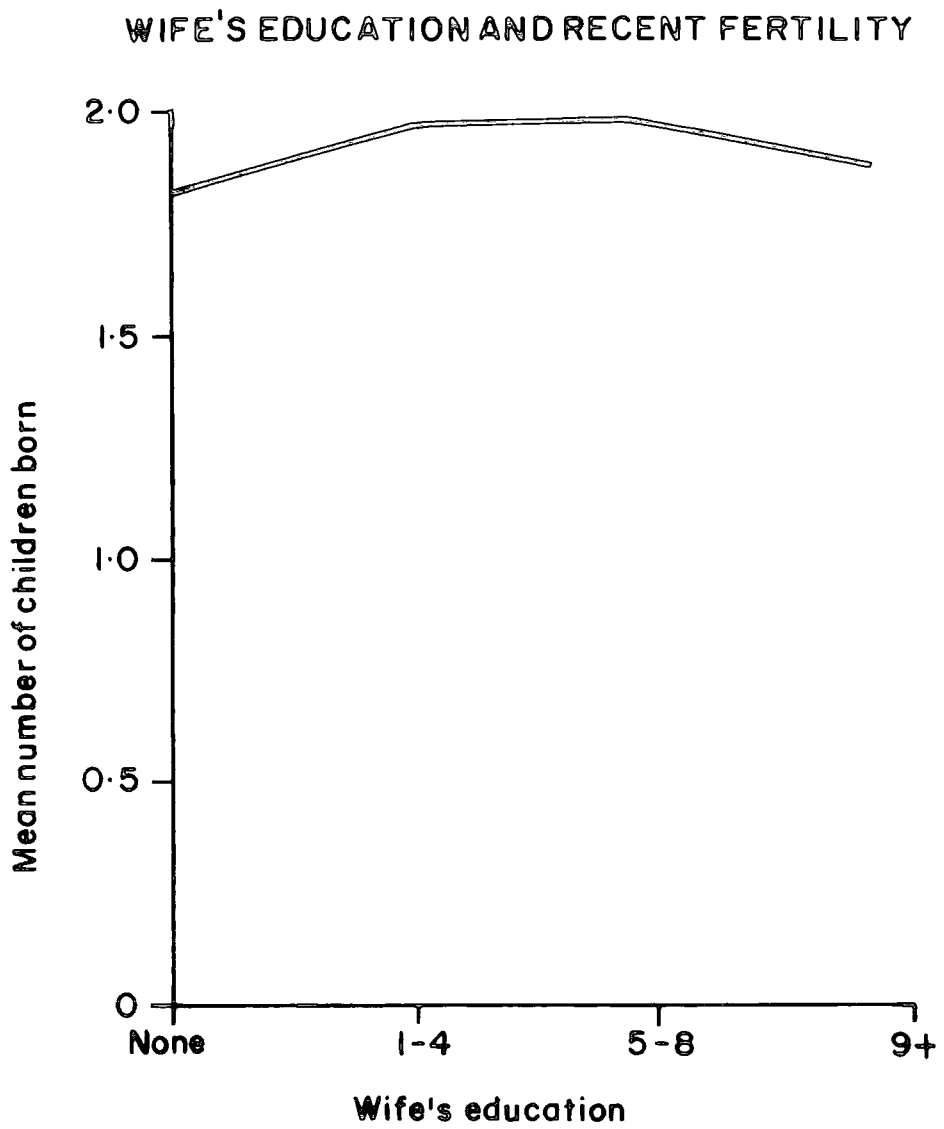


Table 4.5(a) : Mean number of children ever born by ever married women by level of education and type of place of residence

Level of Education	Type of place of residence							(N)
	Rural		Urban		Metropolitan			
	Unst.	St.	Unst.	St.	Unst.	St.		
None and low	5.44(0.05)	4.9	4.12(0.28)	3.51	4.04(0.21)	3.29	4629	
Medium and high	3.60(0.07)	5.13	3.22(0.22)	3.94	2.92(0.15)	3.67	1681	
All Unst.	3.34		3.67		3.48			
All St. by duration of marriage	4.99		3.73		3.48		6310	

Table 4.5.(b) : Mean number of children born in the past five years prior to the survey by women who first married at least five years ago by level of education and type of place of residence

	Rural		Urban		Metropolitan		(N)
	Unst.	St.	Unst.	St.	Unst.	St.	
	None and Low	1.38(0.02)	1.43	1.24(0.11)	1.38	1.08(0.08)	
Medium and high	1.81(0.04)	1.45	1.63(0.12)	1.46	1.63(0.10)	1.36	1023
All Unst.	1.46		1.41		1.30		
All St.	1.43		1.42		1.25		5000

* Standardization was done basing on the entire distribution of wife's level of education. The proportions of women in each category of marital duration to the total sample in a particular level of wife's education were multiplied with the marginal cell means for each cross-combination of marital duration and place of residence. The resulting figures were again added to give standardized means for each type of place of residence for a particular level of wife's education.

Figures in parentheses are estimated standard errors for each cell.

It is evident from the Table that cumulative fertility among women with 5-8 years or higher education decreases drastically from rural areas to metropolitan centres. The frequencies show that about 88 per cent of the ever married in the sample live in rural areas; only 4.2 per cent in urban areas and 7.4 per cent in metropolitan areas. Without exception, within the same combined levels of education, women in rural areas have higher fertility than those in urban and metropolitan areas. However, the difference in fertility is bigger between rural and metropolitan than between rural and urban. Rural women with medium and high education (5-8 years and 9+ years of schooling) have on average 1.19 more children than urban women in the same category of education but 1.46 more children than metropolitan women. Among these educated women the difference in cumulative fertility is bigger between rural and urban and rural and metropolitan but smaller between urban and metropolitan. The same is true for women with no and little education. Looking at women living in a similar place of residence but having a different level of education, cumulative fertility is generally slightly higher among women with medium and high education than their counterparts with no and little education. The most plausible explanation for this again may lie in the fact that polygamy, which suppresses fertility, is more prevalent among the uneducated population than among those with 5-8 years and higher education. But one of the possible explanations for overall lower fertility in metropolitan areas, as Table 4.5(a) indicates, has already been mentioned (Section 4.2). A greater proportion of educated women live in metropolitan areas and those are more likely to use contraception and to undergo induced abortions, a practice most likely to be uncommon in rural areas. This, however, is not conclusive, since data on induced abortion are not available (the only available data are for spontaneous abortion). Data on differential recent fertility based on rural-urban residence and again controlling for broad categories of education is presented in Table 4.5(b).



Metropolitan women seem to have experienced on average 0.18 fewer children than rural women, but urban and rural women experienced similar fertility. The difference in recent fertility between women of different educational experience but similar place of residence is small although marginally higher for educated women.

4.2.5 Concluding remarks

The analysis has shown marked differentials in fertility according to education. Women with some education (1-4 years) have higher fertility than those with no formal education. The possible explanation may lie in the type of union. Polygamy (a suppressing factor of fertility) is higher among women with no education than among those with some or higher education. Women's education has greater influence in restraining fertility than that of the husband. Women with 5 or more years of education married to husband's of similar or higher education have the lowest number of children.

Differentials in fertility according to rural-urban residence is even more marked than that based on education. Metropolitan fertility is markedly lower than rural fertility. Differentials based on other socio-economic variables, namely region of residence, ethnic group and husband's occupation, were not very apparent although fertility is very low for Nairobi, Coast and Mijikenda categories.

PART TWO

4.3 Differentials In Fertility In Relation To Nuptiality Variables

4.3.1 Introduction

We now specifically turn to examine the impact of nuptiality on fertility. The relationship between fertility and nuptiality is important, not only because marriages usually lead to births but because marriage

itself and the selection of a partner change the structure of the population. The formation of married couples affects the proportion married at any given time. In historical perspective, the interest of most demographers in nuptiality as a related demographic variable evolved from their great interest in fertility especially the relationship between age at marriage and fertility decline in the Western World during the nineteenth century (Heeren, 1973: 9-17). Historical investigations on a number of issues related to this relationship are presented in several studies (Hajnal, 1965: Matras, 1965: Coale, 1967 and 1969).

Two approaches have been employed to study the inter-relationship - the aggregate level and the individual level (Caldwell et al., 1980). "The individual relationship may not be important when aggregated depending upon the frequency distribution for the total population" (op.cit.). In the previous chapter, for instance, it was shown^(see p. 71) that marriage in Kenya is universal and that age at first marriage is generally low although it has gone up in the recent past among some sections of the population; but only a small proportion, mainly those who postponed marriage because they are still at school, marry after age 25. Thus, to draw a conclusion that educated women in Kenya have very low fertility has little significance and effect on the total population. As Caldwell et al. (1980:1) further observed "the behaviour for such a small minority of women may not be replicated when larger numbers enter the same group".

The analysis in this part of the chapter is based on individual women. Emphasis will be put on the impact of selected marital status variables such as age at first marriage, type of union, especially polygamy, incidence of remarriage and age differences between spouses on fertility.

4.3.2 Fertility and age first marriage

The possible relationship between fertility and age at first marriage has been summarized in Caldwell et al. (1980:4) :

- (i) Fertility, through pre-marital conception may influence the timing of marriage;
- (ii) very early age at parturition may lead to subsequent impairment;
- (iii) if age at marriage is very early, then a rise in this age may not affect completed fertility greatly because of the impact of adolescent sub-fecundity;
- (iv) young age at first marriage is frequently associated with high rates of divorce;
- (v) young age at first marriage for a woman frequently involves much wider age differences between husband and wife, increasing the chance of early widowhood or earlier decline in the husband's ability to reproduce.

The impact of age at first marriage on cumulative fertility for ever married women is summarized in Table 4.6 for selected socio-economic variables. The first two columns give a comparison of age at first marriage and fertility for different groups. The sub-groups with the lowest completed fertility are metropolitan, muslim, Mijikenda, Nairobi and Coast with an average of 6 children per woman. Highest completed fertility is found among categories 1-4 and 5+ years of school, christians, monogamous, Kikuyu, Luhya, Kisii, Kalenjin, Central, Nyanza and Western with an average of 8 children per woman. The rest have completed fertility lying between the two extremes. As we noted earlier (sub-section 4.2.1, part one), rural, urban and metropolitan differentials are more marked than either educational or other categories.

Table 4.6: Mean number of children ever born (completed fertility) to ever married women by age, age at first marriage and selected socio-economic variables

Population	Median age at first marriage	Completed fertility	Completed fertility by age at first marriage			
	current age 45-49		< 15	15-19	20-24	25+
National	18.82	7.88	7.87	8.32	7.48	6.25
<u>LEVEL OF EDUCATION</u>						
None	17.54	7.66	7.74	8.09	7.04	6.47
1-4	18.53	8.61	7.89	9.08	8.36	6.25
5+	19.50	8.47	9.86*	8.39	8.24*	6.32*
<u>TYPE OF PLACE OF RESIDENCE</u>						
Rural	17.50	7.98	8.11	8.41	7.57	6.17
Urban	17.00	7.18*	8.87	6.18*	6.84	11.00*
Metropolitan	15.60*	5.29	3.75*	6.40*	4.92*	5.00*
<u>RELIGION</u>						
Christians	17.81	8.03	7.97	8.40	7.79	6.25
Muslims	16.12	6.80	6.83	6.72	7.17*	6.56*
No Religion	19.67	6.95	8.02*	8.44	5.50	5.25*
<u>ETHNIC GROUP</u>						
Kikuyu	18.78	8.03	8.18	8.69	7.13	7.74
Luo	16.89	7.98	8.05	8.29	7.88	5.19*
Luhya	16.93	8.24	9.01	8.60	6.93	5.04*
Kamba	17.62	7.69	6.40	7.95	8.16	6.71
Kisii	17.83	8.99	8.72*	8.85	8.77	10.80*
Meru/Embu	19.36	7.75	8.00*	8.23	7.95	3.98*
Mijikenda	15.50	6.96	7.92	6.77	7.31*	3.64*
Kalenjin	18.37	8.16	6.16*	8.86	8.14*	3.50*
Other	19.00	5.11	7.77*	6.05*	3.97*	5.00*
<u>REGION OF RESIDENCE</u>						
Nairobi	19.50	6.53	4.97*	7.77*	5.48*	5.00*
Central	19.00	8.03	8.30	8.77	7.03	7.78
Coast	16.10	6.15	6.88	6.22	5.25	3.64*
Nyanza	16.98	8.32	8.26	8.36	8.81	6.96
Rift	18.20	7.49	7.89	8.07	6.48	6.15*
Western	17.04	8.35	9.27	8.90	6.21	4.13*
Eastern & N.Eastern	19.35	7.85	6.59	8.42	8.10	5.87

* Number of cases less than 25.

The evidence in Table 4.6 suggests that women who marry late, say after age 25, generally have sufficient time to give birth to a large number of children, on average 6-7 births. However, due to a small number of respondents marrying at higher ages (after age 25), completed fertility of these women in the various sub-groups of that category should be interpreted with caution. The table also suggests that completed fertility for women marrying before age 15 was almost identical to that of women who married at ages 15-19. A similar finding was made by Caldwell et al. (1980:23) among national populations of Asia* with the conclusion that this pattern "suggests a relatively low level of significance of fecundity impairment due to very early age at marriage."

When we now view age at marriage from a different angle (earlier stage in the reproductive history - first 20 years of marriage) by examining a period 15-19 years after first marriage, it is noticeable (ignoring women who enter union before age 15) that women have more or less the same number of children whatever age at marriage, although some categories where women marry after age 25 show smaller numbers of births (Table 4.7). Most of these categories, however, had too few respondents to determine their mean number of births with confidence. Nevertheless, this observation implies that the difference in completed fertility by age of first marriage is attributed to the longer reproductive period (exposure) of the women who marry early. The important point to be made from Table 4.7 is that women whose first marriage occurred 15-19 years before the survey show lower level of cumulative fertility when they had married before age 15. In other words, cumulative fertility in the first 20 years of first marriage is lower for those women who first married

*Caldwell et al. used age groups at marriage <15, 15-17, 18-19, 20-21, 22-24 and 25+.

Table 4.7 : Mean number of children ever born by women whose first marriage occurred 15-19 years before the survey by age at first marriage

Population	Age at first marriage			
	<15	15-19	20-24	25+
National	5.82	6.54	6.62	6.01
<u>LEVEL OF EDUCATION</u>				
None	5.79	6.33	6.39	5.57*
1-4	6.02	6.87	7.18	7.06*
5+	5.70	6.80	6.92	6.24*
<u>TYPE OF PLACE OF RESIDENCE</u>				
Rural	5.92	6.58	6.67	5.01
Urban	4.37*	7.02*	6.90*	11.00*
Metropolitan	5.25*	5.57	5.43*	5.00*
<u>RELIGION</u>				
Christians	5.88	6.60	6.78	5.87
Muslims	6.05*	6.08	0.0	7.88*
No Religion	5.28*	5.84	5.39*	0.0
<u>TYPE OF UNION</u>				
Polygamous	5.58	5.95	6.05	5.12*
Monogamous	6.04	6.95	7.00	6.32*
<u>ETHNIC GROUP</u>				
Kikuyu	5.49	7.15	7.27	7.81*
Luo	5.61	6.20	5.74*	3.51*
Luhya	6.41	6.60	7.83*	5.19*
Kamba	6.05	6.36	6.18	4.43*
Kisii	6.12*	6.61	7.37	7.00
Meru/Embu	5.85*	5.82	6.80*	2.94*
Mijikenda	5.58	6.39	3.25*	3.00*
Kalenjin	5.85*	6.51	5.39*	4.00*
Other	5.17*	5.78	5.01	5.00*

* Number of cases less than 25.

before age 15. The differences in cumulative fertility observed above among women married at ages <15 and 15-19 are already noticeable after the first five years of marriage (Table 4.8) and is clearly a result of adolescent sub-fecundity. Those women who married before age 15 have clearly experienced very low fertility in the first 5 years of marriage compared to their counterparts who married between ages 20-24, who, in fact have slightly higher fertility. It then drops among those women marrying at age 25 and over. Among the national populations of Asia studied by Caldwell et al. (1980:23), such a differential pattern was apparent between women marrying in age groups under 15 and 15-17.

The very low early marital fertility observed above among women marrying before age 15 seems to be related to the obvious fact that a high proportion of women who marry before that age remain childless for the first five years of marriage (Table 4.9). However, the large differences in the proportions with no births in the first years that are apparent in the Table may suggest possible errors in statement of date of marriage. With the muslim women, the proportion remaining childless in the early years of marriage is very low among those marrying before age 15. These proportions get progressively higher with increasing age at marriage (Table 4.9). This may indicate a combination of early age at first birth, possible mis-statement of age at marriage and the effect of secondary sterility among these muslim women.

4.3.3 Fertility and type of union

Type of union affects the rate of population growth as a result of the interplay of two major variables (Chojnacka, 1980:93) :

- (a) the age-specific fertility schedule,
- and (b) the nuptiality pattern of the population.

Coale (1972) observed that early marriage can provide both short and long term reductions in the population growth rates in high fertility

Table 4.8: Mean number of children born in the first 5 years of marriage to women married 10-19 years before the survey by age at first marriage

Population	Age at first marriage			
	<15	15-19	20-24	25+
National	1.58	1.96	2.03	1.73
<u>LEVEL OF EDUCATION</u>				
None	1.49	1.77	1.04	1.58
1-4	1.81	2.12	2.13	1.76*
5+	1.65	2.23	2.45	2.33*
<u>TYPE OF PLACE OF RESIDENCE</u>				
Rural	1.59	1.95	2.01	1.10
Urban	1.39*	2.17	2.78*	0.60*
Metropolitan	1.57	1.94	2.56*	3.00*
<u>RELIGION</u>				
Christians	1.66	2.04	2.11	1.80
Muslims	1.23	1.30	0.80*	1.11*
No Religion	1.177	1.47	1.30	1.60*
<u>TYPE OF UNION</u>				
Polygamous	1.39	1.73	1.88	1.63*
Monogamous	1.72	2.07	2.14	1.79
<u>ETHNIC GROUP</u>				
Kikuyu	1.90	2.16	2.18	2.17
Luo	1.50	1.92	1.68	0.86*
Luhya	1.67	1.99	2.44	1.88*
Kamba	1.72	1.90	1.88	1.32*
Kisii	1.47	2.01	2.43	2.00*
Meru/Embu	1.82	2.03	2.13	1.59*
Mijikenda	0.99	1.47	0.78*	1.56*
Kalenjin	1.64	1.99	1.87*	1.14*
Other	1.50	1.52	1.37*	2.21*

* Number of cases less than 25.

Table 4.9 : Percentage of women who first married at least five years before the survey who had no births in the first five years after marriage, by age at first marriage

Population	Age at first marriage			
	< 15	15-19	20-24	25+
National	18.98	11.03	10.99	16.90
<u>LEVEL OF EDUCATION</u>				
None	21.57	15.14	17.05	17.52
1-4	12.32	7.70	8.48	8.70
5+	14.17	3.76	2.02	22.73*
<u>TYPE OF PLACE OF RESIDENCE</u>				
Rural	18.99	10.87	11.15	15.67
Urban	22.92	8.91	10.71	66.67*
Metropolitan	15.00	14.36	8.93	20.00*
<u>RELIGION</u>				
Christians	17.28	8.98	8.77	16.13
Muslims	16.28	25.61	27.27*	50.00*
No Religion	37.78	26.18	31.67	8.33*
<u>TYPE OF UNION</u>				
Polygamous	24.17	15.85	17.09	12.73
Monogamous	14.54	9.23	7.25	17.33
<u>ETHNIC GROUP</u>				
Kikuyu	16.23	7.81	8.42	13.33
Luo	17.15	12.73	17.78	26.67*
Luhya	16.37	6.37	4.48	11.76*
Kamba	20.35	9.74	5.92	20.83*
Kisii	16.13	8.25	1.72	0.0
Meru/Embu	19.35	8.94	10.00	25.00*
Mijikenda	29.81	26.01	20.00*	40.00*
Kalenjin	10.94	13.20	17.07	14.29*
Other	31.03	20.81	45.24	0.0

* Number of cases less than 25.

societies, and that the higher the prevailing fertility levels the greater the reductions. Furthermore, any changes in nuptiality in such high fertility conditions can have immediate impact on the rate of population growth.

It is acknowledged that polygamy is one of the major natural fertility factors likely to affect marital fertility. Studies in Kenya (Kabwegyere and Mbula, 1979; Kabwegyere, 1977; Molnos, 1973; Mosley et al., 1981) and elsewhere (Oppong et al., 1978; Muhsam, 1956) all show lower fertility for women in polygamous unions. Some (Ohandike, 1968), however, have shown no significant difference between wives in either type of union. Caldwell (1977) quoted one study in Eastern Nigeria explaining this in terms of a high divorce rate for barren wives and considerable fertility competition between wives in polygamous marriages. Another study in Western Nigeria (Chojnacka, 1980:96) demonstrated no "consistent tendency towards higher or lower fertility between polygamous and monogamous unions". The divergencies were explained in terms of higher incidence of childlessness among polygamous wives.

Suggestions often put forward for the lower fertility among polygamous women were outlined in the previous chapter (see section on polygamy). Further, we noted in the previous chapter that the family structure in Kenya is towards nuclearization, and that polygamy is gradually on the decline. Nevertheless, it is still widely practised, accounting for about 30 per cent of all current marriages. A preliminary analysis of Kenya's fertility survey data has indicated the likelihood of a slight rise in cumulative fertility over the past two decades (Central Bureau of Statistics, 1980). By implication, it has been concluded that as African countries become industrialized and polygamous institutions become less common, fertility may rise at least in the short run (UN, 1975:86).

With that observation in mind, this analysis will attempt to evaluate the impact on fertility of type of union, particularly polygamy. And aware of the substantial differences in the prevalence of polygamy in Kenya, the analysis is done for urban and rural areas, for the Coast and non-Coast populations separately. It is also done for first, second or higher rank wives.

Furthermore, we have looked at the prevalence of primary sterility to see whether this factor causes the formation of polygamous households. Finally, age differences between spouses are analysed to examine the extent to which the factor can account for the link between polygamy and fertility. The results are given (controlling for education) for women falling in different broad age groups.

Generally, there appear to be differences in cumulative fertility between women living in monogamous and polygamous unions. The differences, however, are not substantial except in age group 35-44 (Table 4.10(a)). When the data are looked at from the point of view of the number of times married, monogamously married women who have been married only once have experienced higher fertility than their counterparts living with co-wives. The difference seems to be larger among women in the older ages over 35. Among women who have been married more often in both types of unions, those living in polygamous unions have experienced higher cumulative fertility in all but the 45+ age group. There are also consistent variations in the reproductive behaviour among women living in a similar type of union - fertility being lower for those women who have been married twice or more.

The pattern in variation in fertility in the recent past between the two types of unions, is somewhat similar to that of cumulative fertility observed above : higher fertility among monogamously married women with 0.29 more children than their counterparts living with

Table 4.10(a): Mean number of children ever born to currently married women by cohort, type of marriage and number of times married

Broad cohort	Polygamous/times union /married			Monogamous/times union /married			Total/times married	
	Married once	Married twice or more	ALL	Married once	Married twice or more	ALL	Married once	Married twice or more
<25	1.79	1.77	1.79	1.81	1.66	1.80	1.81	1.70
25-34	4.52	3.89	4.44	4.77	3.65	4.69	4.70	3.75
35-44	6.77	6.48	6.73	7.67	6.05	7.55	7.37	6.28
45+	7.64	5.49	7.36	8.82	5.86	8.52	8.35	5.69
ALL	5.00	4.75	4.97	4.86	4.15	4.81	4.90	4.42
Total number of women	1499	206	1706	3793	266	4059	5292	472

Only standardized figures (for age at first marriage) have been shown. Standardization was done following the steps outlined in Table 4.1.

Table 4.10(b) : Mean number of children born in the five years prior to the survey to women who first married at least five years previously by age cohort, type of union and number of times married

Broad age cohort	Polygamous/time union /married			Monogamous/times union /married			Total/times married		
	Married once	Married twice or more	ALL	Married once	Married twice or more	ALL	Married once	Married twice or more	Total
<25	1.78	1.16	1.70	1.98	1.66	1.95	1.93	1.50	1.88
25-34	1.70	1.39	1.66	1.90	1.41	1.86	1.85	1.40	1.81
35-44	1.13	0.93	1.14	1.41	1.19	1.39	1.32	1.05	1.30
45+	0.59	0.34	0.56	0.64	0.44	0.62	0.62	0.39	0.59
ALL	1.33	1.02	1.30	1.62	1.24	1.59	1.53	1.14	
All st. by age	1.39	1.09	1.35	1.59	1.24	1.56	1.53	1.17	
No. of women	1250	193	1443	2856	246	3102	4106	439	4545

* Only standardized figures (for age at first marriage) have been shown. Standardization was done following the steps outlined in Table 4.1.

co-wives; also more children in the recent past for those women who have been married once, regardless of their age, than those women who have been married twice or more often. Fertility has also been highest for younger women aged less than 35 (Table 4.10(b)).

The question to ask now is whether the variations in fertility observed above between the two types of unions persist when wife's education is controlled. It seems that they do, looking at data in Table 4.11. Among women with no and little education, those in monogamous unions, without exception, have higher fertility than their polygamous counterparts. The pattern among women with medium and high levels of education is difficult to establish due to the small sample size living in polygamous unions.

A further confirmation of the observed differential in fertility between polygamous and monogamous unions was done by examining the variation in cumulative fertility according to the number of wives in a union (Table 4.12(a)). The unstandardized figures generally show declining fertility as the number of wives increases in a union. The standardized figures (by duration of marriage) reveal even more markedly consistent differences. When a single group of women aged 45-50 (most of them having reached their menopause and essentially completed their child-bearing) is examined, a woman living in a monogamous union has on average 1.23 more children than a woman living with a co-wife and 0.97 more children than a woman living with two co-wives, reflecting competition among polygamous women for childbearing or self-selection of less fecund women. A similar pattern is repeated for recent fertility (Table 4.12(b)).

We now want to repeat the above analysis examining the differential pattern in fertility according to type of union looking at urban and rural populations separately, the Coast and non-Coast populations

Table 4.11 : Mean number of children ever born to currently married women by current age, level of education and type of union

Current age	No and low level of education		Medium and high level of education		Total No. of women
	Polygamous union	Monogamous union	Polygamous union	Monogamous union	
<25	1.71	1.89	1.86	1.73	1546
25-24	4.44	4.89	4.35	4.38	2227
35-44	6.70	7.59	6.87	7.30	1385
45+	7.26	8.44	-	-	605
ALL	5.22	5.43	3.81	3.42	
Total No. of women	1385	2814	320	1242	5763

* The method of standardization was similar to that followed in Table 4.1.

- No cases.

Table 4. 12(a) : Mean number of children ever born to currently married women whose first marriage is still continuing by current age and number of wives in a union

Current age	Number of wives in a union						Total No. of women
	One wife		Two wives		Three wives		
	Unst.	St.	Unst.	St.	Unst.	St.	
<25	1.80 (0.04)	1.80	1.80 (0.08)	1.81	1.64 (0.16)	1.65	1469
25-34	4.75 (0.05)	4.7	4.79 (0.11)	4.68	3.81 (0.17)	3.78	2040
35-44	7.66 (0.09)	7.71	6.84 (0.17)	6.77	6.68 (0.29)	6.68	1249
45+	8.81 (0.16)	8.80	7.58 (0.25)	7.57	7.77 (0.39)	7.83	537
ALL Unst.	4.84	4.86	5.04	4.98	4.90	4.90	5295
ALL st. by current age	5.04		4.67		4.28		
Total No. of women	3795		1061		439		5295

Figures in parentheses are estimated standard errors for each cell.

Table 4. 12(b) : Mean number of children born in the five years before the survey to women who first married at least five years previously according to current age and no. of wives in a union

Current age	No. of wives in a union				No. of women
	One	Two	Three or more	ALL	
<25	1.97	1.81	1.68	1.92	458
25-34	1.89	1.79	1.51	1.84	1869
35-44	1.42	1.19	0.97	1.32	1244
45+	0.65	0.69	0.39	0.63	536
ALL Unst.	1.62	1.42	1.13	-	
All st. by duration of marriage on selected groups	1.59	1.50	1.22	-	
Total No. of women	2857	878	372		4107

and lastly but not least examine the reproductive behaviour of first and second or higher order wives. As before we shall control age, although this time using broader groups (under 30 and over 30). In particular we want to see the effect of polygamy on marital fertility once the broader dimension of wife's characteristics are controlled.

(a) Type of union and number of times married

Whether looked at from the point of view of rural and urban residence or non-Coast and Coast populations, the variations in cumulative fertility between polygamous and monogamous unions is still very slight, especially among younger women aged under 30. The differences are slightly more apparent in the over 30 age groups where monogamous women whether married only once, married twice or more frequent in both rural and urban areas (Table 4.13(a)) and non-Coast and Coast populations (Table 4.14(a)) have experienced consistently higher cumulative fertility. Again, taking this old age group as a reference, there is a marked difference in fertility among women married only once and those married more often. This confirms our earlier observation in Table 4.10. Regardless of the type of union, those women whose first union is still continuing have a higher number of children ever born than those women whose first union was dissolved and who remarried once or several times after. Highest fertility is particularly found among those married only once and are in monogamous unions. Such a pattern observed above in cumulative fertility is repeated in the case of fertility in the recent past (Tables 4.13(b) and 4.14(b)).

(b) Type of union and education

When we now examine the differential pattern in fertility between the two types of unions controlling for education, the variation in the under 30 age groups is again insignificant but marked among the over 30s (see Tables 4.15(a) and 4.16(a)). Again, fertility is higher among

Table 4.13(a) : Mean number of children ever born to currently married women in rural and urban areas by age, type of union and the number of times married

	RURAL			URBAN		
	AGE UNDER 30					
	Married once	Married twice or more	(N)	Married once	Married twice or more	
Polygamous Unions	2.89	2.75	(615)	2.28	2.57*	(95)
Monogamous Unions	2.81	2.67	(1802)	2.45	2.70*	(348)
	AGE OVER 30					
Polygamous Unions	6.69	5.77	(943)	5.75	5.43*	(51)
Monogamous Unions	7.31	6.11	(1762)	6.43	4.21*	(153)
	ALL AGES					
Polygamous Unions	5.14	4.87	(1558)	3.48	3.62*	(146)
Monogamous Unions	5.01	4.58	(3564)	3.60	3.56	(501)

Table 4.13(b) : Mean number of children born in the past five years before the survey to married women living in rural and urban areas who have been married at least five years ago by age, type of union and the number of times married

	AGE UNDER 30					
Polygamous Unions	1.85	1.40	(405)	1.59	1.28*	(50)
Monogamous Unions	2.01	1.46	(1021)	1.98	1.67*	(178)
	AGE OVER 30					
Polygamous Unions	1.11	.90	(938)	.93	.26*	(51)
Monogamous Unions	1.41	1.17	(1751)	1.10	.48	(152)
	ALL AGES					
Polygamous Unions	1.34	1.03	(1343)	1.24	.86	(101)
Monogamous Unions	1.63	1.29	(2772)	1.59	.94	(330)

* Number of cases less than 25.

Table 4.14(a): Mean number of children ever born to currently married women among non-Coast and Coast populations by age, type of union and number of times married

	NON-COAST			COAST		
	AGE UNDER 30					
	Married once	Married twice or more	(N)	Married once	Married or more	(N)
Polygamous Unions	2.78	3.04	(620)	3.05	1.58	(90)
Monogamous Unions	2.78	2.83	(1931)	2.51	2.18	(218)
	AGE OVER 30					
Polygamous Unions	6.70	6.07	(909)	5.87	4.16	(85)
Monogamous Unions	7.13	6.15	(1770)	6.28	4.80	(144)
	ALL AGES					
Polygamous Unions	5.07	5.12	(1529)	4.34	3.14	(175)
Monogamous Unions	4.92	4.76	(3701)	3.96	3.47	(362)

Table 4.14(b): Mean number of children born in the past five years before the survey to currently married women among non-Coast and Coast populations by age, type of union and the number of times married

	AGE UNDER 30					
Polygamous Unions	1.0	1.46	(393)	1.53	.96 *	(62)
Monogamous Unions	2.02	1.54	(1071)	1.86	1.28	(128)
	AGE OVER 30					
Polygamous Unions	1.11	.97	(903)	.99	.32	(85)
Monogamous Unions	1.40	1.10	(1759)	1.22	1.08	(114)
	ALL AGES					
Polygamous Unions	1.34	1.10	(1296)	1.24	.51	(147)
Monogamous Unions	1.63	1.27	(2830)	1.52	1.17	(242)

* Number of cases less than 25.

Table 4.15(a) : Mean number of children ever born to currently married women in rural and urban areas by level of education, age and type of union

Level of education	RURAL			URBAN		
	AGE UNDER 30					
	Polygamous Unions	Monogamous Unions	(N)	Polygamous Unions	Monogamous Unions	(N)
None	2.97	2.78	(1048)	2.25	2.64	(121)
Some	2.73	2.79	(1367)	2.41	2.40	(323)
	AGE OVER 30					
None	6.46	7.21	(1787)	5.11	5.91	(104)
Some	6.85	7.23	(918)	6.28	6.56	(100)

Table 4.15(b) : Mean number of children born in the past five years before the survey to currently married women in rural and urban areas who have been married at least five years ago by level of education and type of union

	AGE UNDER 30					
None	1.75	1.80	(690)	2.14	1.82	(77)
Some	1.87	2.08	(736)	1.76	2.03	(150)
	AGE OVER 30					
None	1.04	1.30	(1776)	.60	.92	(104)
Some	1.19	1.54	(912)	.99	1.16	(99)

Table 4.16(a) : Mean number of children ever born to currently married women in non-Coast and Coast areas by level of education, and type of union (Cumulative fertility)

Level of education	NON-COAST			COAST		
	AGE UNDER 30					
	Polygamous Unions	Monogamous Unions	(N)	Polygamous Unions	Monogamous Unions	(N)
None	2.89	2.83	(960)	2.87	2.48	(210)
Some	2.70	2.74	(1592)	2.15*	2.44	(98)
	AGE OVER 30					
None	6.53	7.28	(1699)	5.46	7.79	(788)
Some	6.84	7.18	(980)	5.07*	7.16	(39)

Table 4.16(b) : Mean number of children born in the past five years before the survey to currently married women in non-Coast and Coast areas who have been married at least five years ago by level of education, age and type of union

	AGE UNDER 30					
None	1.78	1.82	(635)	1.38	1.73	(133)
Some	1.88	2.09	(829)	1.10*	1.82	(57)
	AGE OVER 30					
None	1.06	1.29	(1689)	.79	1.07	(192)
Some	1.18	1.50	(974)	.59*	1.65	(38)

* Number of cases less than 25.

monogamous women. The largest differentials between the two unions are found among the old Coast monogamously married women, in both categories of education, who on average have 2 children more than their counterparts with co-wives. This is probably a reflection of differences in the levels of sterility as we shall see later in Chapter Six. Taking women in the over 30 age group living in a similar type of union, but having different educational experience, fertility is higher among those with some education, especially in the urban sector. On the contrary, on the basis of the non-Coast and Coast classification, cumulative fertility is higher among the old Coast women with no education. A comparison of cumulative fertility between polygamous unions themselves among rural and urban women and non-Coast and Coast populations is of great interest. Polygamously married women among the rural and among the non-Coast populations (taking women over 30) have clearly a higher number of children ever born than their polygamous counterparts among the urban and the Coast populations for both categories of education. Again, this is likely to be related to the differences in sterility levels.* The differences among the monogamous women is not apparent. Much of what has been observed in cumulative fertility is again repeated in the recent fertility pattern (see Tables 4.15(b) and 4.16(b)).

(c) Number of wives in a union

Let us now examine the variation in fertility between unions with different numbers of wives. There is no clear pattern among young women under 30 although monogamous wives in rural and non-Coast categories have experienced a similar cumulative fertility with polygamous unions with two wives. So if again we take the old women over 30 as a reference, monogamous women in all the four categories of residence, have the highest cumulative fertility (Table 4.17(a) and 4.18(a)). Again the differential in fertility between rural and urban women is marked in

* An analysis of sterility is contained in Chapter 6.

each category of union. One main point of interest here is that polygamous unions with two wives and those with three wives in rural and non-Coast areas have almost identical fertility.

In all the four categories of residence looked at separately, fertility in the recent past is lowest for those polygamous unions with three or more wives - in all age groups. Similarly, monogamous wives have had, in general, the same number of children as polygamous wives with only one co-wife. The rural-urban and non-Coast - Coast differential in fertility in the recent past among older women in a similar type of union is negligible (Tables 4.17(b) and 4.18(b)).

(d) Wife order and education

When the polygamous category is now viewed in a different perspective by dividing it into groups - 'senior' and 'junior' polygamous wives* controlling for education - the results are interesting. In the survey questionnaire, if a woman lived in a polygamous union, she was asked to state how many wives her husband had and what number wife she was. When the two numbers were the same, she was considered to be the 'junior' wife.

For younger monogamous and 'junior' polygamous wives, among the rural and non-Coast populations, regardless of education, fertility is identical. In both cases it is slightly lower than that of younger 'senior' polygamous wives (Tables 4.19(a) and 4.20(a)). The pattern is different among the older age group where 'junior' and 'senior' polygamous wives with no education, among the rural and non-Coast populations, have experienced identical cumulative fertility, lower than for monogamous women. But then among those with some education, it is the monogamous wives who show no difference in reproductive behaviour from the 'senior'

* Mosley et al. (1982) used categories 'current' and 'old' polygamous wives. His terminologies assume that 'senior' or 'old' wives have been almost totally discarded.

Table 4.17(a) : Mean number of children ever born to currently married women in rural and urban areas whose first marriage is still continuing by age and number of wives in a union

RURAL				
Current age	Monogamous wives	Two wives in a union	Three or more wives in a union	(N)
Age under 30	2.82	2.99	2.55	(2254)
Age over 30	7.31	6.76	6.54	(2440)
URBAN				
Age under 30	2.40	2.18	2.55*	(419)
Age over 30	6.44	5.89	5.28*	(179)

Table 4.17(b) : Mean number of children born in the past five years before the survey to currently married women in rural and urban areas who have been continuously married for at least five years prior to the survey by age and number of wives in a union

RURAL				
Age under 30	2.00	1.93	1.68	(1294)
Age over 30	1.40	1.20	.90	(2426)
URBAN				
Age under 30	1.98	1.59	1.44*	(206)
Age over 30	1.10	1.02	0.80*	(178)

* Number of cases less than 20.

Table 4.18(a) : Mean number of children ever born to currently married women in non-Coast and Coast areas, whose first union is still continuing by age and the number of wives in a union

NON-COAST				
Current age	Monogamous wives	Two wives in a union	Three or more wives in a union	(N)
Age under 30	2.78	2.85	2.51	(2409)
Age over 30	7.31	6.72	6.68	(2440)
COAST				
Age under 30	2.52	3.11	2.56	(263)
Age over 30	6.24	6.72	4.65	(179)

Table 4.18(b): Mean number of children born in the past five years before the survey to currently married women in non-Coast and Coast areas who have been continuously married for at least five years prior to the survey by age and number of wives in a union

NON-COAST				
Age under 30	2.02	1.94	1.69	(1345)
Age over 30	1.39	1.19	.91	(2427)
COAST				
Age under 30	1.85	1.47	1.51	(156)
Age over 30	1.22	1.17	.67	(178)

Table 4.19(a) : Mean number of children ever born to currently married women in rural and urban areas by level of education, age and wife rank order

Level of Education	RURAL			
	AGE UNDER 30			
	Monogamous	Junior Polygamous Wives	Senior Polygamous Wives	(N)
None	2.78	2.81	3.10	(1048)
Some	2.7	2.61	3.07	(1368)
	AGE OVER 30			
None	7.21	6.36	6.56	(692)
Some	7.23	6.27	7.45	(251)
	URBAN			
	AGE UNDER 30			
None	2.64	2.03	2.27*	(120)
Some	6.54	5.99	4.96*	(321)
	AGE OVER 30			
None	5.87	4.72	3.80*	(102)
Some	6.54	5.99	4.96*	(98)

Table 4.19(b) : Mean number of children born in the past five years before the survey to married women in rural and urban areas who have been married at least five years ago by level of education, age and wife rank order

	RURAL			
	AGE UNDER 30			
None	1.80	1.73	1.63	(690)
Some	2.08	1.79	1.85	(732)
	AGE OVER 30			
None	1.30	1.13	0.93	(1776)
Some	1.55	1.33	1.04	(912)
	URBAN			
	AGE UNDER 30			
None	1.82	1.31	.89*	(78)
Some	2.03	1.71	1.71*	(150)
	AGE OVER 30			
None	.92	.80*	.65*	(104)
Some	1.16	.92*	1.17*	(99)

* Less than 20 cases.

Table 4.20(a) : Mean number of children ever born to currently married women in non-Coast and Coast areas by level of education, age and wife rank order

Level of education	NON-COAST			
	AGE UNDER 30			
	Monogamous Unions	Junior Polygamous Wives	Senior Polygamous Wives	(N)
None	2.83	2.74	3.41	(960)
Some	2.74	2.60	3.13	(1592)
COAST				
AGE UNDER 30				
None	2.31	2.42	2.78*	(210)
Some	2.10	2.42*	1.83*	(98)
AGE OVER 30				
None	5.79	4.52	6.70	(191)
Some	7.16	0.0	4.47*	(37)

Table 4.20(b) : Mean number of children born in the past five years before the survey to married women in non-Coast and Coast areas who have been married at least five years ago by level of education, age and wife rank order

NON-COAST				
AGE UNDER 30				
None	1.82	1.74	1.60	(635)
Some	2.09	1.81	2.12	(829)
AGE OVER 30				
None	1.29	1.16	.94	(1689)
Some	1.50	1.30	1.47	(973)
COAST				
AGE UNDER 30				
All levels of education	1.75	1.50	1.22*	(190)
AGE OVER 30				
All levels of education	1.19	.76	.82*	(39)

polygamous women. Lower fertility is found among the 'junior' polygamous wives with some education.

In Mosley's analysis (although used a different sample of women), "current" polygamous women breastfed longer and as a result had longer lactational amenorrhoea than their monogamous counterparts (Mosley et al, 1981:14). This may probably, partly explain why our results reveal relatively lower fertility among "junior" polygamous wives.

The variation in fertility among the urban and coast populations cannot be evaluated with confidence due to the small number of cases. However, it appears that urban women in monogamous unions for both age groups and levels of education, have higher cumulative fertility than either 'junior' or 'senior' polygamous wives. The variation in recent fertility among women in all the four categories of residences is slight. It is again difficult to draw any conclusions on the pattern in recent fertility owing to the small sample (Table 4.19(b) and 4.20(b)).

(e) Sterility and polygamy

Having seen the nature of the variation in fertility between the two types of unions, the question now is whether the prevalence of childlessness in Kenya is a major factor in the formation of polygamous households. This question is answered by the results presented in Table 4.21. Generally, childlessness among women in Tropical Africa is extremely low, with exception of Zaire, ranging between 4 and 5 per cent (Moss and Rathbone, 1975:90). In Kenya it ranges between 2 and 4 per cent. It is evident from Table 4.21, however, that childlessness varies greatly by type of union, rural-urban residence and between the non-Coast and Coast populations. It is higher among polygamous than monogamous unions, coast than non-Coast populations and urban than rural areas. For instance, among the currently married females aged 45-50 in the Coast area, about

Table 4.21 : Proportion childless among currently married women aged 45-50 living in rural and urban areas and among the Coast and non-Coast populations by type of union and number of times married

	Polygamous Unions					
	Coast	non-Coast	Total	Rural	Urban	Total
Once	8.33	2.49	2.82	2.43	12.50	2.80
Twice or more	33.03	3.33	3.03	3.23	50.00	3.03
Total	13.33	2.60	2.85	2.53	20.00	2.83
Monogamous Unions						
Once	0.00	1.62	1.54	1.61	0.0	1.54
Twice or more	28.57	6.45	10.53	11.76	0.0	10.53
Total	9.09	2.06	2.49	2.61	0.0	2.49

13.33 per cent were childless while the corresponding proportion among the monogamously married was only 9.09 per cent. In the urban areas, the proportion childless was about 20 per cent among polygamous women and zero among monogamous females. The differences in childlessness among females living in non-coast and rural categories between the two types of unions are less significant. The higher incidence of infertility among the coast and urban populations may be attributed to the higher incidence of venereal diseases (Guest, 1978, see also Griffith, 1963; Moss and Rathbone, 1975:91). This explanation has been found very plausible in Zaire (Romaniuk, 1968). From the point of view of type of union, therefore, it seems likely that in certain circumstances infertility may be one of the main causes of polygamy particularly among the coast and urban populations (in this context, urban is used to include metropolitan centres - Nairobi and Mombasa). Instead of getting divorced the couples may enter into polygamous unions.

When, however, the data are looked at from the point of view of the number of times a woman marries, it is evident that infertility is more frequent among women who marry more than once for both types of unions. This finding indicates that childlessness is also one of the major causes of marriage instability (high in the coast area - see chapter six), women who are unable to have children tending to marry more often in the hope of having children. In conclusion, it can be asserted that these differences in sterility partly account for the earlier observed fertility differentials by type and number of marriages.

4.3.4 Fertility and age differences between spouses for polygamous and monogamous unions

I indicated in the previous chapter that the factor of wide age difference between spouses (characteristic of polygamous unions) has often been mentioned to explain why polygamous unions have lower fertility than monogamous ones. Several studies (Hondaille, 1976; Anderson, 1975; Knodel, 1978) have shown negative effects of age of husband on a woman's fertility. The effect, however, is very small as Freedman and Casteline (1979:49) found in their study of Taiwan. The mechanisms are not clear, but some possibilities have been suggested:

- (a) physiological factors affecting male fecundity,
- (b) declining coital frequency with age,
- (c) an association of male age with other socio-economic or cultural variables which indirectly influence fertility (Freedman and Casteline, 1979:43).

In the survey questionnaire, ever married women were asked to give the ages of their husbands, but as mentioned earlier, the data on age for both wife and husband suffered from reporting error. For it is a common practice in Africa for men, particularly the old ones, to overstate their ages either for prestige or for other reasons. Consequently, the results of variation in fertility according to current age of women and age difference between themselves and their husbands, should be interpreted with great caution.

On the whole, there are very few men in Kenya married to women older than themselves (only about 1.6 per cent). Most men marry women younger than them with a difference of 0-9 years (these account for about 57.3 per cent of all currently married) or 10-19 years accounting for 28.0 per cent). A smaller proportion of men have wives 20 or more years

younger than them (accounting for 13.2 per cent) or women older than their husbands (less than 3 per cent). This latter category comprises mainly polygamous marriages. About 65.5 per cent of all marriages in this category are polygamous.

An examination of the variation in cumulative fertility among women married to husbands <10, 10-19 and 20+ years older than them (across age groups of wives) shows very slight difference. There is, however, an overall decrease in fertility among women whose husbands are over 20 or more years older than them (see both second and third rows from the bottom of Table 4.22(a)). The greatest decline in fertility is found among women aged 25-34. Similarly, the variation in recent fertility on the basis of age difference between spouses is very slight (Table 4.22(b)). It can thus be generalized that the effect of husband's age on a woman's fertility in Kenya is very slight.

When, however, the above analysis is repeated for non-Coast and Coast populations and rural and urban areas separately, by type of union controlling for age, with the view to examining the extent to which the factor of age difference between spouses can account for the link between polygamy and fertility, the results presented in Table 4.23 and 4.24 are interesting. The variation in cumulative fertility with increasing age difference of spouses, for both age groups and types of union among the rural and non-Coast populations, is very small. But the polygamous - monogamous differential in fertility is pronounced among the older women. Fertility is highest for monogamous wives. The pattern in the urban area is less clear probably owing to fewer number of cases. Among the coast populations the variations may be reflective of differences in age reporting. The pattern in recent fertility in all the four areas of residence is much the same as observed above for cumulative fertility : little variation among women in rural and non-Coast categories and an

Table 4.22(a) : Mean number of children ever born to currently married women in the whole of Kenya by current age and age differences between spouses

Current age	Differences in age between Husband and wife			
	< 10	10-19	20+	(N)
<25	1.74	1.93	1.75	1548
25-34	4.73	4.64	4.19	2229
35-44	7.31	7.14	7.31	1385
45+	8.12	7.99	7.85	609
ALL	4.86	4.98	4.63	
All standardized by age	4.90	4.87	4.67	
No. of women	3397	1613	762	5771

Table 4.22(b) : Mean number of children born in the past five years before the survey to women who have been married at least five years ago by current age and age differences between spouses

<30	1.95	1.92	1.70	1654
30+	1.31	1.21	1.17	2895
ALL	1.54	1.46	1.37	
All standardized by age	1.54	1.47	1.36	
No. of women	2632	1315	600	4549

Table 4.23(a) : Mean number of children ever born to currently married women in rural and urban areas by age, type of union and age differences between spouses

RURAL				URBAN				
AGE UNDER 30								
Type of union	Differences in age between husband and wife (years)							
	<10	10-19	20+	(N)	<10	10-19	20+	(N)
Polygamous Unions	3.10	2.86	2.75	(615)	2.15	2.65	1.94	(95)
Monogamous Unions	2.76	2.97	2.77	(1802)	2.47	2.46	2.09*	(348)
AGE OVER 30								
Polygamous Unions	6.78	6.41	6.40	(943)	5.61	6.07*	5.28*	(51)
Monogamous Unions	7.13	7.38	7.43	(1762)	6.21	6.24	5.03*	(153)

Table 4.23(b) : Mean number of children born in the past five years before the survey to currently married women in rural and urban areas who have been married at least five years ago by age, type of union and age differences between spouses

AGE UNDER 30								
Polygamous Unions	1.84	1.90	1.67	(405)	1.19*	1.80	1.34*	(50)
Monogamous Unions	1.98	1.92	1.78	(1021)	2.00	1.88	1.63*	(178)
AGE OVER 30								
Polygamous Unions	1.06	1.09	1.13	(938)	.88	.83*	.58*	(51)
Monogamous Unions	1.44	1.32	1.26	(1751)	1.09	.91	.57*	(152)

* Number of cases less than 20.

Table 4.24(a): Mean number of children ever born to currently married women among non-Coast and Coast populations by age, type of union and age difference between spouses

NON - COAST				COAST				
Type of union	AGE UNDER 30							
	Differences in age between husband and wife (years)							
	<10	10-19	20+	(N)	<10	10-19	20+	(N)
Polygamous Unions	2.96	2.85	2.63	(620)	2.92	2.59	2.89	(90)
Monogamous Unions	2.71	2.95	2.93	(1931)	2.62	2.42	1.74	(218)
AGE OVER 30								
Polygamous Unions	6.76	6.51	6.51	(909)	5.64	5.04	5.54	(85)
Monogamous Unions	7.12	7.43	7.56	(1770)	6.14	5.97	4.84*	(144)

Table 4.24(b): Mean number of children born in the past five years before the survey to currently married women among non-Coast and Coast populations by age, type of union and age differences between spouses

AGE UNDER 30								
Polygamous Unions	1.87	1.93	1.64	(393)	.99	1.44	1.65	(62)
Monogamous Unions	2.00	1.94	1.89	(1071)	1.82	1.76	1.31	(128)
AGE OVER 30								
Polygamous Unions	1.06	1.10	1.14	(903)	.70	.74	.98	(85)
Monogamous Unions	1.43	1.30	1.23	(1759)	1.16	1.19	1.42	(144)

* Number of cases less than 20.

unclear pattern among urban and Coast populations because of small sample size. The conclusion to be made from the above analysis is that the factor of age difference between husband and wife shows no link between polygamy and fertility in Kenya.

4.3.5 Concluding remarks

This analysis has confirmed, for national and sub-national groups in Kenya, that completed fertility decreases with the rise in age at first marriage. However, in a non-contraceptive society like Kenya, even women marrying between ages 20-24 end up with 7-8 children while those women marrying as late as 25 and over have an average 6 children. But this is a very small proportion of the total population. In such circumstances, and on aggregate level, age at first marriage, in itself, is not yet a significant factor in lowering fertility in Kenya.

As in most traditional societies where universal and early marriage is an important and deep-rooted cultural phenomenon, "it is very likely that a shift from early to late age at marriage only occurs within a milieu of broad social change involving changes in the role of women, education, family and economic structure and, more particularly, change in the relationship of parents and their children. These in a social structure are likely to also have implications for fertility. Thus, the often observed association between increased age at first marriage and fertility decline should be seen in this light, rather than in the terms that increased age at marriage is merely a societal strategy for reducing fertility" (Caldwell et al., 1980:40).

Type of union was seen to affect marital stability, frequency of marriage and consequently both completed and recent fertility. However, any effect on fertility by marital instability which may be a direct result of marriage type, is offset by the rapid rate of remarriage (as seen in Chapter Three). Besides, marriage disruption is selective of

women of either low fertility or who are sterile. And by far the most common cause of this in Kenya is venereal disease. The conclusion to be made from the above relationship is that after considering intervening variables like age, education, rural-urban residence, non-Coast and Coast residence, polygamous unions have lower fertility than monogamous ones. Husband's age was found to have little effect on a woman's fertility and the factor of age difference between spouses showed no link between polygamy and fertility. It is intended in the next chapter that some of the problems that have not been solved in this chapter by cross-tabulation analysis will be dealt with using a multiple regression analysis.

REFERENCES

- Abu Gamrah, H., Analytical Framework for Studies of Socio-Economic Determinants of Fertility Technical Papers, R/55, The American University in Cairo, January 1977.
- Alvin, H.J., Fertility and Economic Behaviour of Families in the Philippines, The Rand Corporation, Santa Monica, California, 1970.
- Anderson, B.A., "Male Age and Fertility Results from Ireland Prior to 1911" Population Index, 41, 1975, pp.561-77.
- Bongaarts, J., "Framework for Analysing the Proximate Determinants of Fertility", Population and Development Review, 4, 1, 1978, pp.105-32.
- Caldwell, J.C., The Socio-economic Explanation of High Fertility, Papers on the Yoruba Society of Nigeria, Changing African Family Project Series, Monograph No.1, The Australian National University, Canberra, 1976.
- Caldwell, J.C., "Towards a Restatement of Demographic Transition Theory - An Investigation of Conditions Before and at the Onset of Fertility Decline Employing Primarily African Experience and Data", in Caldwell, J.C. (ed), The Persistence of High Fertility, Family and Fertility Change Series, 1, The Australian National University, Canberra, 1977, pp.25-119.
- Caldwell, J.C. et al., Interrelationships Between Nuptiality and Fertility : The Evidence From the World Fertility Survey, World Fertility Survey Conference, Substantive Findings Session No.2, Wembley Conference Centre, London 7th to 11th July, 1980.
- Caldwell, J.C., "The Mechanisms of Demographic Change in Historic Perspective", Population Studies, 35, 1981, pp.5-27.
- Central Bureau of Statistics, Kenya Fertility Survey 1977-1978, First Report, Volume 1, Ministry of Economic Planning and Development, Nairobi, Kenya, February, 1980.
- Central Bureau of Statistics, Ministry of Economic Planning, Republic of Kenya, Population Census Reports 1962, 1969 : Also see Demographic Baseline Survey Report 1973.

- Cho et al., Differential Fertility in the United States Community and Family Study Centre, University of Chicago, 1970.
- Chojnacka, H., "Polygamy and the Rate of Population Growth", Population Studies, Vol.34 (1), March 1980 pp.91-107.
- Coale, A.J., "Factors Associated with the Development of Low Fertility. An Historic Summary", in United Nations Proceedings of the World Population Conference, Belgrade, 1965, 11, New York, 1967, pp.205-9.
- Coale, A.J., "The Decline of Fertility in Europe from the French Revolution to World War II," in Behrman, Corsa and Freedman, Fertility and Family Planning, A World View, Ann Arbor, 1969, pp.3-24.
- Coale, A.J. The Growth and Structure of Human Populations. Princeton University Press, 1972, Chapter 2.
- Cochrane, H.S. Fertility and Education, The World Bank, The John Hopkins University Press, Baltimore and London, 1979.
- Davis, K., "Institutional Patterns Favouring High Fertility in Under Developed Areas", Eugenics Quarterly, 11 (1), 1955, pp.33-9.
- Davis, K. and Blake, J., "Social Structure and Fertility : An Analytical Framework?" Economic Development and Cultural Change, 1v, 1956, pp.211-35.
- Driver, E., Differential Fertility in Central India, Princeton University Press, Princeton, New Jersey, 1963.
- Freedman, R.&Casteline, J. "Nuptiality and Fertility in Taiwan", in Ruzicka, L.T. Nuptiality and Fertility, Proceedings of a Seminar held in Bruges (Belgium), Jan.8-11,1979.
- Grifith, H.B. "Gonorrhoea and Fertility in Uganda", Eugenics Review, 55 (2), July 1963, pp.103-9.
- Guest, I., "Infertility in Africa", A Special Report People, 5(1),1978, pp.23-34.
- Hajnal, J., "European Marriage Patterns in Perspective", in Glass, D.V. and Eversley, D.C., Population in History, London, 1965, pp.101- 43.

- Heeren, H.J., "Marriage as a Demographic Variable". International Union for Scientific Study of Population (IUSSP), International Population Conference, Liege, 1973, pp.9-17.
- Henin, R.A., The Demography of Tanzania, An Analysis of the 1973 National Demographic Survey of Tanzania, VI, Dar Es Salaam, 1973.
- Henin, R.A., Unpublished Data, Population Studies and Research Institute, University of Nairobi, 1980.
- Hondaille, J., "Fécondité des Familles Souveraines du VI An XVIII Siècle : Influence de L'age du Père sur la Fécondité, Population, 31, 1976, pp.961-70.
- Kabwegyere, T. and Mbula T., A Case of the Akamba of Eastern Kenya, Changing African Project Series, Monograph No.5, The Australian National University Canberra, 1979.
- Kabwegyere, T., "Determinants of Fertility : A Discussion of Change in the Family among the Akamba of Kenya", in Caldwell, J.C. (ed.), The Persistence of High Fertility, Family and Fertility Change, Changing African Family Series, The Australian National University, Part 1, Canberra, 1977, pp.189-221.
- Knodel, J., "Natural Fertility in Pre-Industrial Germany", Population Studies, 32, 1978. pp.481-510.
- Koesoebjono, S. and Kivuto Ndeti "Some Problems of Implementation of Population Policy in Kenya", Kroniek Van Afrika, 1974/1, pp.88-98.
- Molnos, A., Cultural Source Materials for Population Planning in East Africa. Institute of African Studies, University of Nairobi, Vol.III, Nairobi, 1973.
- Matras, J. "The Social Strategy of Family Formation : Some Variations in Time and Space", Demography, 2, 1965, pp.349-62.
- Mosley, W.H. et al., Some Determinants of Marital Fertility in Kenya : A Birth Interval Analysis From the 1978 Kenya Fertility Survey, Population Studies and Research Institute and Central Bureau of Statistics, Nairobi, Kenya, 1981.

- Moss R.P., and Rathbone, R.A.R. (eds.) The Population Factor in African Studies, The Proceedings of a Conference Organized by the African Studies Association of the United Kingdom, September, 1972, University of London Press Ltd., 1975.
- Muhsam, H.V., "Fertility of Polygamous Marriages", Population Studies, 10(1), 1956, pp.3-16.
- Ohandike, P.O., "A Demographic Note", in Caldwell, J.C. and Okonjo, C. (eds.), The Populations of Tropical Africa, Longmans, Green and Co., Ltd. 1968, p.383.
- Oppong, C., et al., Marriage, Fertility and Parenthood in West Africa, Changing African Family, No.4., Parts 1 and 2, The Australian National University, Canberra, 1978.
- Pullum, T.W., Standardization, Technical Bulletins No.3/Tech. 597, World Fertility Survey, August, 1978.
- Rodriguez, G., and Cleland, J., Socio-Economic Determinants of Marital Fertility in Twenty Countries : A Multi-Variate Analysis, World Fertility Survey Conference, Wembley Conference Centre, Substantive Findings Session, No.5 London 7th-10th July, 1980.
- Romaniuk, A., "Infertility in Tropical Africa", in Caldwell, J.C., and Okongo, C. (eds.), The Population of Tropical Africa, Longmans, Green and Co. Ltd., 1968, pp.214-24.
- Ruzicka, L.T. (ed.), The Economic and Social Support for High Fertility, Family and Fertility Change, Changing African Family Project Series 2, Proceedings of the Conference held in Canberra 16-18 Nov. 1976, Canberra 1977.
- United Nations, The Determinants and Consequences of Population Trends, New Summary of Findings on Interaction of Demographic, Economic and Social Factors, 1, New York, 1973.
- United Nations, Economic Commission in Africa, Demographic Handbook for Africa, April, 1975, p.86.
- Vijay Verma Estimation and Presentation of Sampling Errors, World Fertility Survey Technical Bulletins, No.11, Jan. 1983.

CHAPTER FIVE

THE EFFECT OF SOME SOCIO-ECONOMIC VARIABLES ON MARITAL FERTILITY : A MULTIPLE LINEAR REGRESSION ANALYSIS

5.1 Introduction

In the previous chapter we examined, using cross-tabulation analysis, the effect of some socio-economic variables on fertility. This technique is a useful tool for identifying variables likely to be related to fertility, but it may be difficult to identify the nature of any interactions present between the independent variables. If there are many independent variables, then the number of the various sub-categories becomes large and cell-size constraints restrict the level of analysis.

This present chapter is a continuation of the previous one and its specific aim is to examine the effect of selected socio-economic variables influencing marital fertility using multiple linear regression analysis. This technique was applied to the data to try to overcome some of the difficulties of control and standardization which restricted the use of the cross-tabulation procedure. Multiple linear regression analysis (MRA) allows many independent variables to be included in a convenient framework. The approach used here is similar to multiple classification analysis (MCA) and is described by Little (1980). These techniques allow us to investigate both additive relationships and interactions between independent variables, and can be used to fit models involving various categorical and interscaled variables such as ethnic group, rural-urban residence, levels of education, and years since first marriage and age at first marriage respectively plus specific interactions between them.

This chapter consists of six sections. After the introduction, the statistical framework of the model is outlined in section 5.2.

This is followed in section 5.3 by a description of the main steps of the analysis. Then the effects of selected socio-economic characteristics of couples are examined in section 5.4. The effects of type of place of residence are studied first since in Kenya, as in all African countries south of the Sahara, the opportunities for education and high status employment depend much on type of place of residence and are thus indirect effects of place of residence. This is followed by an examination of the effects of the educational characteristics of the husband and the wife, the combined effects of both, and also of ethnic group. In section 5.5 the effect of the number of children born after age 30 (late fertility) is monitored using children born before age 30 as one of the independent variables. In particular, we want to identify the extent to which early fertility affects a woman's fertility behaviour in the later part of her reproductive life. This is followed by concluding remarks in section 5.6.

5.2 Conceptual Framework Of The Model

The general multiple linear regression analysis takes the form :

$$Y = b_0 + b_1 x_1 + b_2 x_2 + \dots + b_k x_k$$

where b_0 is a constant term, b_1, b_2, \dots, b_k are the regression coefficients for the independent variables and Y is the dependent variable. There are two dependent variables in this analysis : the children ever born to a woman and the children born to a woman after age 30. The independent variables are represented by x_1, x_2, \dots, x_k . In this analysis they comprise rural-urban residence, level of educational attainment, ethnic group, type of union and children born before age 30 which is used as a surrogate for early fertility. The parameters are estimated by least squares. The relative size of the estimated regression coefficients gives an indication of the strength of association between the independent and dependent variables and this can also be interpreted as partial slopes. To assess the relevance of a particular independent variable

as a predictor of fertility we compare the magnitude of the regression coefficient with that of its standard error. If the coefficient is much larger than its standard error we have some evidence of the usefulness of the independent variable as a predictor. Finally, we will assess the overall fit of the model by considering the square of the multiple correlation between the dependent and the independent variables (R^2) which measures the percentage of the total variation explained by the independent variables. The model assumes no relationship between independent variables but this is not true in real life. They are inevitably related in one way or another. In this present analysis, exploratory work using ANOVA program in SPSS suggested that interactions are not very important after controlling for other variables.

5.3 Methodology

The analysis in this chapter was restricted to ever married women aged between 30 and 50. The choice of this sample of women instead of women aged 45-49 to represent completed fertility was to overcome the problem of sample size. There were, for instance, very few women in the sample with five or more years of schooling who were rural residents. Only about 13 per cent of the women aged 30-50 had 5+ years of schooling although 34.1 per cent had some education. The restriction on marital fertility was based on the fact that in many WFS surveys the detailed interview was administered to ever married women only. The choice of the four socio-economic variables to be included in the model was based on the following criteria :

1. the variable had to show significant variation with respect to the dependent variable;
2. the variable had to be poorly correlated with the other independent variables;
- and 3. the variable had to have sufficient cases in each of its categories.

On the basis of the foregoing criteria 4 socio-economic variables were selected :

1. Type of place of residence. This variable includes two categories, rural (92.4 per cent) and urban (7.6 per cent). In the model, the variable consists of the single indicator variable URBAN, where URBAN = 1 for urban respondents and URBAN = 0 for rural respondents. The rural category was chosen as the reference category.

2. Educational attainment of spouses. The three categories of wife's level of education - no education (65.9 per cent), lower primary (21.2 per cent) and upper primary and higher education (12.9 per cent) - were represented in the model by two indicator variables (dummy variables) LT5YR and GT4YR, which take value 1 for lower primary and upper primary and higher education and zero otherwise. The reference category consists of respondents with no education. Similarly, the three categories of husband's level of education - no education (43.6 per cent), lower primary (20.6 per cent) and upper primary and higher education (35.8 per cent) - were also represented by two indicator variables in the model HEDLOWPR and HEDUPPGT, which again take the value 1 for lower primary and upper and higher education and zero otherwise, the reference category further consisting of husbands with no education.

3. Ethnic group. This variable has 9 categories - Kikuyu (25.8 per cent), Luo (18.3 per cent), Luhya (13.5 per cent), Kamba (12.9 per cent), Kisii (6.7 per cent), Meru/Embu (7.3 per cent), Mijikenda (5.2 per cent), Kalenjin (5.3 per cent), and others (5.0 per cent). These were represented in the regression model by 8 indicator or dummy variables, LUO, LUHYA, KAMBA, KISII, MERUEMBU, MJKENDA, KALENJIN and OTHER, which take value 1 if the respondent belongs to the ethnic groups Luo, Luhya, Kamba, Kisii, Meru/Embu, Mijikenda, Kalenjin or remaining

others and zero otherwise. The ethnic group, Kikuyu, was chosen as the reference category.

4. Type of union. The two categories in this variable - monogamous (66.0 per cent) and polygamous (34.0 per cent) - were represented in the regression by one dummy variable POLYGAM, which takes the value 1 for respondents living with co-wives and POLYGAM = 0 for respondents living in monogamous unions.

Two demographic variables, current age of the respondent and age at first marriage, were controlled for in the model. The three categories of age, 30-34, 35-39 and 40-50 were represented in the first part of the regression (section 5.4) by two dummy variables AGE39 and AGE50, which take the value 1 for AGE39 and AGE50 and zero otherwise. The reference category includes respondents aged 30-34. However, in section 5.5 involving analysis of late fertility as the dependent variable, current age was treated as a single continuous variable V010(in years). The initial classification of age at first marriage variable was : <15, 15-19, 20-24, and 25+ years. There is a problem in the use of this classification of age at marriage. The fertility of those women marrying after age 25 will undoubtedly be dependent on their age at the time of the survey, as the younger members of this group will have been exposed to the risk of childbirth for only a short time. To overcome this potential bias, the women who married after age 25 were further divided into two groups to make a total of five instead of four categories. One group included women married after age 25 but aged less than 35 and the other consisted of those married after age 25 but aged over 35. Thus, the five categories of the age of marriage variable were represented in the regression by four dummy variables AGMLT15 (corresponding to <15), AGMLT25 (corresponding to 20-24), AGMGT241 (corresponding to women married at over age 25 but currently aged less than 35) and AGMGT242 (corresponding to women married

at over age 25 but aged over 35). The category 15-19 was chosen as the reference category. In the second stage of the analysis (section 5.5), however, it was not necessary to subdivide the women who married after age 25. In the results, the intercept b_0 may be interpreted as the fitted mean of the dependent variable for the reference category and the b_j as the difference between this fitted mean for category b_{j+1} and the reference category. This approach is described clearly by Little (1980).

Each variable was introduced into the model as a set of dummy variables together. They were also introduced hierarchically in an attempt to preserve a casual ordering among them. Type of place of residence was introduced first since it was felt that this has a strong influence on both the educational and other socio-economic opportunities of an individual. This approach allows us to examine the effect of subsequent socio-economic variables on marital fertility free from the intervening effect of residence. More specifically, this will allow examination of fertility differentials between, for example, education categories after allowing for the fact that the least educated are more likely to live in rural areas.

As with much demographic research, our previous analysis has identified a strong relationship between fertility and female educational attainment. In this analysis, the interest is not merely to confirm further this relationship but to investigate the question raised by Rodriguez and Cleland (1980:16) as to whether the existing relationships between women's level of education and fertility persist after controlling for socio-economic status as reflected by the attributes of the husband. This led to the choice of husband's level of education as the second variable in the regression model. The next step was to examine and assess the effect of each variable when all other variables

are controlled. To facilitate easier interpretation, the results of the regression analyses are presented in the form of estimated mean number of children ever born. This was achieved by expressing the effects as deviations from the overall mean. The steps are outlined by Little (1980:53). For instance, if d_1 is the deviation from the overall mean number of children ever born for the No schooling group, then the deviations for the other educational groups are $d_1 + b_1$, $d_1 + b_2$, $d_1 + b_3$ respectively, where b_i are the regression coefficients for each level of education. In order to calculate d_1 , the fact that the average over the distribution of the factors in the sample of the category deviations is zero, is used. That is, if p_j is the (weighted) proportion of the sample in category j , then

$$0 = \sum_{j=1}^4 p_j d_j = d_1 + p_2 b_1 + p_3 b_2 + p_4 b_3,$$

and hence $d_1 = -p_2 b_1 - p_3 b_2 - p_4 b_3$.

In SPSS the means or the weighted proportion of the dummy variables (of the parent variables) are derived by specifying STATISTICS 2 after the regression card. After obtaining the deviations of each category from the overall mean, adjusted means for each category are calculated by adding the overall mean to each deviation d_i . The results of the regression are presented in Tables 5.1 to 5.11. The first row of each table gives unadjusted means and the subsequent rows present adjusted means. The last column displays the measure of the contribution of a variable to the multiple R-squared or the percentage of variation explained.

5.4 The Effect Of Selected Socio-economic Variables On Marital Fertility

5.4.1 Effect of type of place of residence

The rural-urban effect was studied by introducing variables into the regression following the steps shown in Table 5.1. The first row, corresponding to step 1, is simply the unadjusted effects or the cross-classification of mean level of children ever born by ever married women aged 30-50 residing in rural and urban areas at the time of the survey. The row for each succeeding step presents the means for each type of place of residence after controlling for other variables introduced up to that step. The last-but-one column of the table gives the overall mean level of children ever born. From this table, completed fertility is a child higher for those older women living in rural areas than for the urban residents. This replicates the finding of the previous chapter. The difference is unaffected by the introduction of controls of both demographic and socio-economic variables : current age, age at marriage, husband's level of education, wife's education and ethnic group. While the substantive explanation of this effect of type of place of residence on completed fertility may lie in the fact that there is a concentration of better educated older women who are engaged in activities outside their homes living in urban centres, it is obvious that despite the marked rural-urban differential, fertility is not necessarily significantly lower among urban women as might have been expected; for urban women have greater exposure to mass media and access to family planning services and are more likely to undergo induced abortion to facilitate their family limitation. This is, however, not the case - what this effect shows is that the urban environment has not significantly affected older women towards childbearing (see also Chapter Six). This rural-urban effect signals a warning in the first instance that the results of this regression exercise would not prove to be too good. The last column of Table 5.1

particularly shows, after controlling for residence, age and age at married, that there is no extra variation explained by including husband's educational attainment in the regression. There is also very little variation when wife's education and ethnic group are introduced.

5.4.2 Effect of educational attainment of spouses

From Table 5.1 it is evident that the inclusion of husband's education in the regression is invalid since its introduction does not result in any extra variation. We will however leave it in for use in the effect of wife's education and for the analysis of the effect on fertility of wife's and husband's education considered together. This brings us to the examination of the effect of wife's educational attainment on fertility adjusting for husband's education, age of respondent and age at marriage. The unadjusted differences between the educational categories are apparent (Table 5.2). The difference in completed fertility between uneducated women and those with upper primary and higher education is about 0.6 and is about a child higher for women with lower primary than those with upper primary and above. As expected, the effect of lower primary education is curvilinear as marital fertility is higher for lower primary education women than for uneducated women but after that fertility declines slightly. This table confirms that wife's education has a strong effect on marital fertility.

The above conclusion is further confirmed in Tables 5.3 and 5.4 when we try to examine the combined effect of both husband's and wife's level of education on completed fertility. In other words, wife's education shows larger differentials between categories than husband's education (see unadjusted effects in Tables 5.3 and 5.4). The effect of husband's education remains unaffected when residence, wife's education and ethnic group are introduced (Table 5.3). Similarly, the effect of wife's educational attainment is not affected by the addition

Table 5.1 : Effect of residence on marital fertility adjusting for other variables

<u>Step in the regression</u>	<u>Control</u>	<u>Type of place of residence</u>			<u>Added R-sq</u>
		<u>Rural</u>	<u>Urban</u>	<u>Mean</u>	
1	-	6.92	5.77	6.84	0.01
2	Age	6.91	5.97	6.84	0.09
3	Age, age at marriage	6.91	5.95	6.84	0.04
4	Age, Age at marriage, husband's education	6.91	5.91	6.84	0.00
5	Age, age at marriage, husband's education, wife's education	6.90	6.07	6.84	0.01
6	Age, age at marriage, husband's education, wife's education, ethnic group	6.90	6.07	6.84	0.02

Sample size = 3242

Percent distribution 92.4 7.6

Table 5.2 : Effect of wife's level of education on marital fertility adjusting for husband's education

<u>Step in the regression</u>	<u>Control</u>	<u>Wife's level of education</u>				<u>Added R-sq.</u>
		<u>None</u>	<u>1-4</u>	<u>5+</u>	<u>mean</u>	
1	-	6.79	7.39	6.15	6.84	0.02
2	Age	6.69	7.40	6.67	6.84	0.09
3	Age, age at marriage	6.66	7.40	6.87	6.84	0.04
4	Age, age at marriage, husband's education	6.68	7.67	6.82	6.84	0.00

Sample size = 3242

Percent distribution 65.9 21.2 12.9

Table 5.3 : Effect of husband's education on marital fertility adjusting for all other variables

<u>Step in the regression</u>	<u>Control</u>	<u>Husband's level of education</u>				<u>Added R-sq</u>
		<u>None</u>	<u>1-4</u>	<u>5+</u>	<u>Mean</u>	
1	-	6.81	7.24	6.64	6.84	0.01
2	Age	6.63	7.18	6.88	6.84	0.10
3	Age, residence	6.62	7.16	6.92	6.84	0.01
4	Age, residence, wife's education	6.67	7.15	6.86	6.84	0.01
5	Age, residence, wife's education, age at marriage	6.63	7.13	6.92	6.84	0.01
6	Age, residence, wife's education, age at marriage, ethnic group	6.72	7.07	6.86	6.84	0.02

Sample size = 3242

Percent distribution 43.6 20.6 35.8

Table 5.4 : Effect of wife's education on marital fertility adjusting for all other variables

<u>Step in the regression</u>	<u>Control</u>	<u>Wife's level of education</u>				<u>Added R-sq</u>
		<u>None</u>	<u>1-4</u>	<u>5+</u>	<u>Mean</u>	
1	-	6.79	7.39	6.15	6.84	0.02
2	Age	6.69	7.40	6.67	6.84	0.10
3	Age, residence	6.68	7.39	6.77	6.84	0.00
4	Age, residence, age at marriage	6.57	7.30	6.90	6.84	0.05
5	Age, residence, age, at marriage, husband's education	6.62	7.28	6.86	6.84	0.00
6	Age, residence, age at marriage, husband's education, ethnic group	6.66	7.23	6.82	6.84	0.02

Sample size = 3242

Percent distribution 65.9 21.2 12.9

into the model type of place of residence, husband's education and ethnic group. The analysis of Chapter 4 did not include the effect of educational level of spouses adjusting for all other socio-economic variables. The conclusion to be drawn from this section is that although wife's level of education shows greater average differentials (like rural-urban differential) and contribution to R-squared than husband's education, on balance, neither has had a significant impact on marital completed fertility after adjusting for type of place of residence and ethnic group.

5.4.3 Effect of ethnic group

This section looks at the effect of ethnic group adjusting for other variables (Table 5.5). The unadjusted effect shows highest rates for the Luhya, Kisii, Kalenjin, Kikuyu, Kamba and Luo with the Mijikenda having the lowest fertility. The same pattern persists even after adjusting for residence and education. The adjusted rates change very little indicating that ethnic group does not explain much of the differential fertility.

5.5 The Effect Of Selected Socio-economic Variables On The Number Of Children Born After Age 30 (Late Fertility)

This section is intended to examine the relationship between late marital fertility (children born after age 30) and some socio-economic variables together with early fertility (i.e. children born before age 30) as one of the independent variables. In particular, we want to see how much fertility in the early part of life (first 30 years) has any bearing on the number of children a woman produces after age 30. The results are presented in Tables 5.6 to 5.11.

Type of place of residence affects late fertility in the same way as completed fertility (Table 5.6). The unadjusted effect shows rural women having, on average, a child more than urban women. After adjusting

Table 5.5 : Effect of ethnic group on marital fertility adjusted for other variables

Step in the regression	Control	E t h n i c G r o u p									Added R-sq
		Kikuyu	Luo	Luhya	Kamba	Kisii	Meru/ Embu	Mijik- enda	Kalen- jin	Other	
1	-	6.90	6.72	7.34	6.77	7.33	6.48	5.76	7.13	5.76	0.02
2	Age	6.98	7.01	6.93	7.02	6.95	7.01	7.04	6.98	7.04	0.10
3	Age, residence	6.89	6.72	7.24	6.52	7.19	6.35	5.77	6.83	5.77	0.00
4	Age, residence, wife's education	6.96	6.84	7.34	6.64	7.33	6.47	5.97	7.21	5.98	0.01
5	Age, residence, wife's education, age at marriage	7.12	6.73	7.26	6.76	7.45	6.61	5.83	6.20	6.04	0.05
Sample size = 3242											
Percent distribution		25.8	18.3	13.5	12.9	6.7	7.3	5.2	5.3	5.0	

Table 5.6 : Effect of residence on the number of children born after age 30 adjusting for other variables

Step in the regression	Control	Residence		Mean	Added R-sq
		Rural	Urban		
1	-	2.56	1.33	2.28	0.02
2	Current age	2.33	1.62	2.28	0.38
3	Current age, age at first marriage	2.33	1.63	2.28	0.01
4	Current age, age at first marriage, husband's level of education	2.33	1.63	2.28	0.003
5	Current age, age at first marriage, husband's level of education, wife's level of education	2.33	1.68	2.28	0.004
6	Current age, age at first marriage, husband's level of education, wife's level of education, ethnic group	2.28	1.71	2.28	0.003
7	Current age, age at first marriage, husband's level of education, wife's level of education, ethnic group, children born before age 30	2.32	1.73	2.28	0.008
Sample size = 3242					
Percent distribution		92.4	7.6		

Table 5.7 : Effect of wife's level of education on the number of children born after age 30 adjusting for residence, children born before age 30 and husband's level of education

Step in the regression	Control	Wife' level of education			Mean	Added R-sq
		None	1-4	5+		
1	-	2.38	2.50	1.39	2.28	0.03
2	Current age	2.23	2.55	2.07	2.28	0.37
3	Current age, residence	2.31	2.62	1.53	2.28	0.01
4	Current age, residence, age at first marriage	2.24	2.53	2.05	2.28	0.01
5	Current age, residence, age at first marriage, children born before age 30	2.26	2.49	2.02	2.28	0.01
6	Current age, residence, age at first marriage, children born before age 30, husband's level of education	2.27	2.47	1.99	2.28	0.002
Sample size = 3242						
Percent distribution		65.9	21.2	12.9		

for both wife's and husband's education, ethnic group and children born after age 30, the rural-urban differential is reduced to about 0.6 child. The addition of children born before age 30 into the model does not seem to make much difference to the results.

The difference in late fertility between wife's education categories is bigger between women with lower primary education and those with upper primary and higher education than between women with no schooling and those with lower primary education. In both cases the differential in late fertility reduced after controlling for demographic variables and for other socio-economic factors. The contribution of husband's education is again negligible (Table 5.7).

When the effect of education is examined further from the point of view of the combined effect of both husband's and wife's education, the pattern is again similar to that in sub-section 5.4.2. The unadjusted rates for husband's education are higher for women married to husbands with lower primary schooling than for those whose husbands who have either no schooling or upper primary and higher level of education (Table 5.8). This pattern persists even after adjusting for other variables. The impact of wife's educational attainment is more obvious, the difference in late marital fertility between the no education category being about a child more than that of the 5 and more years of education category. In both cases of husband's and wife's level of education, fertility for women with 5 and more years of education increases after adjusting for other variables. The increase is bigger in the case of wife's education. Also, the difference in fertility between education categories (especially for wife's education) is reduced considerably reflecting the greater impact of wife's educational attainment as compared to husband's education (Table 5.9). But the point to be made from Tables 5.8 and 5.9 is that although the effect of wife's educational attainment is higher than that

Table 5.8 : Effect of husband's level of education on the number of children born after age 30 adjusting for all other variables

Step in the regression	Control	Husband's level of education				Added R-sq
		None	1-4 yrs.	5+ yrs.	Mean	
1	-	2.42	2.53	1.96	2.28	0.01
2	Current age	2.16	2.46	2.32	2.28	0.38
3	Current age, residence	2.15	2.44	2.34	2.28	0.01
4	Current age, residence, wife's level of education	2.15	2.43	2.34	2.28	0.004
5	Current age, residence, wife's level of education, ethnic group	2.17	2.42	2.33	2.28	0.005
6	Current age, residence, wife's level of education, ethnic group, age at first marriage	2.18	2.43	2.31	2.28	0.01
7	Current age, residence, wife's level of education, ethnic agroup, age at first marriage, children born before age 30	2.18	2.42	2.31	2.28	0.01

Sample size = 3242

Percent distribution

Table 5.9 : Effect of wife's level of education on the number of children born after age 30 adjusting for all other variables

Step in the regression	Control	Wife's level of education				Added R-sq
		None	1-4	5+	Mean	
1	-	2.38	2.50	1.38	2.28	0.03
2	Current age	2.23	2.55	2.07	2.28	0.37
3	Current age, residence	2.31	2.62	1.53	2.28	0.01
4	Current age, residence, ethnic group	2.24	2.49	2.10	2.28	0.01
5	Current age, residence, ethnic group, age at first marriage	2.26	2.50	2.03	2.28	0.01
6	Current age, residence, ethnic group, age at first marriage, children born before age 30	2.27	2.47	2.00	2.28	0.01
7	Current age, residence, ethnic group, age at first marriage, children born before age 30, husband's level of education	2.28	2.46	1.98	2.28	0.00

Sample size = 3242

Percent distribution

65.9 21.2 12.9

Table 5.10

Effect of ethnic group on the number of children born after age 30 adjusting for other variables

Step in the regression	E t h n i c g r o u p										Added R-sq
	Control	Kikuyu	Luo	Luhya	Kamba	Kisii	Meru/ Embu	Mijik- enda	Kalen- jin	Other	
1	-	2.35	2.20	1.57	2.48	3.06	2.20	1.80	2.62	1.77	0.01
2	Current age	2.43	2.50	2.20	2.22	2.83	2.27	1.86	2.69	1.89	0.39
3	Current age, residence	2.53	2.14	2.29	2.28	2.28	2.31	2.02	2.02	2.03	0.01
4	Current age, residence, wife's level of education	2.49	2.12	2.26	2.26	2.18	2.28	2.01	2.21	2.04	0.003
5	Current age, residence, wife's level of education, age at marriage	2.41	2.15	2.27	2.20	2.20	2.21	2.04	3.06	1.99	0.01
6	Current age, residence, wife's level of education, age at marriage, children born before age 30.	2.43	2.19	2.27	2.27	2.07	2.26	2.14	2.54	2.08	0.01
Sample size = 3242											
Percent distribution		25.8	18.3	13.5	12.9	6.7	7.3	5.2	5.3	5.0	

Table 5.11 : Effect of type of marriage on the number of children born after age 30 adjusting for other variables

<u>Step in the regression</u>	<u>Control</u>	<u>Type of union</u>		<u>Mean</u>	<u>Added R-sq</u>
		<u>Polygamy</u>	<u>Monogamy</u>		
1	-	2.21	2.39	2.33	0.002
2	Current age	2.05	2.47	2.33	0.43
3	Current age, residence	2.04	2.48	2.33	0.01
4	Current age, residence, wife's level of education	2.05	2.47	2.33	0.004
5	Current age, residence, wife's level of education, ethnic group	2.10	2.45	2.33	0.01
6	Current age, residence, wife's level of education, ethnic group, age at marriage	2.10	2.45	2.33	0.01
7	Current age, residence, wife's level of education, ethnic group, age at marriage, children born before age 30	2.11	2.44	2.33	0.004

Sample size = 2912

Percent distribution 34,0 66,0

of husband's, the effect of both wife's and husband's education has had little impact on late fertility at an aggregate level.

Turning to the effects of ethnic group (Table 5.10), the unadjusted rates show that the Kisii, Kalenjin, Kamba and Kikuyu experience the highest late fertility, the Luhya and Mijikenda the lowest, while the Luo and Meru/Embu have intermediate levels, although the difference between the highest and the lowest is about a child on average. After adjusting for other factors, however, the differences more or less disappear, indicating that the observed variations in fertility between ethnic groups may be attributed to the differences in the distribution of modernizing factors of education and urbanity.

When we now examine the effect of type of union (Table 5.11), it is noted that there exists some variation in fertility in both unadjusted and adjusted rates. The magnitude of the variation, however, is not significant between the two types of unions.

5.6 Concluding Remarks

In summary, we have confirmed that the two factors of modernization - education and urbanity - have had a strong effect on fertility. Wife's education has had a stronger impact than that of the husband. However, the proportion among the older women with some education is only 34.1 per cent. The proportion living in urban areas is much smaller, 7.6 per cent. Education, too, is not evenly distributed across categories. Only about 13 per cent of the older women have had five and more years of schooling. It is not, therefore, surprising that in general terms the level of fertility remains high even after adjusting for all other factors. In other words both education and urbanization have not had significant impact on the overall level of fertility, particularly among the older generation. As stated earlier in the text

(see Chapters 3 and 4), the modernizing impact has affected the younger population much more than their parents whose reproductive behaviour remained more or less unaffected. This is confirmed by the contribution of each factor to the R-squared in the model, an indication that other unmeasured factors are clearly operating, as we shall see in the next chapter dealing with Bongaarts' proximate determinants of marital fertility.

References

- Cleland, J.G., et al., Illustrative Analysis : Socio-Economic Determinants of Contraceptive Use in Thailand, International Statistical Institute, World Fertility Survey, London, Scientific Reports, Number 5, August 1979.
- Little, R.J.A., Linear Models For WFS Data, International Statistical Institute, World Fertility Survey, London, Technical Bulletins, No.9, June 1980.
- Pullum T.W., Standardization, International Statistical Institute, World Fertility Survey, London, Technical Bulletins, No.3, August 1978.
- Rodriguez, G., and Cleland, J., Socio-Economic Determinants of Marital Fertility In Twenty Countries : A Multivariate Analysis, International Statistical Institute, World Fertility Survey Conference, Wembley Conference Centre, London 7th to 11th July 1980, Substantive Findings Session No.5,1980.
- Sathar, Z.A., Education and Fertility in Pakistan, Ph.D. Thesis, London School of Hygiene and Tropical Medicine, London, June 1982.
- Tufte, E.R., Data Analysis For Politics and Policy, Foundations of Modern Political Science Series, Prentice-Hall, INC; Englewood Cliffs, N.J., 1974, pp.135- 63.

CHAPTER SIX

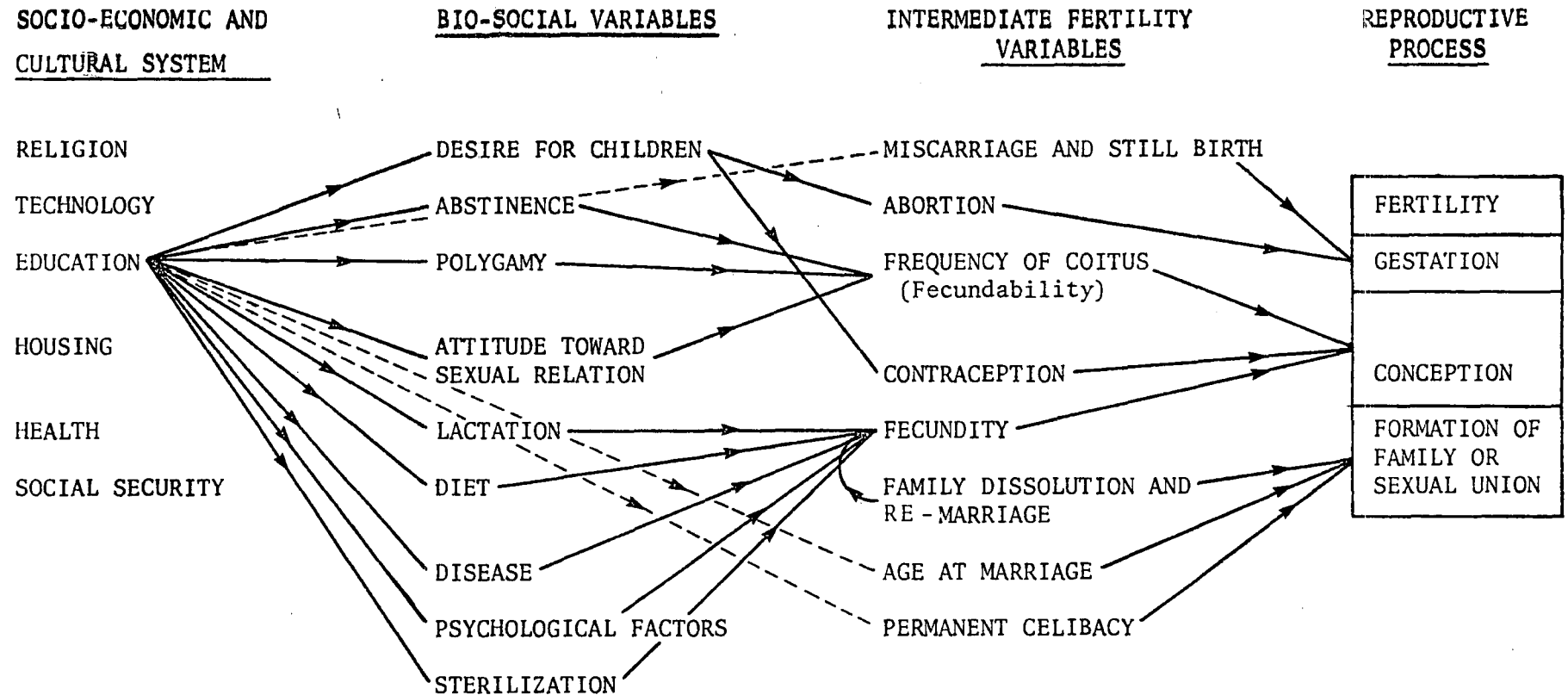
PROXIMATE DETERMINANTS OF FERTILITY: AN APPLICATION OF BONGAARTS MODEL TO GROUP DATA

6.1 Introduction

The objective of this chapter is to quantify the effects of the proximate determinants of Kenyan fertility and to find out whether we can account for the level of fertility, both at national and sub-national level, by three intermediate fertility variables, using the model developed by Bongaarts on a mixture of 30 diverse populations (recently revised to include 41 populations) (see Bongaarts, 1982). The model was developed in an attempt to understand the mechanism through which the bio-social and socio-economic factors (the indirect determinants of fertility) affect the fertility level in a population through the biological and behavioural variables, the so-called intermediate fertility variables (the direct determinants of fertility). The systematic analysis of the intermediate variables was pioneered in the fifties by Davis and Blake (1956:211). They proposed eleven variables through which the various socio-economic and bio-social factors operate to affect fertility. Following this pioneering work, Bongaarts modified this model and introduced his own based on eight variables (Bongaarts, 1978:105-132). The linkage between fertility and the other variables is demonstrated in *Figure 12*. Bongaarts demonstrated, as we shall see later, that differences in fertility among and between populations are mainly a function of the variations in four intermediate fertility variables, namely proportion married among females, contraceptive use and effectiveness, prevalence of induced abortion and duration of postpartum infecundability.

In quantifying and estimating the effects of each of the above

Figure 12 : Linkages between fertility and the socio-economic and cultural system through bio-social and intermediate variables



Source : Abu Gamrah Hamid, Analytical Framework for Studies of Socio-Economic Determinants of Fertility, Technical Paper R/55, Jan. 1977.

intermediate variables, Bongaarts made certain assumptions, basically that in the absence of lactation and contraception there is an average birth interval of about 20 months, of which about seven months represent the interval of exposure (i.e. the menstruating interval). In the absence of all determinants, the Bongaarts model is based on the premise that potential fertility of populations would vary within a narrow range of 13.5 to 17.5 births per woman, with an average of 15.3.

Although the model has been validated on a large number of national populations, there is much less experience in using it to analyse sub-national population differentials. For that reason, efforts are made in this chapter to adopt Bongaarts' analytical framework in analysing the proximate determinants of total marital fertility in Kenya as a whole and examining the extent to which the intermediate variables can account for fertility differences among some selected sub-groups according to the level of education, type of place of residence, religious affiliation, ethnic group and region of residence.

6.2 Conceptual Framework

Seven intermediate variables were considered in Bongaarts framework (Bongaarts, 1980:2) :

1. Proportion married among all females
2. Prevalence of induced abortion
3. Contraceptive use and effectiveness
4. Duration of postpartum infecundability
5. Fecundability (i.e. probability of conception - normally assumed to reflect frequency of intercourse).
6. Spontaneous intra-uterine mortality rate
7. Prevalence of permanent sterility.

In the first variable, Bongaarts defines marriage to include consensual unions. This variable measures the extent to which women are exposed to regular intercourse. The second and third variables measure the prevalence of deliberate marital fertility control. The last four variables determine the level of natural fertility (Bongaarts, 1978:107).

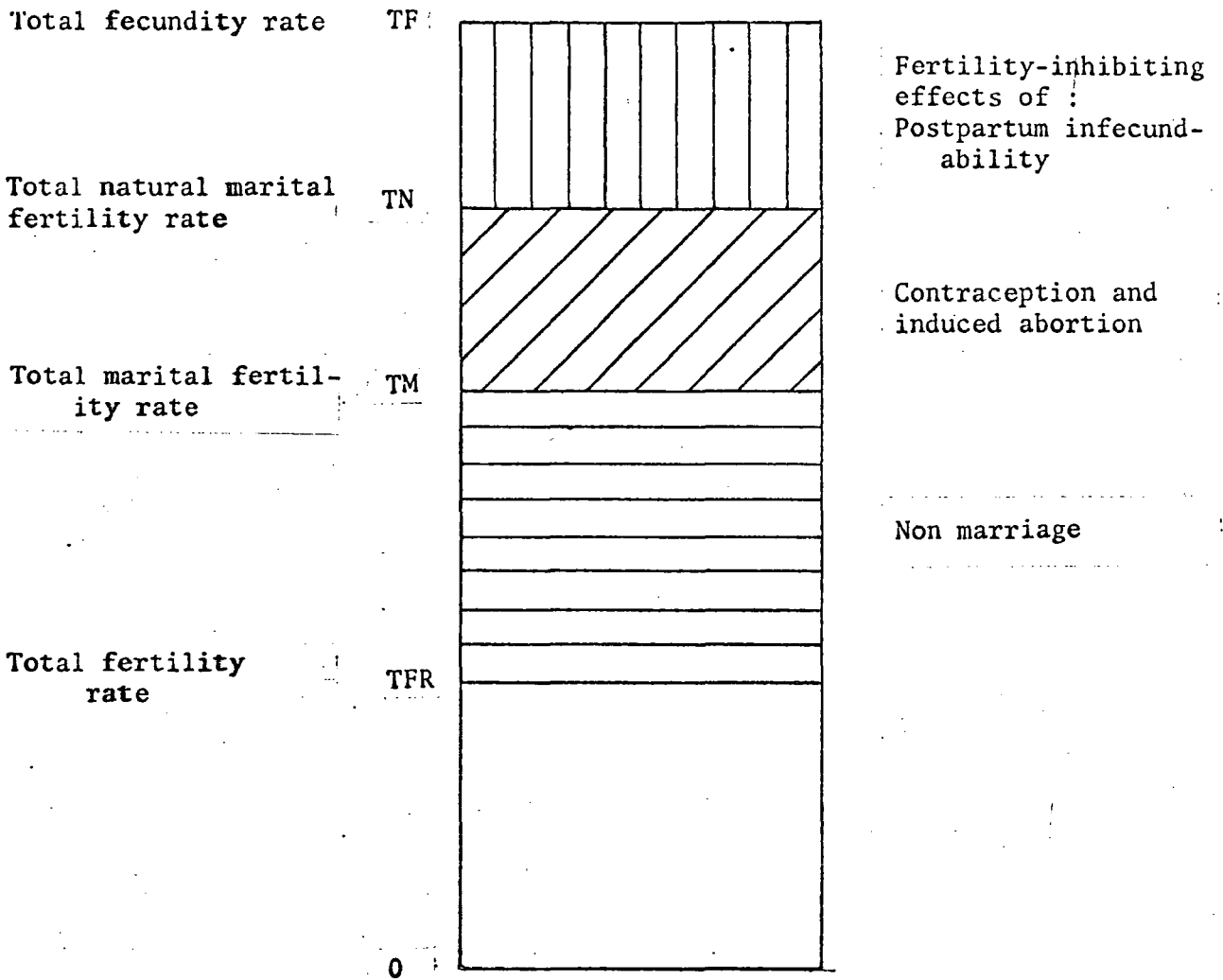
The above framework has two components:

1. The equations that express the effect on fertility of the first four determinants (which Bongaarts considered to exert strong effect on fertility) in the model;
2. The assumption that the remaining proximate determinants vary little between populations. Evidence was produced that foetal loss, sterility and fecundability do not vary sufficiently between most populations to account in any appreciable way for differences in fertility levels.

When the model estimates of TFR do not correspond to the observed TFR, either component 1 or component 2 may be faulty.

Figure 5 represents the suppressing effects of the first four intermediate variables. When the influence of all four are present, as in the real world, fertility will be observed at a level of Total Fertility Rate (TFR). When the suppressing effect of non-marriage on fertility is removed - i.e. all women enter marriage at age 15 and marriages are stable - fertility will rise to a level of Total Marital Fertility (TM). Eliminating further the suppressing impact of contraception and induced abortion - i.e. they are not practised in a population - fertility will rise further to a level of Total Natural Fertility Rate (TN). And removing the effect of postpartum infecundability, fertility reaches the maximum level of Total Fecundity Rate, TF.

Figure 5 : Relations between the fertility-inhibiting effects of intermediate fertility variables and various measures of fertility



Source : Bongaarts, John "The fertility inhibiting effects of the intermediate fertility variables." Paper presented for the IUSSP and WFS seminars on the analysis of maternity histories, London, April 1980, p.6.

Bongaarts measured the relationship between the four intermediate fertility variables and fertility by four indexes: the index of proportion married, C_m ; the index of contraception, C_c ; the index of induced abortion, C_a ; and the index of postpartum infecundability, C_i . Each of the indexes has a value between 0 and 1. The relationship between the four indexes of the intermediate fertility variables and the total fertility rates was summarized as :

$$TFR = C_m \times C_c \times C_a \times C_i \times TF$$

6.3 Methodology

The model was applied to the Kenya data following four steps as suggested by Bongaarts:

- (a) the estimation of the intermediate fertility variables,
- (b) the estimation of the indexes,
- (c) the estimation of the total fertility rates and,
- (d) a comparison of the model estimates of the total fertility rates with the observed total fertility rates.

In estimating the total fertility rates, only legitimate births (births by currently married women aged 15-49 but based on all women, both married and unmarried, as suggested by Bongaarts) were used. Following Potter's (1980) proposal, births in the last 24 instead of 12 months prior to the survey were used to calculate the schedule of age-specific fertility rates, owing to the limited number of respondents in some categories of the population. Table 6.1 shows the distribution of respondents, births and proportions by selected sub-groups of population. Induced abortions were assumed to be absent because of lack of evidence to the contrary. Women had been asked in the survey whether they had had any pregnancies that ended in abortion (whether induced or spontaneous). About 6 per cent of the total pregnancies were reported to have ended in

Table 6.1 : Distribution of respondents to the Kenyan fertility survey and births in the past 12 months and 24 months by selected sub-populations

Population	Respondents		Births in months 1-12		Births in months 1-24	
	Number	Proportion	Number	Proportion	Number	Proportion
EDUCATION						
None	3,579	0.44	798	0.46	1,589	0.47
1-4	1,489	0.18	357	0.20	688	0.20
5-8	2,214	0.27	463	0.26	884	0.26
9+	810	0.10	130	0.07	243	0.07
RESIDENCE						
Rural	7,093	0.88	1,553	0.89	3,072	0.89
Urban	367	0.05	77	0.04	147	0.04
Metropolitan	632	0.08	120	0.07	226	0.07
REGION						
Catholics	2,931	0.36	648	0.37	1,238	0.36
Protestants & other churches	4,294	0.53	947	0.54	1,812	0.53
Muslims	392	0.05	66	0.04	152	0.04
Other	467	0.06	88	0.05	190	0.06
ETHNIC GROUP						
Kikuyu	2,007	0.25	439	0.25	836	0.25
Luo	1,421	0.18	303	0.17	604	0.18
Luhya	1,191	0.15	285	0.16	555	0.16
Kamba	980	0.12	180	0.10	353	0.10
Kisii	547	0.07	137	0.08	253	0.07
Meru/Embu	586	0.07	113	0.06	219	0.06
Mijikenda	424	0.05	78	0.04	149	0.04
Kalenjin	543	0.07	151	0.09	268	0.08
Other	394	0.05	63	0.04	168	0.05
REGION						
Nairobi	434	0.05	82	0.05	155	0.05
Central	1,232	0.15	260	0.15	494	0.15
Coast	680	0.08	123	0.07	249	0.07
Nyanza	1,774	0.22	397	0.23	775	0.23
Rift	1,479	0.18	359	0.21	700	0.21
Western	1,082	0.13	253	0.14	495	0.14
Eastern and N. Eastern	1,392	0.17	266	0.15	519	0.15

Table 6.2: Percentages of all pregnancies ending in abortion or still births by age, level of education and type of place of residence, Kenya 1977/78

Level of education	Type of Residence			
	Rural	Urban	Metropolitan	All
<u>Age < 30</u>				
None	5.27	3.64	4.95	5.19
1-4	4.97	6.63	11.50	5.42
5-8	4.03	4.81	6.05	4.30
9+	6.08	5.10	5.73	5.87
All	4.88	4.89	6.27	5.00
<u>Age 30+</u>				
None	4.70	5.83	9.27	4.87
1-4	4.49	4.44	4.80	4.50
5-8	4.88	3.57	6.18	4.90
9+	7.68	4.03	11.58	8.27
All	4.69	4.86	7.92	4.82

abortion or still births. This under-reporting is a common feature of fertility surveys. The highest levels of pregnancy loss reported by better educated and metropolitan women as shown in Table 6.2, may indicate the practice of induced abortion among these groups. Another equally plausible explanation is that these groups may be better at reporting miscarriages. Postpartum abstinence (associated with index 4 above) can be ignored as an appreciable factor in Kenya. The mean duration of abstinence for majority of women is 6 months (Central Bureau of Statistics, 1980). The Kenyan Fertility Survey also collected data on temporary separations, but findings indicated that this factor can also be ignored. The mean length of temporary absence for the closed interval is only 0.6 months (Central Bureau of Statistics, 1980).

Data on the natural fertility factors (the remaining three variables) considered less important by Bongaarts, were available, but not used in this analysis for the reasons given by Bongaarts (Bongaarts, 1980:3). Fecundability, for instance, can be estimated either directly from data on the last closed and open interval or indirectly through Mosley's model (Mosley et al., 1982), and so can sterility. The index of fertile period (this is not among the list of variables considered by Bongaarts, but it is implicit in the model) can be derived from the Kenyan Fertility Survey data on age at menarche and menopause, although their reliability is likely to be low. Primary sterility was found to be very insignificant as a fertility variable among Kenyan women; about 97 per cent of all the women interviewed had had at least one pregnancy (Central Bureau of Statistics, 1980; See also section 6.5 on sterility). Mosley's recent analysis found higher secondary sterility (Mosley et al., 1982) than would be expected in a healthy population.

The duration of breastfeeding and amenorrhoea from which the indexes of postpartum infecundability were estimated were derived using the

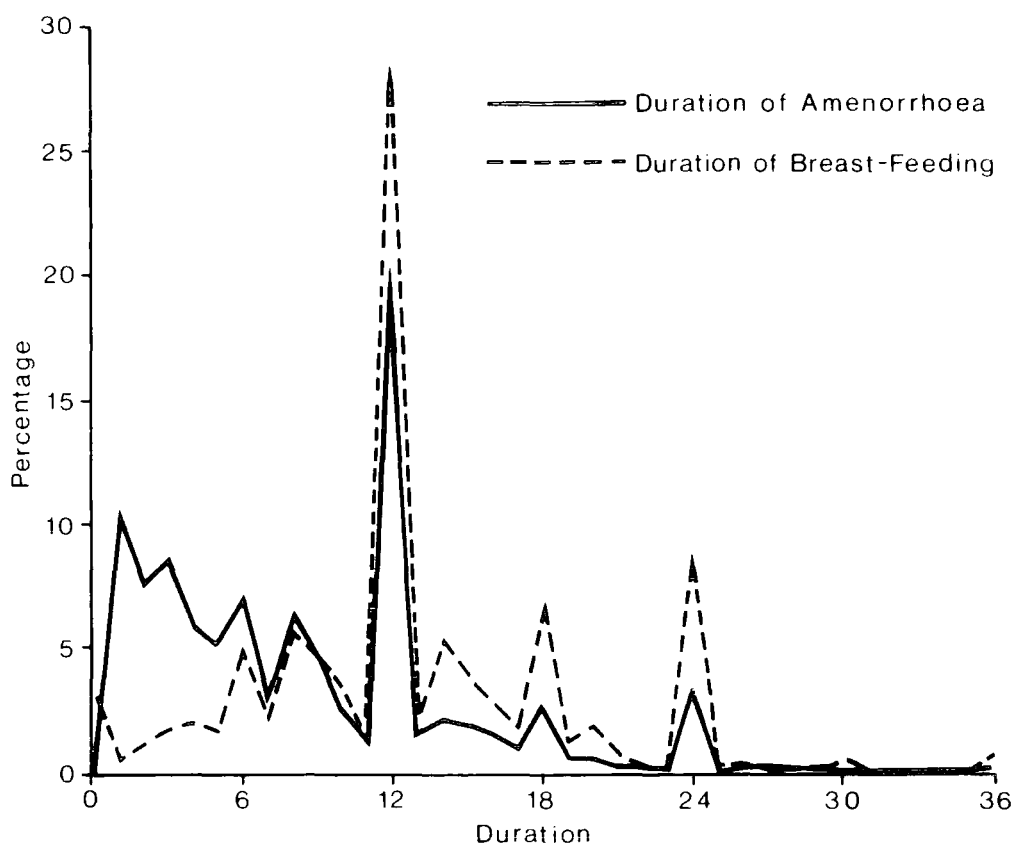
'current status' technique. This method requires the distribution of women by months since the last-but-one live birth, months since last live birth and number still breastfeeding, or amenorrhoeic by months since last live birth. From the data the median duration of breastfeeding and amenorrhoea (i.e. the point at which 50 per cent of all recent births have been weaned and the point at which menstruation has been resumed in 50 per cent of cases) can be derived. In Section 5 of the survey questionnaire information on breastfeeding and amenorrhoea was collected with regard to the last closed pregnancy interval (i.e. the time between the penultimate and the last pregnancy) and to the open pregnancy interval (i.e. the time since the last pregnancy). Data on the open interval were restricted to ever-married women with at least one pregnancy who are not currently pregnant; and data on the closed interval to ever-married women with two or more pregnancies (including any current pregnancy). These data suffered from strong preference for round figures (6, 12, 18, 24 and 30) with the majority of women reporting a duration of 12 months (Figure 6).

Table 6.3 compares estimates of median duration of amenorrhoea (using current status method) and those derived directly from data in the last closed interval. The length of postpartum amenorrhoea increases slightly with age (Central Bureau of Statistics, 1980) but decreases drastically with education and rural/urban residence. The Mijikenda, muslim, Coast, and Nairobi populations reported much shorter durations compared to other sub-groups. These populations, with exceptions of Nairobi, are highly overlapping.

The major problem in the 'current status' method is that there may be erratic fluctuations in current rates pertaining to independent single month durations. This problem was, however, overcome by using three months interval suggested by Ferry and Smith (1982).

Figure 6

PERCENT DISTRIBUTION OF WOMEN ACCORDING TO DURATION OF BREAST-FEEDING AND OF AMENORRHOEA IN LAST CLOSED INTERVAL



Source: Central Bureau of Statistics, Kenya Fertility Survey 1977/78, First Report, vol. 1 1980 p. 150

Table 6.3: Duration of postpartum infecundability : A comparison of current status medians with medians derived from the last closed interval

	Current Status Medians (months)	Medians derived from the closed interval (months)
<u>POPULATION</u>		
National	10.49	8.39
<u>LEVEL OF EDUCATION</u>		
None	12.43	8.80
1-4	10.31	9.19
5-8	7.77	7.07
9+	6.36	3.89
<u>TYPE OF PLACE OF RESIDENCE</u>		
Rural	11.11	8.69
Urban	6.07	5.19
Metropolitan.	6.69	4.54
<u>ETHNIC GROUP</u>		
Kikuyu	10.50	8.16
Luo	11.30	8.46
Luhya	9.58	8.79
Kamba	9.26	8.62
Kisii	12.80	11.11
Meru/Embu	9.55	8.80
Mijikenda	15.30	5.30
Kalenjin	8.55	6.82
<u>RELIGION</u>		
Catholics	10.54	8.78
Protestants & other churches	10.35	8.24
Muslim	7.37	6.63
<u>REGION OF RESIDENCE</u>		
Nairobi	6.36	4.64
Central	11.34	8.16
Coast	9.96	6.19
Nyanza	12.12	8.97
Rift	9.73	8.48
Western	9.56	9.07
Eastern & N.Eastern	9.75	8.71

6.4 Proximate Determinants of Fertility

From the observations in Section 6.3, this analysis will consider only 3 intermediate fertility variables, namely the proportion married, contraception and postpartum infecundability. The indexes for these variables were estimated using the formulae suggested by Bongaarts :

6.4.1 Index of proportion married

This index was estimated using the formula:

$$C_m = \frac{TFR}{TM} = \frac{\sum f(a)}{g(a) = \sum f(a)/m(a)}$$

where $f(a)$ is the schedule of the age-specific fertility rates, $m(a)$ is the proportion currently married among all females by age; and $g(a)$ denotes the age-specific marital fertility rate. Bongaarts estimated the value for the age specific marital fertility rate, $g(a)$ for the age group 15-19 as $g(15-19) = 0.75 \times g(20-24)$. The direct estimate $f(15-19)/m(15-19)$ tends to be unreliable particularly in population with low values of $m(15-19)$ (Bongaarts, 1980). The national estimated values for $f(a)$ and $m(a)$ are given in Table 6.4.

6.4.2 Index of contraception

This index was estimated using the formula:

$$C_c = 1 - s \times e \times u$$

The component u represents the average age specific use rates; s stands for the sterility correction factor and is constant with a value of 1.1 (for developing countries); e stands for the use effectiveness of contraception. The effectiveness levels for developing countries are given by Bongaarts as:

Sterilization	IUD	PILL	Other
(1.0)	(0.95)	(0.90)	(0.70)

Estimation of the components of the formula for the index of contraception

component 'e' (Average use effectiveness of Contraception)

<u>Contraception type</u> 1	<u>use effectiveness</u> 2	<u>current uses</u> 3	<u>4=2x3</u>
Sterilization (females)	1.0	57	57.00
IUD	0.95	38	37.05
PILL	0.90	115	103.50
OTHER	(0.70)	179	124.60
		<u>N = 389</u>	<u>Total = 321.90</u>

$$\text{Therefore, } e = \frac{321.90}{389} = 0.827$$

It can be noted from the above figures that contraceptive use is at very low levels in Kenya. The figure of 389 current users among married women represent about 7 per cent, and about 6 per cent among all currently married and ever-married women respectively. The most popular method is the pill.

<u>AGE</u>	<u>Current users among married women</u>	<u>Currently married</u>	<u>Proportion of age - specific use rates</u>
15-19	13	498	.026
20-24	59	1050	.056
25-29	80	1311	.061
30-34	95	918	.103
35-39	56	846	.066
40-44	46	536	.085
45-49	36	545	.066
	<u>389</u>		<u>.463</u> ÷ 7

$$\text{Therefore, } u = .066$$

Thus for Kenya 1977/78, $u = .066$, $e = .827$ and $Cc = .940$

Table 6.4 : The national estimates of the schedule of age-specific fertility, age-specific marital fertility rate and the index of proportion married

<u>Current age</u>	<u>f(a)</u>	<u>m(a)</u>	<u>g(a) = f(a)/m(a)</u>
15-19	.102	.261	.311
20-24	.304	.732	.415
25-29	.341	.886	.385
30-34	.277	.908	.305
35-39	.227	.915	.248
40-44	.122	.878	.139
45-49	.071	.846	.084
	<hr/>		<hr/>
	1.445x5		1.889x5

$$\underline{\text{TFR}} = 7.225$$

$$\underline{\text{TM}} = 9.443$$

$$C_m = \frac{\text{TFR}}{\text{TM}} = \frac{7.225}{9.443} = .765$$

6.4.3 Index of postpartum infecundability

The coefficient for postpartum infecundability (lactational amenorrhoea) for measuring the effect of breastfeeding on fertility was estimated using the formula:

$$C_i = \frac{20}{18.5+i}$$

where i represents median duration of postpartum infecundability. In Kenya the duration of postpartum infecundability for married women measured by duration of amenorrhoea, i , was 10.49 months yielding $C_i = .690$ (using 'current status' at interview). This estimate corresponds quite closely with the i derived from the breastfeeding duration of 15.92 months yielding an i value of 9.99 and C_i of .702 (also derived using 'current status' at interview and then Bongaarts formula, $i = .753 \exp. (.1396B - .001872 B^2)$ where B = mean or median duration of breastfeeding). It should be noted at this point that in most surveys data on amenorrhoea are not collected; hence the need for the Bongaarts formula for conversion of mean breastfeeding durations, which are more commonly available, to mean/median durations of amenorrhoea. The close agreement in Kenya between the direct and indirect estimates supports the validity of the formula.

6.4.4 Model estimates of fertility rates

The relationship between the intermediate fertility variables and the fertility rates is expressed by the following equations as given by Bongaarts:

$$TFR = C_m \times C_c \times C_a \times C_i \times TF$$

$$TM = C_c \times C_a \times C_i \times TF$$

$$TN = TFR / (C_m \times C_c \times C_a)$$

$$TF = TFR / (C_m \times C_c \times C_a \times C_i)$$

where TFR is the Total Fertility Rate; C_m is the index of marriage, C_c is the index of contraception; C_a is the index of induced abortion; C_i is the index of postpartum infecundability; TM is the Total Marital Fertility Rate; TN is the Total Natural Fertility Rate and TF is the Total Fecundity Rate.

The model estimates are based on a TF of 15.3, while the 'observed' rates are the results of applying the indexes to the observed TFR for the 2 year period preceding the survey. Substituting the indexes of the intermediate fertility variables estimated, the model estimates of the Total Fertility Rate (TFR), Total Marital Fertility Rate (TM), Total Natural Fertility Rate (TN) and Total Fecundity Rate (TF) for Kenya as a whole are presented alongside the observed values and the approximate observed range for countries with high fertility (TFR greater than 5) in Table 6.5.

The model estimates of fertility rates correspond quite well with the observed rates. The ratio of the estimated over the observed TFR of 1.05 (derived from estimates using data on amenorrhoea) and 1.07 (derived from estimates using data on breastfeeding) show that the model fits well the data for whole of Kenya and also corresponds to the situation of a high fertility population. The correspondence and low level of Total Natural Fertility Rate TN, shows the strong suppressing impact of lactational amenorrhoea. The Total Marital Fertility Rate is not much lower than the Total Natural Fertility Rate, TN, reflecting the low prevalence of contraceptive use and induced abortion among Kenyan women. There are, however, several possible reasons for finding that the model estimated values are higher than the observed values (i.e. TF (observed) = 14.57 and 14.31) : higher sterility levels, lower fecundability among Kenyan women, higher foetal loss, underreporting of fertility control and defects in the survey data on fertility or amenorrhoea

Table 6.5: Model estimates of total fertility rate, total marital fertility rate, total natural fertility rate and total fecundity rate for whole of Kenya

Fertility	Model Estimate		Observed Rate	Approximate Observed range for countries with high fertility (TFR >5)
	using Ci from amenorrhoea	using Ci from breast-feeding		
TFR	7.59	7.72	7.22	5.0 - 7.2
TM	9.92	10.10	9.44	6.5 - 11.0
TN	10.55	10.74	10.05	7.0 - 11.0
TF	15.3	15.3	14.57* 14.31**	13.5- 17.0
The Ratio of estimated TFR over observed TFR	1.05	1.07		

* TF observed derived from estimates using data on amenorrhoea

** TF observed derived from estimates using breastfeeding data

and breastfeeding. In the following section the model is applied to the selected groups of population.

6.4.5 Estimation of indexes of intermediate fertility variables and the model estimates of fertility rates for selected sub-groups of population

Table 6.6 presents the estimates of the total fertility rates, total marital fertility rates and the intermediate fertility variables for the sub-groups of population based on the level of education, type of place of residence, religion, ethnic group and region of residence. From the estimates in that Table, estimates of the indexes of the intermediate fertility variables were derived as shown in Table 6.7. The methods of estimation were similar to the steps followed in section 6.4. The last six columns of the Table present two sets of model estimates of total fertility rate, ratio of estimated TFR over observed TFR and the observed Total Fecundity Rate (one set using C_i from amenorrhoea and the other using C_i from breastfeeding).

Comparing the model estimates of total fertility rate from the two methods of estimation, one using C_i from amenorrhoea and the other using C_i from breastfeeding and the observed rates for the sub-groups, there seems to be very close correspondence between the two sets of fertility levels (see the ratios of the estimated TFR/observed TFR), in all but Nairobi, Metropolitan, Coast, Muslim and Mijikenda sub-groups, where observed levels of fertility are considerably lower than the model estimates. A comparison of (a) model estimates based on survey data on amenorrhoea in sub-groups with (b) estimates based on breastfeeding data using Bongaarts' formula shows no significant difference between the two.

Table 6.6 : Estimates of total fertility rate, the total marital fertility rate, and intermediate variables for selected sub-populations in Kenya

Selected Variables	Total fertility rate	Total Marital Fertility rate	Prevalence of Contraceptive use	Use Effectiveness	Total induced abortion rate	Median durations of postpartum infecundability/and breast-feeding		
						(amenorrhoea)	(breast feeding)	i values
Total	7.225	9.443	0.066	0.827	-	10.490	15.92	9.99
EDUCATION								
None	7.624	8.829	0.048	0.811	-	12.43	17.62	11.70
1-4 years	7.762	9.897	0.070	0.790	-	10.31	17.70	11.78
5-8 years	7.175	9.694	0.148	0.830	-	7.77	12.72	6.78
9+ years	6.160	8.994	0.313	0.875	-	6.37	12.48	6.54
RESIDENCE								
Rural	7.413	9.590	0.059	0.814	-	11.11	16.52	10.60
Urban	6.186	9.024	0.066	0.839	-	6.08	12.83	6.90
Metropolitan	4.848	6.889	0.130	0.867	-	6.690	12.88	6.94
RELIGION								
Catholics	7.167	9.302	0.054	0.806	-	10.54	16.80	10.88
Protestants & other churches	7.469	9.876	0.084	0.829	-	10.35	14.57	8.64
Muslims	6.076	7.458	0.054	0.900	-	7.37	15.20	9.27
ETHNIC GROUP								
Kikuyu	7.289	10.372	0.107	0.840	-	10.50	13.500	7.57
Luo	7.197	8.458	0.050	0.765	-	11.30	15.50	9.57
Luhya	7.873	9.352	0.038	0.854	-	9.58	17.00	11.08
Kamba	6.438	9.504	0.071	0.822	-	9.26	19.30	12.81
Kisii	8.151	10.614	0.019	0.841	-	12.80	16.20	28.77
Meru/Embu	7.085	9.748	0.109	0.868	-	9.55	15.80	9.87
Mijikenda	5.565	6.662	0.017	0.971	-	15.30	17.80	11.88
Kalenjin	8.259	10.470	0.040	0.781	-	8.55	14.39	8.46
REGION OF RESIDENCE								
Nairobi	4.167	7.047	0.179	0.865	-	6.36	13.51	7.58
Central	7.281	10.371	0.102	0.831	-	11.34	13.41	7.47
Coast	5.679	7.114	0.046	0.857	-	9.96	16.81	10.88
Nyanza	7.551	9.163	0.045	0.845	-	12.12	16.11	10.18
Rift	7.724	10.000	0.070	0.808	-	9.73	14.92	8.99
Western	7.821	9.762	0.039	0.833	-	9.56	17.12	11.20
Eastern & N. Eastern	6.890	9.827	0.084	0.846	-	9.75	17.34	11.41

Table 6.7 : Estimates of the indexes of the intermediate fertility variables and model estimates of the total fertility rates for selected sub-populations in Kenya

Selected Variables	INDEX OF MARRIAGE	INDEX OF CONTRACEPTION	INDEX OF INDUCED ABORTION	INDEX OF POST-PARTUM INFECUNDABILITY (Based on amenorrhoea) (Based on breastfeeding)		MODEL ESTIMATE OF TOTAL FERTILITY RATE (TFR)			MODEL ESTIMATE OF TOTAL FERTILITY RATE (TFR)		
	Cm	Cc	Ca	Ci	Cj	Using Ci from amen.	Ratio of estimated TFR/obs TFR	TF (obs)	Using Ci from breast feeding	Ratio of est. TFR/obs TFR	TF (obs)
TOTAL	.765	.940	1.0	.690	.702	7.59	1.05	14.6	7.72	1.07	14.3
EDUCATION											
None	.864	.963	1.0	.647	.662	8.23	1.07	14.2	8.42	1.10	13.9
1-4 years	.784	.939	1.0	.694	.660	7.82	1.01	15.2	7.44	0.96	16.0
5.8 years	.740	.865	1.0	.761	.791	7.45	1.04	14.1	7.75	1.08	14.2
9+ years	.689	.698	1.0	.804	.799	5.92	0.96	16.0	5.89	0.96	16.1
RESIDENCE											
Rural	.773	.947	1.0	.675	.687	7.56	1.02	15.0	7.69	1.04	14.8
Urban	.686	.939	1.0	.814	.788	8.02	1.31	11.8	7.76	1.25	12.2
Metropolitan	.704	.876	1.0	.794	.786	7.48	1.54	9.9	7.41	1.53	10.0
RELIGION											
Catholics	.770	.952	1.0	.688	.681	7.72	1.08	14.2	7.64	1.07	14.4
Protestants & other churches	.756	.924	1.0	.693	.737	7.41	0.99	15.4	7.88	1.05	14.5
Muslims	.815	.947	1.0	.773	.720	9.12	1.50	10.2	8.50	1.40	10.9
ETHNIC GROUPS											
Kikuyu	.703	.901	1.0	.690	.767	6.68	0.92	16.7	7.43	1.03	15.0
Luo	.851	.958	1.0	.671	.712	8.36	1.16	13.2	8.88	1.23	12.4
Luhya	.842	.964	1.0	.712	.676	8.84	1.12	13.6	8.39	1.07	14.3
Kamba	.677	.935	1.0	.720	.639	6.98	1.08	14.1	6.20	0.99	15.9
Kisii	.768	.982	1.0	.639	.695	7.38	0.91	16.9	8.02	0.98	15.5
Meru/Embu	.727	.896	1.0	.713	.705	7.11	1.00	15.3	7.03	0.99	15.4
Mijikenda	.835	.982	1.0	.592	.658	7.43	1.33	11.5	8.25	1.48	10.3
Kalenjin	.789	.965	1.0	.739	.742	8.62	1.04	14.7	8.64	1.05	14.6
REGION OF RESIDENCE											
Nairobi	.591	.829	1.0	.804	.767	6.03	1.45	10.6	5.76	1.38	11.1
Central	.702	.907	1.0	.670	.770	6.52	0.90	17.1	7.50	1.03	14.9
Coast	.798	.957	1.0	.703	.681	8.21	1.45	10.6	7.96	1.40	10.9
Nyanza	.824	.962	1.0	.653	.697	7.92	1.05	14.6	8.46	1.12	13.7
Rift	.772	.938	1.0	.709	.727	7.86	1.02	15.0	8.05	1.04	14.7
Western	.801	.964	1.0	.713	.673	8.42	1.08	14.2	7.95	1.02	15.0
Eastern & N. Eastern	.701	.922	1.0	.708	.669	7.00	1.02	15.0	6.62	0.96	15.9

6.4.6 Differentials in indexes of intermediate fertility variables

The estimates of the indexes of the intermediate fertility variables for Kenya as a whole fall within the approximate observed range for countries with high fertility (TFR greater than 5). The indexes portray a picture of universality of marriage in Kenya society (combined with early age at marriage as we saw in chapter 3), very low levels of contraceptive use among married women (only 6 per cent of married women reported using contraceptives) and that Kenyan married women breastfed their children for relatively long duration (median duration of about 16 months) and for other than contraceptive motives. The above three major characteristics may determine the level of Kenya fertility below its natural level. There are, however, differences in the fertility suppressing effect of the major intermediate fertility variables between sub-groups of population.

Figures 7-11 show the per cent reduction in fertility that can be attributable to non-marriage, contraceptive use and breastfeeding for different sub-groups. They are estimated from 1-Cm, 1-Cc and 1-Ci respectively (Bongaarts, 1980). The figures also reveal an interesting association between the contraception index, Cc, and lactational amenorrhoea, Ci, across sub-groups. The index of contraception, Cc, is only low (i.e. higher use and therefore strong suppressing effect on fertility) when lactational amenorrhoea, Ci, is high (i.e. shorter duration of amenorrhoea/breastfeeding and therefore lower reduction effect on fertility). In other words, with increasing level of education, urban and metropolitan influence (see particularly figures 7 and 8) contraception tends to replace the effect of lactation in restraining fertility.

(i) Index of non-marriage

The fertility-inhibiting effect of non-marriage increases with education (see Figures 7 and 8) and urban and metropolitan influence.

In other sub-groups based on religious affiliation, ethnic group and region of residence (with the exception of Nairobi which has markedly low index of non-marriage, indicating a strong reducing effect on its fertility), the variations are less apparent. The categories Coast, Mijikenda and muslim with low total fertility rate, have also low fertility reduction effect attributable to non-marriage. The low fertility rate may be explained by higher secondary sterility in these populations (see section 6.5).

(ii) Index of contraception use

A similar pattern is repeated here. As the total fertility rate declines with increasing education and urban and metropolitan environment, the fertility inhibiting effect of contraception rises on average from 6 per cent to 30 per cent among women with no education and those with 9 or more years of schooling and from 5 per cent to 12 per cent for rural and metropolitan women respectively. Elsewhere, the reduction effect accounted for by contraception is lowest among muslim, catholics, Mijikenda, Kisii, Luo, Luhya, Kalenjin, Coast, Rift and Western categories. This is consistent with our earlier conclusion that the general use of contraception among Kenyan women is very low.

(iii) Index of postpartum infecundability

As pointed out before, contraception replaces the effect of lactation in restraining fertility among women with 5-8 and 9+ years of schooling and among urban and metropolitan populations (these have low observed TFR). In other words the reduction effect of breastfeeding is highest among women with no and little education and among the rural populations. It is also high among catholics, protestants, Mijikenda, Kisii, Luo and Kalenjin categories. Regional differences reflect the marked differences observed among ethnic groups.

**PERCENT REDUCTION IN FERTILITY ATTRIBUTABLE TO MARRIAGE PATTERNS
CONTRACEPTION AND BREAST FEEDING BY SELECTED VARIABLES**

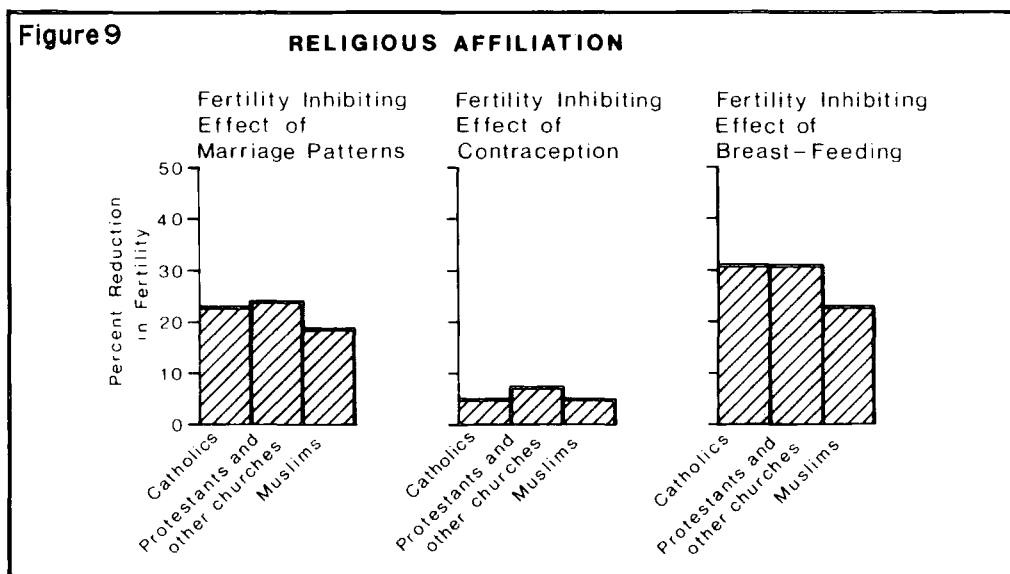
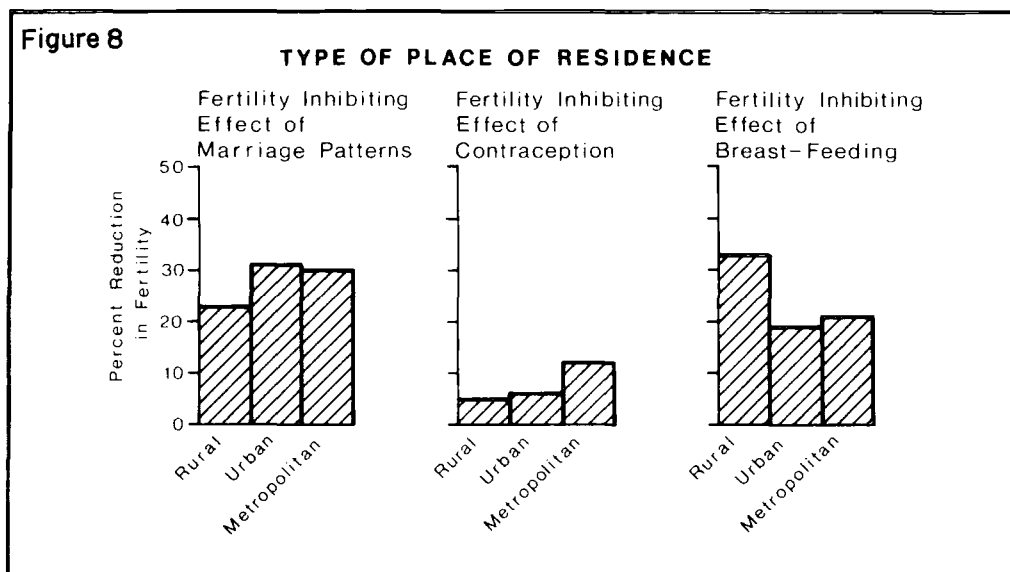
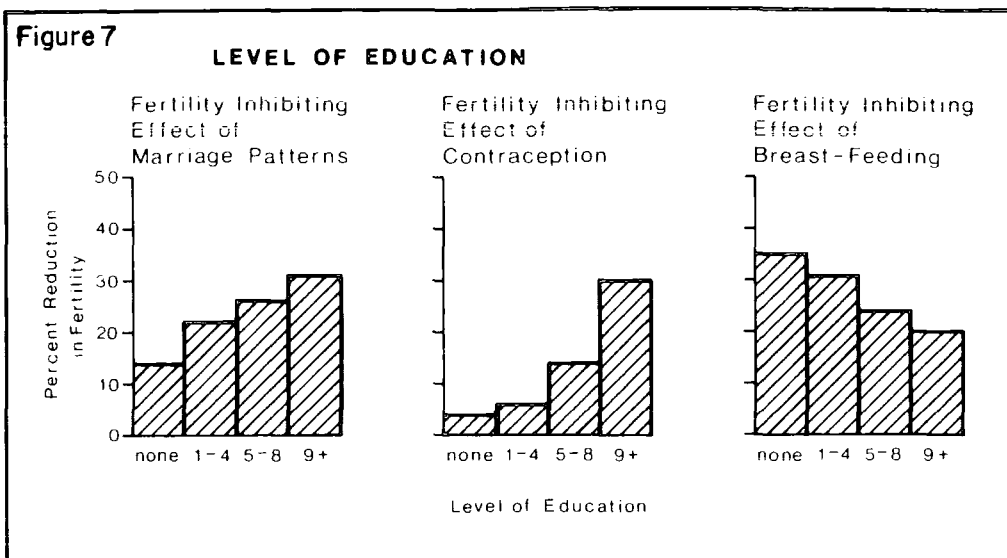


Figure 10 ETHNIC GROUP

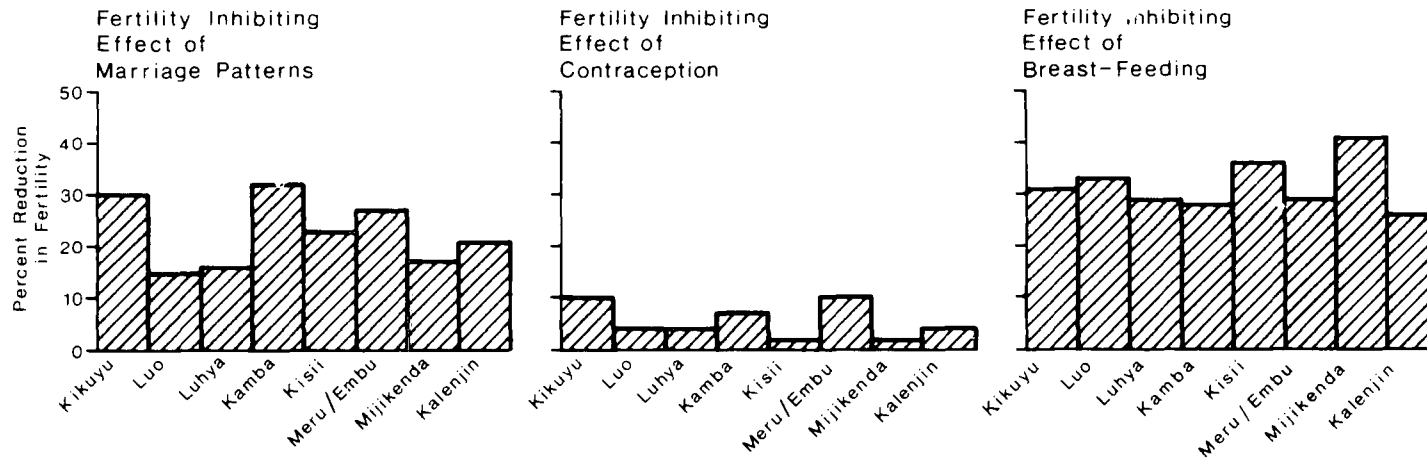
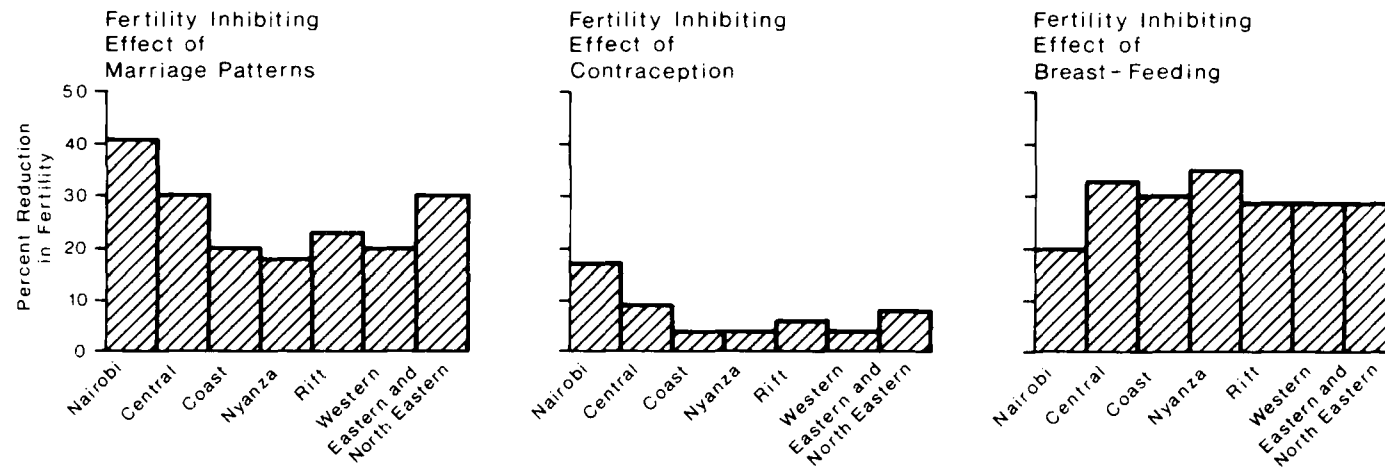


Figure 11 REGION OF RESIDENCE



6.5 Sterility

Although sterility has not been found to be an important fertility variable in Kenya (accounting for about 7 per cent of all ever married women) except among very few localized ethnic groups (Henin, 1980) particularly the Mijikenda of the Coast region, recent analysis of Kenyan data (Mosley et al., 1981) has indicated higher secondary sterility. In a survey conducted in Tanzania (Henin, 1973), a number of factors were identified to affect sterility: physical contact with urban areas, education, health facilities, altitude, christianity, mode of life and prevalence of malaria. Of those, mode of life (dependence on cattle) was found to have a positive relationship with childlessness. The rest were found to reduce sterility.

In analysing sterility and its effects on fertility, several indices can be used. The simplest way of analysing lifetime sterility is by looking at the proportion of women who reach the end of their child-bearing ages without giving birth to a child. This index assumes that all women desire at least one child and that only the sub-fecund will remain childless (Hogan, 1973). In this respect, higher sterility is found in metropolitan, Nairobi, Mijikenda, muslim and Coast categories (Table 6.8). The highest values seem to be consistent with the low levels of fertility observed among these sub-groups (Table 6.9; also refer to Chapter Four).

When we control the effect of rural-urban residence on ethnic group (Table 6.10) the variations in fertility are quite distinct (although the small sample size in some cases may bias the result). Urban women have consistently lower fertility than their rural counterparts. And eliminating further the impact of sterility (same Table) the differences in fertility still persist and the levels are raised; though the figures may not again be genuine owing to small sample size. Nevertheless,

Table 6.8: Proportion of women aged 40-50 who are childless by selected variables

LEVEL OF EDUCATION (in years)

<u>None</u>	<u>1-4</u>	<u>5+</u>
3.9	1.5	1.1

TYPE OF PLACE OF RESIDENCE

<u>RURAL</u>	<u>URBAN</u>	<u>METROPOLITAN</u>
2.7	7.7	10.7

ETHNIC GROUP

<u>KIKUYU</u>	<u>LUO</u>	<u>LUHYA</u>	<u>KAMBA</u>	<u>KISII</u>	<u>MERU/EMBU</u>	<u>MIJIKENDA</u>	<u>KALENJIN</u>	<u>OTHER</u>
1.9	5.9	1.6	1.6	1.3	2.1	8.7	0.0	6.1

RELIGION

<u>CHRISTIANS</u>	<u>MUSLIM</u>	<u>NO RELIGION</u>
2.7	10.9	4.9

REGION OF RESIDENCE

<u>NAIROBI</u>	<u>CENTRAL</u>	<u>COAST</u>	<u>NYANZA</u>	<u>RIFT</u>	<u>WESTERN</u>	<u>EASTERN & N. EASTERN</u>
6.5	1.4	7.4	4.3	1.9	2.7	2.3

Table 6.9: Children ever born by mothers aged 40-50 by selected variables

<u>LEVEL OF EDUCATION (in years)</u>							
<u>None</u>		<u>1-4</u>		<u>5+</u>		<u>All</u>	
7.91		8.42		7.74		8.00	
<u>TYPE OF PLACE OF RESIDENCE</u>							
<u>RURAL</u>			<u>URBAN</u>			<u>METROPOLITAN</u>	
8.07			7.76			6.56	
<u>ETHNIC GROUP</u>							
<u>KIKUYU</u>	<u>LUO</u>	<u>LUHYA</u>	<u>KAMBA</u>	<u>KISII</u>	<u>MERU/EMBU</u>	<u>MIJIKENDA</u>	<u>KALENJIN</u>
8.05	8.39	8.48	7.58	8.90	7.69	6.59	8.31
<u>RELIGION</u>							
<u>CHRISTIANS</u>			<u>MUSLIM</u>			<u>NO RELIGION</u>	
8.16			6.91			6.74	
<u>REGION OF RESIDENCE</u>							
<u>NAIROBI</u>	<u>CENTRAL</u>	<u>COAST</u>	<u>NYANZA</u>	<u>RIFT</u>	<u>WESTERN</u>	<u>EASTERN & N.EASTERN</u>	
7.84	8.03	6.10	8.59	7.79	8.58	7.71	

Table 6.10: Mean number of children born by all women and by fertile mothers aged 40-50 according to ethnic group

Ethnic group	Mean no. of children born by all women aged 40-50		Mean no. of children born to fertile mothers aged 40-50		Percentage of women in urban areas
	Rural	Urban	Rural	Urban	
Kikuyu	8.00	7.05	8.10	7.83	9.52 (32)
Luo	7.91	6.77	8.40	8.16	4.30 (11)
Luhya	8.34	7.56	8.52	7.50	4.21 (8)
Kamba	7.52	5.27	7.66	5.07	2.75 (5)
Kisii	8.76	-	8.91	-	- (0)
Meru/Embu	7.49	-	7.69	-	- (0)
Mijikenda	6.40	3.19	6.94	4.79	18.57 (13)
Kalenjin	8.26	-	8.24	-	- (0)
Other	6.34	4.61	6.63	5.58	20.90 (13)
All	7.84	5.84	8.07	6.79	6.19
Number	1243	82	1209	72	82

- No cases

() Number of cases

Table 6.9 seems to indicate that the impact of childlessness on fertility is stronger among the Mijikenda (who are exclusively muslim) of the Coast region and among urban populations (metropolitan in this case) than in all other groups.

Another way of analysing the effect of sterility on fertility (again using evidence from the Kenya Fertility Survey) to confirm further that sterility is higher among the Coast, Mijikenda, muslim, Nairobi and metropolitan categories is by looking at parity progression ratios of women aged 40-50 who have never used contraception (Table 6.11). These parity progression ratios, P_i , were defined by Ewbank (1973) as the proportion of the women in a cohort who have had at least $i-1$ children who have gone on to have a child of order i . For instance, P_1 is the proportion who have at least one child (i.e one minus the proportion childless); P_2 is the proportion of those who had a first child who went on to have a second child; P_3 is the proportion of those with two or more children who have a total of three or more children, and so on.

For the national average pattern, P_1 , P_2 and P_3 are almost equal, although P_1 is slightly lower than P_2 and each subsequent value is lower. This may suggest that childlessness is not a major fertility factor, but a small aspect of reduced fecundability and sterility. Seven sub-groups - Christians, Luhya, Kisii, Central, Nyanza, Western and lastly Eastern and North Eastern have patterns which conform closely to the national average (although in the last three P_1 is lower than the two subsequent figures). In three sub-groups - rural, Luo and Meru/Embu - the pattern generally deviates from the national average also with P_1 lower than P_2 . It should be noted at this point that the downward bias in the value of P_1 as a result of say misreporting of children ever born and misstatement of age of mother (both of these factors are severe in this age group, 40-50) will lead to upward bias in P_2 since the denominator

in P_2 is the numerator in P_1 . Similarly, if P_1 is biased upward, again by misreporting, it is likely to result in downward bias in P_2 . Such is the case in the patterns presented by several sub-groups - urban, no religion, Kikuyu, Kamba, Kalenjin and Rift - where P_1 is greater than P_2 . This leaves a particular group of sub-populations - Coast, Mijikenda, muslim and metropolitan with values for P_1 much lower than average and lower than P_2 . The rest of the values also show an erratic pattern and are lower than the national average (with the exception of muslim and Mijikenda categories, where P_2 values are close to the national average). This suggests strongly that sterility is indeed higher in these sub-groups than among all other populations; a conclusion which may further be confirmed by looking at the proportion of women who have been continuously married for the past five years, who have not used contraception in the open interval but who nevertheless have had no birth in the last five years (Table 6.12). The proportions are consistently higher among the same categories particularly after age 30.

The observed high sterility among the Coast, Mijikenda, and muslim populations may be accounted for by the very early age at marriage and the prevalence of venereal diseases. Similarly, with the metropolitan sector and Nairobi, apart from higher prevalence of sterility, it is possible that induced abortion may offer another explanation for their lower than expected fertility although a test on induced abortion hypothesis (whether the number of foetal losses is related to contraceptive use or the desire to have no more children) did not clearly support this assertion.

6.6 Concluding Remarks

This has been one of the first applications of the Bongaarts model to an African population. The results at the national level fit the model well. At sub-national level, the results also fitted well for all

Table 6.11 : Parity progression ratio for women aged 40-50

	P ₁	P ₂	P ₃	P ₄	P ₅	P ₆	P ₇	P ₈	P ₉	P ₁₀
National	.96	.97	.97	.96	.96	.93	.89	.84	.76	.66
<u>TYPE OF PLACE OF RESIDENCE</u>										
Rural	.96	.97	.98	.96	.96	.94	.90	.84	.76	.67
Urban	.95	.89	.94	1.00	.94	.93	.79	.91	.60	.33
Metropolitan	.89	.91	.90	.85	.96	.82	.78	.71	.80	.87
<u>RELIGION</u>										
Christians	.97	.97	.97	.97	.96	.94	.90	.84	.76	.66
Muslims	.89	.96	.91	.88	.95	.83	.90	.81	.82	.67
No Religion	.95	.94	.97	.94	.92	.93	.74	.89	.67	.73
<u>ETHNIC GROUP</u>										
Kikuyu	.98	.97	.96	.94	.95	.94	.89	.88	.86	.64
Luo	.93	.99	.98	.98	.96	.93	.93	.84	.78	.62
Luhya	.97	.96	.97	.96	.99	.95	.91	.86	.78	.77
Kamba	.98	.95	.97	.96	.93	.91	.93	.84	.69	.57
Kisii	.98	1.00	1.00	1.00	1.00	.95	.91	.94	.76	.74
Meru/Embu	.98	1.00	.96	.98	1.00	.92	.86	.68	.62	.44
Mijikenda	.90	.96	.91	.92	.96	.91	.85	.85	.61	.82
Kalenjin	1.00	.96	.98	.96	.91	.98	.87	.85	.83	.83
<u>REGION</u>										
Nairobi	.93	1.00	1.00	.93	.92	.92	.91	.70	.71	.80
Central	.97	.97	.97	.94	.97	.96	.88	.84	.86	.63
Coast	.91	.92	.90	.92	.95	.93	.78	.77	.47	.79
Nyanza	.95	.99	.99	.99	.97	.94	.92	.85	.78	.67
Rift	.99	.94	.95	.95	.91	.95	.84	.85	.80	.71
Western	.96	.98	.98	.95	1.00	.96	.90	.89	.77	.74
Eastern & N.Eastern	.98	.97	.98	.96	.95	.92	.89	.81	.67	.52

Table 6.12 : Proportion of women in each age group who have been continuously married for the last five years, who have not used contraception in the open interval but who nevertheless have had no birth in the last five years

	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30-34</u>	<u>35-39</u>	<u>40-44</u>	<u>45-49</u>
National	0.0	11.7	8.9	15.8	23.3	35.3	58.7
<u>LEVEL OF EDUCATION</u>							
None	0.0	14.5	11.0	17.6	27.2	37.6	60.5
1-4	0.0	12.3	10.0	9.9	11.8	25.6	55.4
5+	0.0	7.2	4.9	15.6	27.7	46.8	44.1
<u>TYPE OF PLACE OF RESIDENCE</u>							
Rural	0.0	10.1	8.0	14.6	22.2	33.5	57.5
Urban	0.0	18.0	9.4	28.4	16.9	47.2	89.4
Metropolitan	0.0	22.1	19.6	27.3	47.3	78.4	98.0
<u>ETHNIC GROUP</u>							
Kikuyu	0.0	11.1	5.6	10.9	18.6	26.8	51.1
Luo	0.0	18.5	18.2	25.8	28.3	45.9	67.1
Luhya	0.0	2.4	10.1	14.6	26.4	40.5	62.0
Kamba	0.0	22.1	5.7	13.0	25.3	30.1	48.9
Kisii	0.0	4.6	0.0	4.1	17.4	28.0	71.1
Meru/Embu	0.0	12.1	8.4	20.7	14.2	1.6	48.7
Mijikenda	0.0	19.0	14.3	19.7	30.9	74.0	78.5
Kalenjin	0.0	9.3	1.0	9.2	25.5	21.5	52.8
<u>RELIGIOUS AFFILIATION</u>							
Christians	0.0	11.2	7.9	14.7	22.6	32.3	59.1
Muslim	0.0	18.5	14.2	40.9	39.6	70.9	77.4
No religion	0.0	7.3	15.2	13.5	21.2	51.3	47.1
<u>REGION OF RESIDENCE</u>							
Nairobi	0.0	13.4	15.1	14.9	32.4	70.9	95.7
Central	0.0	8.5	5.4	8.1	17.4	20.3	44.6
Coast	0.0	18.5	15.0	26.1	34.7	66.2	80.7
Nyanza	0.0	11.1	13.4	20.3	24.2	43.2	68.1
Rift	0.0	13.0	4.7	12.7	20.5	23.2	56.6
Western	0.0	2.5	8.4	13.1	24.4	42.0	62.4
Eastern & N.Eastern	0.0	20.0	4.7	17.2	20.7	18.4	47.6

but Nairobi, metropolitan, Coast, muslim and Mijikenda categories. The possible reasons for the divergence in these sub-groups are:-

1. errors in survey data on fertility
 2. unreported contraception or abortion
 3. different levels of secondary sterility than found in populations used by Bongaarts to develop the model,
- and
4. lower fecundability than assumed by Bongaarts.

That retrospective surveys on fertility in developing countries suffer from inability of respondents to report their ages correctly and to state the precise birth dates of all their live births and other pregnancy events, particularly in the distant past (Brass et al., 1968; Page et al., 1980), is a common feature. Data on current fertility suffer particularly from serious errors in the recalled number of births in the year preceding the survey, due to imprecision in the reference period. And, although there is no concrete evidence with respect to Kenya, generally speaking, estimates of total fertility rates from these surveys where the majority of the populations are illiterate, are prone to error.

The reported levels of pregnancy loss are far below what one would expect in a healthy population (where somewhere in the range of 10 to 20 per cent of all pregnancies end in miscarriage or stillbirth). This underreporting is a common feature of fertility surveys. If induced abortion and contraceptive use are higher than reported, and differences are important among the well educated and metropolitan women, it is possible that the model estimates in these categories might have been exaggerated by unreported contraception and the general assumption that "there is no induced abortion". Although sterility has not been found

to be an important fertility variable in Kenya except among very few localized ethnic groups (Henin, 1980), recent analysis of Kenya data (Mosley et al., 1982) has indicated higher secondary sterility. Further analysis of sterility (see section 6.5 of this chapter) has revealed that sterility is indeed higher among the Coast, Mijikenda, muslim, Nairobi and metropolitan populations than among other sub-groups. Moreover, by far the most common cause of secondary sterility in Tropical Africa is venereal disease (Page and Lesthaeghe, 1981). The prevalence of venereal disease among the coastal populations of Kenya (Guest, 1978)* may largely explain their lower than expected fertility, but of course it is possible that venereal disease is also operating among Nairobi and metropolitan populations (Guest, 1978). If so, then one would expect the age-specific marital fertility rates to be lower in most age groups. Conversely, if unreported abortion or contraception is responsible for their lower than expected level of fertility, then one would expect the ASMR's in Nairobi/metropolitan to be the same as for other categories at lower ages but lower at higher ages. In fact, the ASMR's for Nairobi/metropolitan populations seem to be generally comparable to those of muslim, Mijikenda and Coast categories, lower in most age groups and much lower at higher ages than for all other sub-groups, an indication that both venereal disease, unreported abortion and contraception are responsible. Another possibility is selective in-migration of infertile women to metropolitan areas, but this is not conclusive. We had intended to test this hypothesis through information on childhood place of residence. This, however, was not possible as there were not enough women whose childhood place of residence was urban. Almost 90 per cent of the metropolitan residents at the time of the survey had non-metropolitan background.

* In another study by Griffith, "Gonorrhoea and Fertility in Uganda", The Eugenics Review, vol.55 (2), July 1963, pp.103-109, he concluded that gonorrhoea is one of the major determinants of fertility in Uganda.

Further, the observed *total fecundity* of 14.6 and 14.3 using data from amenorrhoea and breastfeeding respectively, suggests that Kenyan women in general have slightly lower fecundity rate than the average actually found by Bongaarts (TF = 15.3) for a large national population. If, therefore, adjustments were made for induced abortion for Nairobi and metropolitan and second sterility for Coast, muslim and Mijikenda sub-groups, it is possible that the model would fit data for these sub-groups. This, however, is not conclusive.

Evidence presented suggest that major differences in indexes of the intermediate fertility variables (reflecting differences in the reduction effect on fertility) do exist between education groups and type of place of residence. In other categories the variations are less apparent. The evidence also points to the fact that Kenyan fertility is at high levels as a result of high proportion married (coupled with early age at marriage, stability of unions and frequent re-marriages), very low levels of contraceptive use and induced abortion and relatively short duration of infecundible interval. Changes in age at first marriage which were noted earlier in Chapter 3 do not seem to have had an important impact on overall fertility since these changes are only important in certain sub-groups of population among the well educated (and this is a very small proportion) and the metropolitan women.

The most interesting substantive point to emerge from this analysis is that modernization in the form of education and urbanization has offsetting effects on the intermediate fertility variables - reducing lactation and increasing contraception. The model has proved useful in identifying sub-groups whose observed level of fertility is inconsistent with the observed levels of the three proximate determinants. In such cases, other factors are operating. Such findings provide a useful focus both for more detailed analysis of KFS data and for future research.

References

- Bongaarts, J., "A Framework For Analysing the Proximate Determinants of Fertility," Population And Development Review, Vol.4, No.1, 1978, pp.105-32.
- Bongaarts, J., The Fertility Inhibiting Effects of The Intermediate Fertility Variables. A Paper prepared for the IUSSP and WFS Seminar on The Analysis of Maternity Histories, London, April, 1980. See Also the Revised Version, January 1982.
- Bongaarts, J., and Kirmeyer, S., "Estimating the Impact of Contraceptive Prevalence On Fertility : Aggregate and Age Specific Versions of a Model." A Paper prepared for the IUSSP on 'The Use of Surveys for the Analysis of Family Planning Programme', Bogata, October 28-31, 1980.
- Brass, W. et al., The Demography of Tropical Africa, Princeton, N.J. Princeton University Press, 1968.
- Central Bureau of Statistics, Ministry of Economic Planning and Development, Kenya Fertility Survey 1977-78, First Report, Vol.1, Feb. 1980, Nairobi, Kenya.
- Central Bureau of Statistics, Ministry of Economic Planning and Development, Major Highlights of The Kenya Fertility Survey, Social Perspective, Vol.4, No.2,
- Davis, K., and Blake J., "Social Structure and Fertility: An Analytical Framework," Economic Development And Cultural Change, Vol.4, No.4, 1956.
- Ewbank, D.C., "Fertility Estimation", In Henin, R. (ed.), The Demography of Tanzania, Analysis of The 1973 National Demographic Survey of Tanzania, Vol.6, 1973, pp.77-9.
- Ferry, B., and Smith D., Breastfeeding Differentials, WFS Comparative Studies, No.22, 1982.
- Griffith, H.B., "Gonorrhoea and Fertility in Uganda," The Eugenics Review, vol.55 (2), July 1963, pp.103-9.
- Guest, I., "Infertility In Africa," special Report in People, Vol.5(1), 1978, pp.23-34.
- Henin, R., (ed.) The Demography of Tanzania, An Analysis of The 1973 National Demographic Survey of Tanzania, Vol.6, 1973, Dar es Salaam.

- Henin, R., (Unpublished Data) Population Studies And Research Institute, University of Nairobi, 1980.
- Henry, L., "Some Data On Natural Fertility," Eugenics Quarterly, Vol.8, No.1, 1961.
- Hogan, H.R., "Childlessness And Subfecundity", in Henin, R.,(ed.) The Demography of Tanzania, An Analysis of the National Demographic Survey of Tanzania, Vol., 6, 1973, pp. 309-11, Dar es Salaam.
- Laing, J., "Estimating The Effects of Contraceptive Use On Fertility," Studies in Family Planning, Vol.9, No.6, 1978:150.
- Mosley, W.H., et al., The Dynamics of Birth Spacing And Marital Fertility in Kenya, WFS Scientific Reports, No.30, 1982.
- Page, J.H., et al., The Most Recent Births: Some Analytical Possibilities and Underlying Problems. Revised Version of The Paper prepared for WFS/IUSSP/LSHTM Seminar, London, April 1980. Forthcoming in Brass, W., (ed.): The Analysis of Maternity Histories, IUSSP.
- Page, H.J., and Lesthaege, R. (eds) Child-Spacing in Tropical Africa: Traditions And Change Studies in Population, Academic Press, 1981.
- Potter, J.E., "Some Notes on an Application of the Bongaarts Intermediate Fertility Variables to Group Data from the Mexican Fertility Survey," An Unpublished Paper Delivered at the Seminar of Maternity Histories, London, April 1980.

CHAPTER SEVEN

SUMMARY AND CONCLUSIONS

7.1 Introduction

The main objective of this research was:-

- (a) to identify, using cross-tabulation analysis, the patterns and differentials in nuptiality and fertility among Kenyan women, using the 1977/78 Kenya Fertility Survey data;
- (b) to examine, using multiple regression analysis, the effects of socio-economic characteristics of couples on their fertility performance; and
- (c) to quantify the effects of the proximate determinants of Kenyan fertility, in order to find out whether we can account for the level of fertility, both at national and sub-national levels, by intermediate fertility variables, using the model developed by Bongaarts.

In this last chapter, it is intended to draw together some of the major findings and some elements discussed in the preceding chapters, in order to examine their relevance for policy considerations.

7.2 Results

Our study of the Kenyan data has confirmed that marriage is a universal institution and that Kenyan women marry young. The median age at first marriage is about 18.7. The data have also revealed several differentials in age at first marriage, with education having the greatest influence on the timing of first entry into union among Kenyan females. It is acknowledged that education provides short-term alternative options to early marriage. Because of the close link between education, high status occupation and urban residence, metropolitan residence was found to have a positive effect on age at first

marriage. Differentials in age at marriage based on other characteristics like ethnic group, region of residence and religious affiliation were also examined but their impact was less apparent. However, the Luo, Mijikenda, Luhya, Coast and muslim sub-populations in particular were seen to marry very young compared to other groups.

The data have also indicated that although monogamy is the dominant type of union, polygamy is still widespread, accounting for about 30 per cent of all married women in the child bearing age range. Polygamy is higher among the uneducated, self-employed agricultural, rural, muslim, Luo, Mijikenda, Luhya and Kisii sub-populations. It is lowest among women with secondary or higher education and among metropolitan residents. Other sub-populations fall in between the two extremes. Despite this widespread polygamy and the fact that society puts no restriction on marriage of widows and the divorced, the marriage institution in Kenya is generally stable. Over 80 per cent of those who have ever married still live with their first husbands. Another cultural phenomenon among the Kenyans is that most of them marry only once, and men often marry women much younger than themselves.

One main feature of this analysis and other analyses so far undertaken using KFS data is the high level of fertility as indicated by the cumulative number of children ever born to women who have completed their reproductive period (aged 45-49). Their completed fertility averages about 8 births per woman, making it one of the highest in the world. Anthropological evidence available (Molnos, 1973; Swartz, 1969; Mbiti, 1966) suggests lower levels of fertility in the past than today. This assertion is based on the reported strong traditional beliefs, customs and practices which prevailed among various ethnic groups in Kenya and had an effect on fertility :

1. Owing to the prevalence of natural disasters, wars, famine and low levels of hygiene and nutrition, coupled with inadequate medical services,

mortality especially infant mortality was much higher than the present levels and population growth through births was slow.

2. Polygamy (and serial polygamy) was widespread and a woman's fertility declined as the number of wives increased in a union.

3. The age gap between spouses was very large (at least 10 years) and it increased as a man indulged himself in polygamy and serial polygamy. In some ethnic groups, the effect of husband's age in comparison with his wife's age on childbearing was further influenced by a man's involvement in many ceremonial activities (as required by society), many of which demanded sexual abstinence both for him and his wives. Among the Meru of Central Kenya once a man had gone through successfully all his traditional initiations and ceremonies and had popular support of his neighbours, he would become a member of the highest religious Council of elders consisting of righteous people aged 60 and over. Once in such a position he had to abstain from all practices considered unclean including sexual activities. His wives too (many of them still very young of course) had to abstain.

4. Generally girls were married at very young ages shortly after puberty and initiation (about age 16 to 18 in the case of the Kikuyu) and it is possible that this often led to later fertility impairment. Uncircumcised daughters were not supposed to have sexual intercourse and childbearing before marriage was not accepted in society.

5. Breastfeeding was very prolonged among mothers since supplementary feeds were not common. During the lactational period, a woman was not supposed to conceive again; this was further helped by either a woman abstaining from sex or a man using coitus interruptus. This practice facilitated child spacing from 2 to 4 years on average. In some instances the spacing of children was ensured by the practice of the husband and wife sleeping in separate huts and not having any sexual relationship

until the child lost some milk teeth which was a period of about 4 to 6 years.

6. In certain circumstances young men could not get married when performing duties of lineage (this sometimes lasted 7 years). If they married in the process, they could not be recognized as husbands and fathers until after handing these duties to the next age group of young men. This had the effect of delaying marriage and reducing the procreating potential of the population (common among the Meru).

7. Certain cultures required parents (including younger wives) to stop having more children as soon as their children got married or reached a marriageable age. Moreover, couples were not supposed to have sexual intercourse after their first son or daughter was circumcized unless they were sure that no pregnancy would result. In such cases active childbearing took place between the onset of marriage and the circumcision of the couple's first child (average age for circumcision thought to be 20).

8. Among the pastoral groups (e.g. the Masai), it is possible that occasional long absence (2-4 months) from home by the husband on social or economic business had an effect on the women's fertility behaviour.

The WFS data have indicated a number of possible reasons for the present high level of fertility:

- (a) Despite the recent expansion in educational facilities especially for women (see Chapter 2), and the observed slight rise in age at first marriage during the last 15-20 years, age at marriage is still low and the majority of women tend to have their first birth immediately during their first 10 to 20 months of marriage; pre-marital births are still common and age at maternity has risen less than age at marriage.

- (b) Improvement in the health sector, particularly in maternal and child care, has ensured that more and more pregnancies result in live births, many of them surviving through the infancy and childhood stages. The decline in mortality, in the short run, would tend to favour high fertility.
- (c) Sterility, which in several African countries is a big factor in restraining fertility, is generally very low among Kenyan women, ranging between 2 and 4 per cent although there are variations among sub-groups.
- (d) The universality and stability of marriage institutions, coupled with the rapid rate of remarriage among the widowed and the divorced or separated, have all been conducive to high fertility.
- (e) Modernization in the form of education and urbanization has had offsetting effects upon the intermediate variables reducing lactation and increasing contraception. However, the proportion using contraception is too small to have any significant effect on fertility. The gradual breakdown of traditional practices, particularly regarding breastfeeding, postpartum abstinence and polygamy, as well as the old practice of separate houses for wife and husband, has only facilitated high fertility.

This erosion of old traditional systems has been due to the gradual replacement of old African traditional religion by christianity, replacement of informal education based on coaching by elders by modern Western classroom-oriented education, and the replacement of barter economy by the all-purpose money economy.

The study of fertility revealed marked differences according to educational levels. Women with secondary or higher education were found to have the lowest fertility. The study also replicates the findings of

other studies using similar data - that women with 1 to 4 years of education have the highest fertility. The possible explanation lies in the differences in type of union. Uneducated women live more in polygamous unions than those with some education. An examination of the effects on fertility of both wives' and husbands' education combined revealed that wives' education has greater influence in restraining fertility than husbands' education. Women with 5 or more years of schooling married to husbands with similar or higher education had the lowest fertility.

Differentials in fertility based on type of place of residence were found to be even more marked than educational differentials. Metropolitan fertility was markedly lower than either urban or rural fertility. This is, I believe, one of the few African countries south of the Sahara where there is convincing evidence of rural-urban differential in fertility in the expected direction. Variations in fertility among regions of residence, ethnic groups and husbands' occupation were not very apparent although fertility was relatively low for Nairobi, Coast region and Mijikenda sub-groups.

Differentials in fertility according to marital status variables were also examined. The analysis indicated, both for national and sub-national groups of population, that completed fertility decreases, though not steadily, with rise in age at first marriage. Despite this, for reasons discussed in the text, there is no clear link between fertility and age at first marriage. In a non-contraceptive society like Kenya, even women marrying as late as ages 20-24 (i.e. late by Kenyan standards) still end up with an average of 6-8 children and those marrying at or after age 25 (and these are very few) have enough time to produce as many as 6 children. The inference to be drawn from this pattern is that age at first marriage is not yet a significant factor in lowering fertility in Kenya as a whole.

The study of the effect on fertility of type of union indicated that type of union affects marital stability, frequency of marriage and consequently marital fertility. But any effect upon marital fertility by marital instability that may be a direct result of marriage type is offset by the rapid rate of remarriage in Kenya. Moreover, marriage disruption seems to be selective of women who are either of lower fertility or sterile. The conclusion to be drawn from the relationship between fertility and type of union is that women in polygamous unions in general have lower fertility than those living with no co-wives. This pattern is maintained even after controlling for age, education and rural-urban residence. Another factor associated with the nuptiality - fertility relationship is that of husbands' age and age differences between spouses. Husband's age in Kenya was found to have very little effect on female fertility. This is consistent with the conclusion of various other studies on this topic. The data on age differences between husbands and wives showed that this factor is not responsible for the link between polygamy and fertility.

The results of the regression analysis of the effects of socio-economic characteristics of couples on completed fertility as a continuation of the cross-classification analysis have confirmed that although the two modernizing factors - education and urbanization - have had a strong effect on fertility, the effect has not been substantial among the sample of older women studied (30-50). As a result, the level of fertility, in general terms, remains high even after adjusting for all other variables. This replicates our earlier conclusion in chapters 3 and 4 that the modernizing impact has affected the young population much more than their parents whose reproductive behaviour remains more or less unaffected. This is confirmed by the contribution of each factor to the R-squared in the regression model, an indication that other

unmeasured factors associated with education and urbanization are clearly operating.

The application of Bongaarts' proximate determinants of fertility to group data from the Kenya Fertility Survey (Chapter 6) was one of the first applications of this model to an African population. The results at the national level fitted the model well. At sub-national level, the results also fitted well for all but Nairobi, metropolitan, Coast, muslim and Mijikenda sub-populations. The divergence in these sub-groups was possibly due to:

- (a) errors in the survey data;
- (b) unreported contraception or induced abortions;
- (c) levels of secondary sterility different from those found in populations used by Bongaarts to develop the model; and
- (d) lower fecundability than assumed by Bongaarts.

In particular the data have suggested higher secondary sterility or unreported birth control and abortion practices among those sub-groups mentioned above than among other categories. The common cause of secondary sterility in Tropical Africa is venereal disease. Thus, the prevalence of venereal disease among the coastal populations in Kenya may largely explain their lower than expected fertility. Among the Nairobi and metropolitan populations, the available evidence suggests that venereal disease, unreported abortion and contraception may be responsible for their lower than expected fertility. Selective in-migration of infertile women into the metropolitan centres is another possibility, but due to the small number of respondents whose childhood place of residence is urban/metropolitan, this hypothesis could not be tested with the data. For example,

almost 90 per cent of the metropolitan residence at the time of the survey had non-metropolitan backgrounds. Lastly, the observed fecundity rate of 14.6 and 14.3, using data from amenorrhoea and breastfeeding respectively, suggested that Kenyan women in general are slightly less fecund than the average actually found by Bongaarts (TF = 15.3) for a large number of national populations.

From the above, it is possible that if adjustment were made for induced abortion in Nairobi/metropolitan population and for secondary sterility in Coast/muslim/Mijikenda sub-groups, the data for these sub-groups would fit the model. This, however, is not conclusive. The model has proved useful in identifying sub-groups whose observed levels of fertility are inconsistent with the observed levels of the three proximate determinants.

7.3 Policy Considerations

The major demographic factors relevant to all social and economic programmes in Kenya are a direct result of sustained high fertility and rapidly declining mortality. It was noted earlier that the rate of population growth is high, averaging between 3.5 and 4.5 per cent^{per year}. Almost half the total population are below age 15 and the proportion in the working age groups (15-64) is in the range of 40-50 per cent. These are the main demographic issues the government has to face when planning for future social, economic and cultural development.

The official declared policy in Kenya is aimed at reducing fertility and the rate of population growth with a subsequent change in the age pattern and structure. While the applicability of the theory of demographic transition from high to low levels of fertility, mortality and population growth is being questioned and re-examined, it is acknowledged that a combination of lower levels of both fertility and

mortality and rate of population growth are a common feature of those societies with high levels of education, adequate health facilities, high levels of technological development and innovation in industry and agriculture, low levels of labour-force engaged in agriculture and a large proportion of females actively participating in the modern sector of the economy. It is also a characteristic feature of those societies where children born alive survive to become adults and through to old age. At what point of social, economic and cultural change the vital events started to decline during the transition, is not a focus of our concern in this discussion. However, if the above generalization is accepted, then it can be acknowledged further that in the process of the demographic transition from high to low levels of fertility, mortality and rate of population growth, those western developed societies must have undergone socio-economic and cultural transformation involving changes in the family, specifically:

- (a) uplifting of female status in society,
- (b) improvement in communication between spouses
and other members of the family,
- (c) changes in attitudes towards contraceptive use and
limiting family size,

and (d) changes from extended to nuclear family systems.

By implication, however, changes in socio-economic and cultural development, in the short run, facilitate higher fertility. The effect in the long run is to lower fertility.

We have seen earlier how socio-economic and cultural changes are already taking place rapidly in Kenya. Munro in his conclusion made this observation in relation to the Akamba of Kenya which may be generalized for Kenya as a whole:

"The acculturation processes of the colonial situation, at one time described as westernization, have now been embraced in the wider concept of modernization, and it has been argued that the colonial situation was the basic source of modernization in Africa. By 1939 Kamba society certainly possessed many of the characteristics said to belong to a modernizing society. Enlargement of scale in political and social institutions, expansion of the market economy, increased social stratification, the spread of literacy, and new means of communications, the emergence of power groups wider than the lineage and changing cultural norms were all to be found in Machakos Kamba. Modernization might therefore seem to be the key process at work in the Machakos District from 1889-1939" (Munro, 1975: 247-8).

Kabwegyere and Mbula (1979:90) opted for the term social change instead of the word modernization. This is appropriate for our discussion here since "social change simply means change in society. The change may yield positive results or it may destabilize and even lead to the destruction of the social fabrics."

The factors responsible for social changes in Kenya are many and varied. The introduction of western education has had and is having strong impact on the family. Old traditional education was centred on the family and community. It represented both social/cultural continuity and was under direct supervision of older sisters, brothers, grandparents, uncles and aunts, each sharing distinctive roles in educating the young and even the adults. In this way they knew what was the content of education, and their sole aim was to prepare the young people for adulthood and to prepare the adults for future challenges. Modern western education, on the other hand brought with it a new culture and a new belief. It cut people^{off} from the traditions of their family and community. It transformed their attitudes towards life while eroding away the existing culture.

As our KFS data has shown, education in Kenya is very much biased in favour of young people. It is also urban/metropolitan oriented. Therefore, it is likely that with further spread of education among young people and into the rural areas, age at first marriage will rise at an aggregate level, celibacy will increase, polygamy will decline further and contraceptive use will increase. As Kabwegyere and Mbula (1979) put it:

"The adoption of modern family planning techniques is one indicator of change in values. In the first place, the techniques are totally new even though the principle is not new to African society. To follow a regular routine of swallowing the pill every day or to accept that a coil be inserted requires a new discipline and convictions and hence new attitudes to fertility and children in general."

The increase in the proportion of educated women will raise their social status in society and their active participation in the modern sector of the economy. Our KFS data again replicated what Caldwell (1976) has emphasized in relation to West Africa that "the demographic innovators are the ones who have been largely involved in the education revolution. The decisions to reduce family size and accept government policies are interrelated." Furthermore, more education for women and further spread of christianity coupled with improved economic conditions will force polygamy to extinction. We have already seen that education of the second, third or higher order wife is lower than that of the first order wife. Christianity too advocates one man one wife.

The search for employment and good education has resulted in the migration into urban and metropolitan centres of both adults and young people, a process which gradually leads to a breakdown of strong traditional family and community ties. It may also lead to the weakening of

the extended family system. A major point to be noted at this stage is that Kenya, like other developing countries, is entangled in the international monetary maze. It is being affected by both internal and external economic pressures, and chances of getting jobs without qualifications are slim. Even the educated have to line up for months or even years without finding employment. Educating children too, is becoming very expensive but, as education becomes an essential part of life, producing a large number of children will prove a great burden to the parents.

By implication, as education diffuses into the rural populations, children will no longer be at home to contribute to domestic work and family economy as they did in the past. As a result, one of the justifications for a large family in Kenya, and indeed in most of Africa south of the Sahara, will disappear. In any case, a family with one or two educated children in good employment usually enjoys better social status and economic returns than a family with many uneducated children helping domestically.

As mentioned earlier, the efforts to reduce fertility must go hand in hand with the programmes to reduce the level of infant and adult mortality. This seems to be in the right direction for the time being in Kenya. However, a major problem related to health services as with education is that the majority of doctors, health centres and hospitals are concentrated in urban/metropolitan centres catering for only a small proportion of the total population.

7.4 Concluding Remarks

In ~~con~~cluding this thesis, it should be emphasized that the task of rapid socio-economic development is vital. It involves improving and spreading of health facilities and education, attracting foreign investors to facilitate the establishment and expansion of industries in order to create jobs particularly for women - all very crucial factors in the change of the family and in the change of values, which in turn lead to the lowering of fertility, mortality and the rate of population growth.

Efforts to spread family planning services must not operate independently of the above goals. They should not be divorced from assurances to parents that their newly born babies will survive through to old age; increasing awareness of the problems through transformation of attitudes; greater involvement of women in the money economy outside home; the realization of cost of living and the cost of rearing children; as well as the diminishing relative importance of the value of land. "It is only when the quality of children rather than quantity has become the parents' concern that a decline in fertility will be worked for" (Kabwegyere and Mbula, 1979:98).

Finally, it is believed that this research has provided a useful focus for more detailed analysis of KFS data and for future studies in the field of Kenyan fertility. In particular, further anthropological, sociological and demographic studies on a micro level into topics such as breastfeeding habits, infecundible intervals, sexual abstinence and temporary separations, the economic value of children, diffusion of contraceptive innovation and the relationship between polygamy and fertility, would contribute to further explanations of why fertility has been persistently high in Kenya and why it is not likely to fall in the immediate future.

References

- Caldwell, J.C., and
Caldwell, P., "Demographic And Contraceptive Innovators:
A study of Transitional African Society",
Journal of Biosocial Science, 8, 1976,
pp.347-65.
- Kabwegyere, T., and
Mbula, J., A Case of The Akamba of Eastern Kenya,
Changing African Family Project Series
Monograph No.5, The Australian National
University Canberra, 1979.
- Mbiti, J.S., Akamba Stories, Oxford University Press,
Oxford, 1966.
- Molnos, A., Cultural Source Materials for Population
Planning in East Africa, Beliefs and
practices, Institute of African Studies,
University of Nairobi, East African
publishing house, vol.111, Nairobi, 1973.
- Munro, J.F., Colonial Rule And The Kamba, Clarendon
Press, Oxford, 1975.
- Swartz, M. "Some Cultural Influence on Family Size in
Three East African Societies,"
Anthropological Quarterly, 42(2), 1969,
pp.73-88.

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 used for research
 purposes only.

Appendix 1

CLUSTER			HH		

CENTRAL BUREAU OF STATISTICS
 MINISTRY OF ECONOMIC PLANNING AND DEVELOPMENT
 KENYA FERTILITY SURVEY
 HOUSEHOLD SCHEDULE

IDENTIFICATION	
PLACE NAME _____	STRUCTURE NUMBERS _____
CLUSTER NUMBER _____	HOUSEHOLD NUMBER _____

Interview calls	1	2	3	4
Date				
Interviewer name				
Result*				

*Result codes

1. Completed	5. Dwelling vacant
2. No competent R at home	6. Dwelling occupied but family away
3. Deferred	7. Household not found or non-existent
4. Refused	

Other (SPECIFY) _____

FOR USE OF CODERS ONLY

CARD	CLUSTER	H/HOLD	LINE	STRUCTURE NO.	STRUCTURE NO.
1 0			0 0		
1	3	6	9	11	15
STRUCTURE NO.		STRUCTURE NO.		DATE OF INTERVIEW	
		DAY	MONTH	YEAR	
19	23	27			
RESULT OF VISIT	TOTAL NO. OF VISITS	FINAL OUTCOME	NO. OF H/HOLD MEMBERS	NO. OF ELIG. RES.	
1 2 3 4					
33	37	38	39	41	

LINE NO.	NAME OF HOME TENANTS AND VISITORS	RELATIONSHIP	RESIDENCE		SEX	DATE OF BIRTH							AGE	ELIGIBILITY
			Does this person usually live here with you?	Did this person sleep here last night?		Does this person live here 7/7?	Does this person live here 7/7?	Month	Day	Year	Month	Day		
01	1	2	3	4	5	6	7	8	9					
02														
03														
04														
05														
06														
07														
08														
09														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														

LINE NO.	RELATIONSHIP	RES.	SEX	AGE	ELIG. & OUTCOME
9					
22					
35					
48					
61					
9					
22					
35					
48					
61					
9					
22					
35					
48					
61					
9					
22					
35					
48					
61					

1 1

1 2

1 3

1 4

IF DISTRIBUTION SHEET USED
CIRCLE HERE

- Set table sure I have a complete listing:
- Are there any other persons, such as small children or infants that we have not listed?
 YES (ENTER FIG. IN TABLE) NO
 - In addition, are there any other people who may not be members of your family, such as domestic servants, friends or lodgers who usually live here and are by definition members of your household?
 YES (ENTER FIG. IN TABLE) NO
 - Do you have any guests or visitors temporarily staying with you?
 YES (ENTER FIG. IN TABLE) NO

SECTION I. RESPONDENT'S BACKGROUND

LOCATION OF INTERVIEW (PLACE NAME) _____

101. Do you live in this compound? _____

YES 1 NO 2

102. Do you live in _____ (PLACE NAME)?

YES 1 NO 2

103. Where do you live? _____ (PLACE NAME)

INTERVIEWER: CIRCLE APPROPRIATE BOX BELOW AND ENTER DISTRICT

COUNTRY	OTHER	NAIROBI
SIDE	URBAN	MOMBASA
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3

104. Have you lived in _____ (PLACE NAME) since you were born? _____

YES 1 NO 2

105. What kind of area would you say (this, that) was when you were growing up, say to age 12? Was it countryside, a town or a city?

COUNTRYSIDE	OTHER URBAN	NAIROBI MOMBASA
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3

106. In what kind of area did you live mostly when you were growing up, say to age 12? Was it in the countryside, in a town or in a city?

107. How old are you? _____

108. Do you know your date of birth? _____

YES 1 NO 2 (SKIP TO 110)

109. In what month and year were you born? _____ (MONTH) 19____ (YEAR)

INTERVIEWER: PROBE AND CORRECT ANY INCONSISTENCY BETWEEN 107 AND 109

110. INTERVIEWER CIRCLE APPROPRIATE BOX

AGE ESTIMATED 1 AGE NOT ESTIMATED 2

INTERVIEWER SPECIFY HOW AGE WAS ESTIMATED, IF NOTHING IS INDICATED ON AGE PROBE:

3 1

1

3

6

9

11

12

13 14

13 14

16

17

18

20

21

25

26

SECTION 2

MATERNITY HISTORY

201. We should like to get a complete record of all the children you have actually given birth to in all your life. Have you ever given birth to any children?

YES 1 NO 2
(SKIP TO 203)

36

202. Have any of your children died? PROBE: Have you given birth to any boy or girl who cried at birth or showed any sign of life and later died even if the child lived for only a short time?

YES 1 NO 2
(SKIP TO 212) (SKIP TO 214)

37

203. Do you have any sons you have given birth to who are now living with you in this homestead?

YES 1 NO 2
(SKIP TO 205)

38

204. How many live with you? _____ (NUMBER)

205. Do you have any sons you have given birth who do not live with you in this homestead?

39

YES 1 NO 2
(SKIP TO 207)

41

206. How many do not live with you? _____ (NUMBER)

42

207. Do you have any daughters you have given birth to who do not live with you in this homestead?

YES 1 NO 2
(SKIP TO 209)

44

208. How many do not live with you? _____ (NUMBER)

45

209. Do you have any daughters you have given birth to who do not live with you in this homestead?

YES 1 NO 2
(SKIP TO 211)

47

210. How may do not live with you? _____ (NUMBER)

48

217. INTERVIEWER: SEE 213, 214

SO FAR NO RECORDED PREGNANCIES

1

SO FAR ONE OR MORE RECORDED PREGNANCIES OR CURRENTLY PREGNANT

2

59

218. Have you ever been pregnant? (IF NO, PROBE: I mean have you ever had a pregnancy that lasted for just a few weeks or a few months)?

YES 1 NO 2
(SKIP TO 222)

219. In addition to the time(s) you have told me about, have there been any other times you were pregnant. (IF NO, PROBE: I mean have you ever had a pregnancy that lasted for just a few weeks or a few months)?

YES 1 NO 2
(SKIP TO 222)

60

220. How many times have you been pregnant?

(NUMBER)

221. How many such pregnancies have you had?

(NUMBER)

61

222. How old were you when you had your first menstrual period?

_____ (YEARS OLD) NOT YET STARTED 77 D.K. 98

63

223. INTERVIEWER: SEE 213, 214, 217, 218, 219

NEVER PREGNANT 1
(SKIP TO 301)

CURRENT PREGNANCY IS FIRST ONE 2
(SKIP TO 301)

ALL OTHERS 3

65

224. HAS HAD NON-LIVE BIRTH(S) ONLY 1 ONLY ONE LIVE BIRTH (SKIP TO 226) 2 TWO OR MORE LIVE BIRTHS 3

66

225. Now I want to ask you some questions about each of your children whether they are not alive or dead, starting with the first one you had.

PROCEED TO 226 AND ASK 227 - 234 FOR EACH CHILD, BEGINNING WITH THE FIRST. IF TWINS, CONNECT WITH A BRACKET AT THE LEFT AND COUNT AS ONE LIVE BIRTH. AFTER LISTING ALL THE CHILDREN PROCEED WITH QUESTIONS 235 - 243.

224 MVA NUMBER (PILA IN)	227 What was the size of your first (second) child?	228 Was that child a boy or a girl?	229 In what year was born? (YEAR OF CHILD'S BIRTH)	IF D.O.B. IN 230 How many years ago was (NAME OF CHILD) born?	231 In what month was that child born?	IF D.O.B. IN 232 How long after ending of PREVIOUS BIRTH) did you have this child?	233 Is he/she still living?	IF DEAD IN 234 How many years and months old was the child when he/she died?	235 Was there any time (STATE INTERVAL) when you were pregnant even if only for a few weeks?	INTERVIEWER FOR LAST INTERVAL USE "AFTER YOUR LAST BIRTH" OR DISCARD YOUR CURRENT PREGNANT	236 In what year did that preg- nancy end?	IF D.O.B. IN 237 How many years ago did that pregnancy end?	238 In what month did that preg- nancy end?	IF D.O.B. IN 239 How long after (NAME OF PREVIOUS BIRTH) did that preg- nancy end?	240 How many months did that preg- nancy last?	IF 7 OR MORE MONTHS IN 241 Did that baby cry or show any sign of life?	IF SIGN OF LIFE IN 241 242 Was it a boy or a girl?	243 Was there any other preg- nancy (STATE INTERVAL)
<input type="checkbox"/>	(NAME)	BOY <input type="checkbox"/>	19 (YEAR)	D.O.B. 58 (YEARS AGO)	(MONTH)	(YEARS AFTER) CHECK AGAINST PREVIOUS ANSWERS & CORRECT IF NECESSARY	YES <input type="checkbox"/>	(YEARS) & (MONTHS)	BETWEEN THIRD AND FOURTH BIRTHS (USE NAMES IN 227)	YES <input type="checkbox"/>	19 (YEAR) D.O.B. 53 (YEARS AGO)	(MONTH)	(YEARS AFTER) CHECK AGAINST PREVIOUS ANSWERS & CORRECT IF NECESSARY	(MONTHS)	YES <input type="checkbox"/>	BOY <input type="checkbox"/>	YES <input type="checkbox"/>	(REPEAT 236-243) NO <input type="checkbox"/>
<input type="checkbox"/>	(NAME)	GIRL <input type="checkbox"/>	19 (YEAR)	D.O.B. 58 (YEARS AGO)	(MONTH)	(YEARS AFTER) CHECK AGAINST PREVIOUS ANSWERS & CORRECT IF NECESSARY	NO <input type="checkbox"/>	(YEARS) & (MONTHS)	BETWEEN THIRD AND FOURTH BIRTHS (USE NAMES IN 227)	NO <input type="checkbox"/>	19 (YEAR) D.O.B. 53 (YEARS AGO)	(MONTH)	(YEARS AFTER) CHECK AGAINST PREVIOUS ANSWERS & CORRECT IF NECESSARY	(MONTHS)	NO <input type="checkbox"/>	GIRL <input type="checkbox"/>	NO <input type="checkbox"/>	(REPEAT 236-243) NO <input type="checkbox"/>
<input type="checkbox"/>	(NAME)	BOY <input type="checkbox"/>	19 (YEAR)	D.O.B. 98 (YEARS AGO)	(MONTH)	(YEARS AFTER) CHECK AGAINST PREVIOUS ANSWERS & CORRECT IF NECESSARY	YES <input type="checkbox"/>	(YEARS) & (MONTHS)	BETWEEN FOURTH AND FIFTH BIRTHS (USE NAMES IN 227)	YES <input type="checkbox"/>	19 (YEAR) D.O.B. 95 (YEARS AGO)	(MONTH)	(YEARS AFTER) CHECK AGAINST PREVIOUS ANSWERS & CORRECT IF NECESSARY	(MONTHS)	YES <input type="checkbox"/>	BOY <input type="checkbox"/>	YES <input type="checkbox"/>	(REPEAT 236-243) YES <input type="checkbox"/>
<input type="checkbox"/>	(NAME)	GIRL <input type="checkbox"/>	19 (YEAR)	D.O.B. 98 (YEARS AGO)	(MONTH)	(YEARS AFTER) CHECK AGAINST PREVIOUS ANSWERS & CORRECT IF NECESSARY	NO <input type="checkbox"/>	(YEARS) & (MONTHS)	BETWEEN FOURTH AND FIFTH BIRTHS (USE NAMES IN 227)	NO <input type="checkbox"/>	19 (YEAR) D.O.B. 95 (YEARS AGO)	(MONTH)	(YEARS AFTER) CHECK AGAINST PREVIOUS ANSWERS & CORRECT IF NECESSARY	(MONTHS)	NO <input type="checkbox"/>	GIRL <input type="checkbox"/>	NO <input type="checkbox"/>	(REPEAT 236-243) NO <input type="checkbox"/>
<input type="checkbox"/>	(NAME)	BOY <input type="checkbox"/>	19 (YEAR)	D.O.B. 88 (YEARS AGO)	(MONTH)	(YEARS AFTER) CHECK AGAINST PREVIOUS ANSWERS & CORRECT IF NECESSARY	YES <input type="checkbox"/>	(YEARS) & (MONTHS)	BETWEEN FIFTH AND SIXTH BIRTHS (USE NAMES IN 227)	YES <input type="checkbox"/>	19 (YEAR) D.O.B. 88 (YEARS AGO)	(MONTH)	(YEARS AFTER) CHECK AGAINST PREVIOUS ANSWERS & CORRECT IF NECESSARY	(MONTHS)	YES <input type="checkbox"/>	BOY <input type="checkbox"/>	YES <input type="checkbox"/>	(REPEAT 236-243) YES <input type="checkbox"/>
<input type="checkbox"/>	(NAME)	GIRL <input type="checkbox"/>	19 (YEAR)	D.O.B. 88 (YEARS AGO)	(MONTH)	(YEARS AFTER) CHECK AGAINST PREVIOUS ANSWERS & CORRECT IF NECESSARY	NO <input type="checkbox"/>	(YEARS) & (MONTHS)	BETWEEN FIFTH AND SIXTH BIRTHS (USE NAMES IN 227)	NO <input type="checkbox"/>	19 (YEAR) D.O.B. 88 (YEARS AGO)	(MONTH)	(YEARS AFTER) CHECK AGAINST PREVIOUS ANSWERS & CORRECT IF NECESSARY	(MONTHS)	NO <input type="checkbox"/>	GIRL <input type="checkbox"/>	NO <input type="checkbox"/>	(REPEAT 236-243) NO <input type="checkbox"/>

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Was that child a boy or a girl? (10)

In what year did it occur? (YEAR)

How many months did the child stay home? (MONTHS)

Did the child stay home for any reason? (YES/NO)

What did you do to correct the situation? (DETAILS)

Has the child had any further health problems? (YES/NO)

Are you currently pregnant or planning to become pregnant? (YES/NO)

Was that child a boy or a girl? (10)

In what year did it occur? (YEAR)

How many months did the child stay home? (MONTHS)

Did the child stay home for any reason? (YES/NO)

What did you do to correct the situation? (DETAILS)

Has the child had any further health problems? (YES/NO)

Are you currently pregnant or planning to become pregnant? (YES/NO)

Was that child a boy or a girl? (10)

In what year did it occur? (YEAR)

How many months did the child stay home? (MONTHS)

Did the child stay home for any reason? (YES/NO)

What did you do to correct the situation? (DETAILS)

Has the child had any further health problems? (YES/NO)

Are you currently pregnant or planning to become pregnant? (YES/NO)

Was that child a boy or a girl? (10)

In what year did it occur? (YEAR)

How many months did the child stay home? (MONTHS)

Did the child stay home for any reason? (YES/NO)

What did you do to correct the situation? (DETAILS)

Has the child had any further health problems? (YES/NO)

Are you currently pregnant or planning to become pregnant? (YES/NO)

Was that child a boy or a girl? (10)

In what year did it occur? (YEAR)

How many months did the child stay home? (MONTHS)

Did the child stay home for any reason? (YES/NO)

What did you do to correct the situation? (DETAILS)

Has the child had any further health problems? (YES/NO)

Are you currently pregnant or planning to become pregnant? (YES/NO)

Was that child a boy or a girl? (10)

In what year did it occur? (YEAR)

How many months did the child stay home? (MONTHS)

Did the child stay home for any reason? (YES/NO)

What did you do to correct the situation? (DETAILS)

Has the child had any further health problems? (YES/NO)

Are you currently pregnant or planning to become pregnant? (YES/NO)

MARRIAGE HISTORY

301. Now we come to matters of marriage. Are you now single, married, widowed, divorced or separated:

SINGLE 1 MARRIED 2 WIDOWED 3 DIVORCED 4
SEPARATED

(SKIP TO 304) (SKIP TO 313) (SKIP TO 313)

302. Have you ever led a married life?

YES 1 NO 2
(SKIP TO 322)

303. Are you now living with a man?

YES 1 2
(SKIP TO 313)

304. Does your husband usually live with you?

YES 1 NO 2
(SKIP TO 306)

305. Is he staying with you at the moment or is he away for the time being or have you stopped living together for good?

STAYING WITH YOU AT THE MOMENT 1 AWAY FOR TIME BEING 2 STOPPED FOR GOOD (i.e. SEPARATED) 3
(SKIP TO 313)

306. In what month and year did you and your husband begin living together?

____ 19 ____ D.K. 98 98
(MONTH) (YEAR)

(SKIP TO 308)

307. How old were you at that time?

(AGE IN YEARS)

308. How old is your husband? (RECORD BEST ESTIMATE)

(AGE IN YEARS)

309. Does he have other wives?

YES 1 NO 2

(SKIP TO 312)

310. How many wives, including yourself, does he have?

311. What number wife are you? _____ (NUMBER)
_____ (NUMBER)

6 1

1

3

6

9

11

12

13

14

15

16

18

20

22

24

25

26

318. INTERVIEWER: SEE 301, 303, 305.

CURRENTLY MARRIED 1
 ↓
 SEPARATED 2
 DIVORCED
 WIDOWED
 (SKIP TO 322)

63

319. Are you having sexual relations with your husband these days?

YES 1
 (SKIP TO 322)
 NO 2
 ↓

64

320. Do you expect to resume sexual relations with your husband some time in the future?

YES 1 (SKIP TO 322) NO 2

OTHER (SPECIFY) ANSWERS

 (SKIP TO 322)

321. Why not?

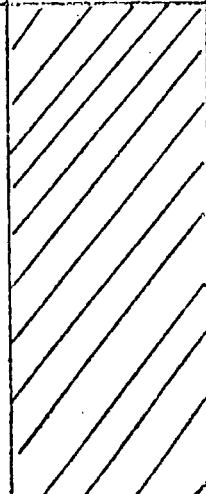
65

66

322. INTERVIEWER: CIRCLE ALL BOXES THAT APPLY PRESENCE OF OTHERS AT THIS POINT

- NO OTHERS 0
- CHILDREN UNDER 10 1
- HUSBAND 2
- OTHER MALES 4
- OTHER FEMALES 8

67

COL. 1 FROM 402, 403		COL. 2 EVER HEARD OF	COL. 3 EVER USED	
1 I.U.D.	408. A woman may have a loop or coil of plastic or metal, the intre devise (IUD), inserted in her womb by a doctor and left there. Have you ever heard of this method? CIRCLE RESPONSE IN COL.2 IF YES: IF NO, GO TO NEXT UNCIRCLED METHOD ↓ Have you ever used this method? CIRCLE RESPONSE IN COL. 3	YES <input type="checkbox"/> 2 NO <input type="checkbox"/> 3	YES <input type="checkbox"/> 1 NO <input type="checkbox"/> 2	<input type="checkbox"/> 16 <input type="checkbox"/> 17
1 OTHER FEMALE SCIENTIFIC	409. Women may also use other methods to avoid getting pregnant, such as placing a diaphragm or tampon or sponge or foam tablets or jelly or cream in themselves before sex. Have you ever head of any of these methods? CIRCLE RESPONSE IN COL.2 IF YES: IF NO, GO TO NEXT UNCIRCLED METHOD ↓ Have you ever used this method? CIRCLE RESPONSE IN COL. 3	YES <input type="checkbox"/> 2 NO <input type="checkbox"/> 3	YES <input type="checkbox"/> 1 NO <input type="checkbox"/> 2	<input type="checkbox"/> 18 <input type="checkbox"/> 19
1 DOUCHE	410. Some women wash themselves immediately after sex, with water or perhaps some other liquid for the purpose of avoiding pregnancy. Have you ever heard of this method? CIRCLE RESPONSE IN COL. 2 IF YES: IF NO, GO TO NEXT UNCIRCLED METHOD ↓ Have you ever used this method? CIRCLE RESPONSE IN COL. 3	YES <input type="checkbox"/> 2 NO <input type="checkbox"/> 3	YES <input type="checkbox"/> 1 NO <input type="checkbox"/> 2	<input type="checkbox"/> 20 <input type="checkbox"/> 21
1 ABORTION	411. Some women do something or have something done after they become pregnant in order to avoid having a child. This is called an abortion. Have you ever heard of this method? CIRCLE RESPONSE IN COL. 2	YES <input type="checkbox"/> 2 NO <input type="checkbox"/> 3		<input type="checkbox"/> 22

COL. 1 FROM 402, 403		COL. 2 EVER HEARD OF	COL. 3 EVER USED	
<p>1</p> <p>MALE STERILI- ZATION</p>	<p>419. Some men have an operation called vasectomy in order not to have more children?</p> <p>Have you heard of this method? CIRCLE RESPONSE IN COL. 2</p> <p>IF YES: IF NO, GO TO NEXT UNCIRCLED METHOD ↓</p> <p>420. INTERVIEWER: SEE 318</p> <p>CURRENTLY MARRIED <input type="checkbox"/> 1</p> <p>SINGLE SEPARATED DIVORCED WIDDED (SKIP TO NEXT UNCIRCLED METHOD) <input type="checkbox"/> 2</p> <p>421. Has your husband had such an operation? YES <input type="checkbox"/> 1 NO <input type="checkbox"/> 2 GO TO NEXT UNCIRCLED METHOD</p>	<p>YES <input type="checkbox"/> 2</p> <p>NO <input type="checkbox"/> 3</p>	<p style="background-color: #cccccc; text-align: center;">/ / / / /</p>	<p><input type="checkbox"/> 33</p> <p><input type="checkbox"/> 34</p> <p><input type="checkbox"/> 35</p>
<p>1</p> <p>CONDOM</p>	<p>422. Another method men use so that their wives will not get pregnant is to wear a condom/durex during sex.</p> <p>Have you ever heard of this method? CIRCLE RESPONSE IN COL. 2</p> <p>IF YES: IF NO GO TO NEXT UNCIRCLED METHOD ↓</p> <p>Did you (and your husband) ever use this method?</p>	<p>YES <input type="checkbox"/> 2</p> <p>NO <input type="checkbox"/> 3</p>	<p>YES <input type="checkbox"/> 1</p> <p>NO <input type="checkbox"/> 2</p>	<p><input type="checkbox"/> 36</p> <p><input type="checkbox"/> 37</p>
	<p>423. Have you ever head of any traditional methods which women or men use to avoid pregnancy? CIRCLE RESPONSE IN COL. 2</p> <p>IF YES: IF NO, SKIP TO 425 ↓</p> <p>424. What methods have you heard of? (LIST EACH METHOD BELOW)</p>	<p>YES <input type="checkbox"/> 2</p> <p>NO <input type="checkbox"/> 3</p>	<p style="background-color: #cccccc; text-align: center;">/ / / / /</p>	<p><input type="checkbox"/> 38</p>
<p>1</p>	<p>SPECIFY 1. ASK: Did you (and your husband) ever use this method? CIRCLE RESPONSE IN COL. 3</p>	<p style="background-color: #cccccc; text-align: center;">/ / / / /</p>	<p>YES <input type="checkbox"/> 1</p> <p>NO <input type="checkbox"/> 2</p>	<p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 39 41 42</p>
<p>1</p>	<p>SPECIFY 2. _____ ASK: Did you (and your husband) ever use this method? CIRCLE RESPONSE IN COL. 3</p>	<p style="background-color: #cccccc; text-align: center;">/ / / / /</p>	<p>YES <input type="checkbox"/> 1</p> <p>NO <input type="checkbox"/> 2</p>	<p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 43 45 46</p>
<p>1</p>	<p>SPECIFY 3. _____ ASK: Did you (and your husband) ever use this method? CIRCLE RESPONSE IN COL. 3</p>	<p style="background-color: #cccccc; text-align: center;">/ / / / /</p>	<p>YES <input type="checkbox"/> 1</p> <p>NO <input type="checkbox"/> 2</p>	<p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 47 49 50</p>

434. INTERVIEWER: SEE 406 TO 423 COL.1 AND COL.2

HEARD OF FAMILY PLANNING (AT LEAST ONE YES IN COL.1 OR COL.2 OR OTHER METHOD MENTIONED IN 423)

1

NEVER HEARD OF ANY METHOD OF FAMILY PLANNING (NO YES IN COL.1 OR COL.2 AND NO METHOD MENTIONED IN 423)

2

(SKIP TO SEC.5)

57

435. Do you know where you can get family planning supplies?

YES

1

2

(SKIP TO SECTION 5)

58

436. Where can you get family planning supplies? INTERVIEWER: CIRCLE ALL THE APPROPRIATE ANSWERS AND THEN READ OUT ALL UNCIRCLED PLACES.

MOBILE FAMILY PLANNING CLINIC

1

HOSPITAL OR DISPENSARY

2

FAMILY PLANNING FIELD WORKER WHO VISITS YOUR AREA

4

PHARMACY OR SHOP

8

PRIVATE DOCTOR

16

59

437. How would you normally get to the nearest place?

BUS

1

WALK

2

OTHER _____

(SPECIFY)

61

438. How long would it normally take you to get there?

_____ (HOURS)

_____ (MINUTES)

62

439. Have you yourself ever gone to a _____ (ALL PLACES AND/OR PERSONS MENTIONED IN 436) to get family planning supplies?

YES

1

NO

2

(SKIP TO 441)

65

440. Have you yourself gone there in the last twelve months?

YES

1

NO

2

(SKIP TO 443)

66

441. In the last twelve months did you yourself ever seriously think about getting family planning supplies?

YES

1

NO

2

67

442. Why is it that you decided not to?

(SKIP TO SECTION 5)

68

SECTION 5

BIRTH INTERVALS AND FERTILITY PREFERENCES

501. INTERVIEWER: SEE 301, 302

EVER MARRIED 1 NEVER MARRIED 2
(SKIP TO 571)

502. INTERVIEWER: SEE 214, 223

NEVER 1 CURRENTLY 2 ALL 3
PREGNANT PREGNANT OTHERS
(SKIP TO 553) (SKIP TO 505) ↓

503. LAST PREGNANCY RESULTED IN (SEE LIVE BIRTH AND PREGNANCY TABLE)

LIVE BIRTH: 1 LIVE BIRTH 2 NON-LIVE 3
CHILD ALIVE CHILD DIED BIRTH
↓ ↓ ↓

504(a) INTERVIEWER-RECORD DATE OF BIRTH. PROBE DATE AGAIN IF MONTH OR YEAR NOT STATED.

____ 19 ____
(MONTH) (YEAR)

OR

(YEARS AGO)

504(b) INTERVIEWER-RECORD NAME AND SEX

(NAME)

BOY 1 GIRL 2

504(c) INTERVIEWER-RECORD DATE OF BIRTH. PROBE DATE AGAIN IF MONTH OR YEAR NOT STATED.

____ 19 ____
(MONTH) (YEAR)

OR

(YEARS AGO)

504(d) INTERVIEWER-RECORD NAME (IF AVAILABLE) AND SEX

(NAME)

BOY 1 GIRL 2

504(e) INTERVIEWER-RECORD AGE OF CHILD AT DEATH.

(YEARS + (MONTHS))

504(f) INTERVIEWER-RECORD DATE OF PREGNANCY TERMINATION. PROBE AGAIN IF MONTH OR YEAR NOT STATED.

____ 19 ____
(MONTH) (YEAR)

OR

(YEARS AGO)

504(g) INTERVIEWER-RECORD LENGTH OF PREGNANCY

(MONTHS)

8	1	
1		
3		
6		
9		
11		
12		
13		
14		
16		
18		
20		
22		
23		
25		

OPEN INTERVAL FOR EVER-MARRIED WOMEN WITH AT LEAST ONE PREGNANCY WHO ARE NOT CURRENTLY PREGNANT

508. INTERVIEWER: SEE 502

CURRENTLY PREGNANT [1] (SKIP TO 531)

NOT CURRENTLY PREGNANT OR D.K. [2]

509. LAST PREGNANCY RESULTED IN: SEE 503
LIVE BIRTH [1] NON-LIVE BIRTH [2] (SKIP TO 516)

510. Now I would like to ask you about several events in your life since the birth of (NAME OF LAST CHILD, OR, YOUR MOST RECENT CHILD WHO LATER DIED). Did you breast-feed (NAME OF LAST OR YOUR MOST RECENT CHILD)?

YES [1] NO [2] (SKIP TO 514)

511. For how many months altogether did you breast-feed him/her PROBE: How many months old was he/she when you completely stopped breast-feeding him/her?

(MONTHS) STILL BREAST FEEDING [77] UNTIL HE/SHE DIED [97] (SKIP TO 513) (SKIP TO 513)

512. After (MONTHS) months had you completely stopped breast-feeding your child even once a day?

YES [1] NO [2] (CORRECT 511 AS NECESSARY THEN PROCEED TO 513)

513. How many months old was the child when you began giving him/her any other food along with breast-feeding?

(MONTHS) NO ADDITIONAL FOOD YET [77] CHILD DIED BEFORE GIVEN ADDITIONAL FOOD [97]

514. For how many months after the birth of this child did you go without sexual relations?

PROBE: How many months old was the child when you resumed sexual relations? (MONTHS) NOT STARTED YET [77]

515. How many months after the birth of this child did your period come back?

(MONTHS) PERIOD NOT BACK YET [77] (SKIP TO 518)

8 2
1
3
6
9
11
12
13
14
16
17
19
21

526. Since the birth of _____ (NAME OF LAST CHILD OR "SINCE YOUR LAST BIRTH/PREGNANCY") have there been any times when you and your husband were apart for three months or more for any reason?

PROBE: Was there anytime when your husband was away from home working or looking for work for three months or more?

YES 1 NO 2

37

527. How long after the birth of _____ (NAME OF LAST CHILD OR "YOUR LAST BIRTH/PREGNANCY") did the first such separation begin? _____ (YEARS) + _____ (MONTHS)

38 40

528(a) Since your last birth (or pregnancy) how many months were you and your husband apart for the (first, second.....)time	528(b) During that time were you continuously apart without seeing each other?	528(c) Since your last birth (or pregnancy) were there any other times when you and your husband were apart for three months or more?
_____ (MONTHS)	YES <input type="checkbox"/> → NO <input type="checkbox"/> (PROBE AND CORRECT)	YES <input checked="" type="checkbox"/> 1 (REPEAT 528(a) 528(c)) NO <input type="checkbox"/> 2 (SKIP TO 529)
_____ (MONTHS)	YES <input type="checkbox"/> → NO <input type="checkbox"/> (PROBE AND CORRECT)	NO <input checked="" type="checkbox"/> 1 (REPEAT 528(a)-528(c)) NO <input type="checkbox"/> 2 (SKIP TO 529)
_____ (MONTHS)	<input type="checkbox"/> → NO <input type="checkbox"/> (PROBE AND CORRECT)	YES <input checked="" type="checkbox"/> 1 (REPEAT 528(a)-528(c)) NO <input type="checkbox"/> 2 (SKIP TO 529)
_____ (MONTHS)	YES <input type="checkbox"/> → NO <input type="checkbox"/> (PROBE AND CORRECT)	YES <input checked="" type="checkbox"/> 1 (REPEAT 528(a)-528(c) AND ENTER ANSWERS ON THE OPPOSITE PAGE) NO <input type="checkbox"/> 2 (SKIP TO 529)

42 44

45 47

48 50

51 53

529. Did you and your husband get together after (LAST) separation?

YES 1 NO 2

STILL AWAY

54

533. For how many months altogether did you breastfeed him/her?

PROBE: How many months old was he/she when you completely stopped breastfeeding him/her?

(MONTHS) STILL BREASTFEEDING DESPITE CURRENT PREGNANCY (SKIP TO 536) UNTIL HE/SHE DIED (SKIP TO 536)

[] []

14

534. After _____ months had you completely stopped breastfeeding your child even once a day?

YES [1] NO [2]

(CORRECT 533 AS NECESSARY AND THEN PROCEED TO 535)

[]

16

535. Did you become pregnant again before or after you completely stopped breastfeeding?

BECAME PREGNANT BEFORE STOPPED BREASTFEEDING [1] BECAME PREGNANT AFTER STOPPED BREASTFEEDING [2]

[]

17

536. How many months old was the child when you began giving him/her any other food along with breastfeeding?

_____ (MONTHS) CHILD DIED BEFORE GIVEN ADDITIONAL FOOD [97]

[] []

18

542. IF CURRENTLY PREGNANT

ASK:

Now I would like to ask you about several events that happened in the interval between your last and current pregnancy. For how many months after the end of your pregnancy did you go without sexual relations?

IF NOT CURRENTLY PREGNANT

ASK:

Now I would like to ask you about several events in your life between your last two pregnancies. For how many months after the end of your next to last pregnancy did you go without sexual relations?

_____ (MONTHS)

--	--

28

543. How many months after your next to last pregnancy did your period come back?

_____ (MONTHS)

PERIOD NEVER CAME BACK BEFORE LAST (CURRENT) PREGNANCY

77

--	--

30

544. INTERVIEWER: SEE 426

HAS USED CONTRACEPTIVE METHOD

1



HAS NOT USED CONTRACEPTIVE METHOD

2

(SKIP TO 547)

--

32

545. Was there any time in the interval between your last two pregnancies (between your last and current pregnancy) when you or your husband were using a method to keep you from getting pregnant?

YES

1



NO

2

(SKIP TO 547)

--

33

546. What method did you use?

_____ (METHOD)

--	--

34

553. (Do, did) your periods usually come at regular intervals?

YES 1 NO 2 NO LONGER MENSTRUATING 3
(SKIP TO 556)

554. (Is, was) the time between your periods usually about a month or more than a month?

ABOUT OR LESS THAN ONE MONTH 1 MORE THAN ONE MONTH 2

555. For how many days (do, did) your periods usually last?

_____ (DAYS)

556. INTERVIEWER: SEE 318.

CURRENTLY MARRIED 1 SEPARATED, DIVORCED WIDDED 2
(SKIP TO 570)

557. INTERVIEWER: SEE 425, 214

HUSBAND OR WIFE, STERILIZED 1 CURRENTLY PREGNANT 2 ALL OTHERS 3
(SKIP TO 570) (SKIP TO 561)

558. As far as you know, is it physically possible for you and your husband to have a child, supposing you wanted one?

YES 1 NO 2 D.K. 3
(SKIP TO 560) (SKIP TO 560)

559. Do you think you are at the menopause?
YES 1 NO 2
(SKIP TO 570) (SKIP TO 570)

560. INTERVIEWER: SEE 213

NO LIVE BIRTHS 1 ONE OR MORE LIVE BIRTHS 2
(SKIP TO 563) (SKIP TO 565)

8 4
1
5
6
9
11

12

13

14

15

16

17

18

FOR SINGLE WOMEN ONLY

571. INTERVIEWER: SEE 213, BIRTH HISTORY TABLES
LAST PREGNANCY RESULTED IN:

NEVER PREGNANT 1 (SKIP TO 581) LIVE BIRTH 2

NON-LIVE BIRTH (SKIP TO 576)

572. Did you breast-feed _____? (NAME OF LAST CHILD OR YOUR LAST CHILD WHO LATER DIED')

YES 1 NO 2 (SKIP TO 576)

573. For how many months altogether did you breast-feed him/her?

PROBE: How many months old was he/she when you completely stopped breast-feeding him/her?

(MONTHS)

STILL BREAST-FEEDING 77 (SKIP TO 575) UNTIL HE/SHE DIED 97 (SKIP TO 575)

574. After _____ months had you completely stopped breast-feeding your child even once a day?

YES 1 NO 2

(CORRECT 573 AS NECESSARY THEN PROCEED TO 575)

575. How many months old was the child when you began giving him/her any other food along with breast-feeding?

(MONTHS)

NO ADDITIONAL FOOD YET 77 CHILD DIED BEFORE GIVEN ADDITIONAL FOOD 97

8 5

1

3

6

9

11

12

13

15

16

SECTION 6
WORK HISTORY

601. INTERVIEWER: SEE 301, 302

EVER MARRIED

1

NEVER MARRIED

2

602. Are you currently working for a wage or salary?

YES 1 NO 2
(SKIP TO 607)

603. Have you ever worked for a wage or salary since the day when you were first married?

YES 1 NO 2
(SKIP TO 616)

604. In what year did you last work? 19__ (YEAR)

605. Are you currently working for a wage or salary?

YES 1 NO 2
(SKIP TO 607)

606. Have you ever worked for a wage or salary?

YES 1 NO 2
(END INTERVIEW)

606.(b) In what year did you last work? 19__ (YEAR)

607. I would like to ask some questions about (your present work, the last work you did). What (is, was) your occupation - that is, what kind of work (do, did) you do? OBTAIN DETAILED DESCRIPTION OF MAIN WORK.

608. INTERVIEWER: SEE 607

WORK (IS, WAS)
FARMING

1

WORK (IS, WAS)
NOT FARMING

2

(SKIP TO 610)

609. (Is, was) that your family farm?

YES 1
(SKIP TO 612)

NO 2
(SKIP TO 612)

610. (Do, did) you work mostly at home or (do, did) you work mostly away from home in that job?

HOME 1

AWAY 2

OTHER ANSWER
(SPECIFY)

611. (Are, were) you employed by some member of your family or by someone else?

FAMILY MEMBER 1

SOMEONE ELSE 2

9 1

1

3

6

6

9

11

11

12

13

14

16

19

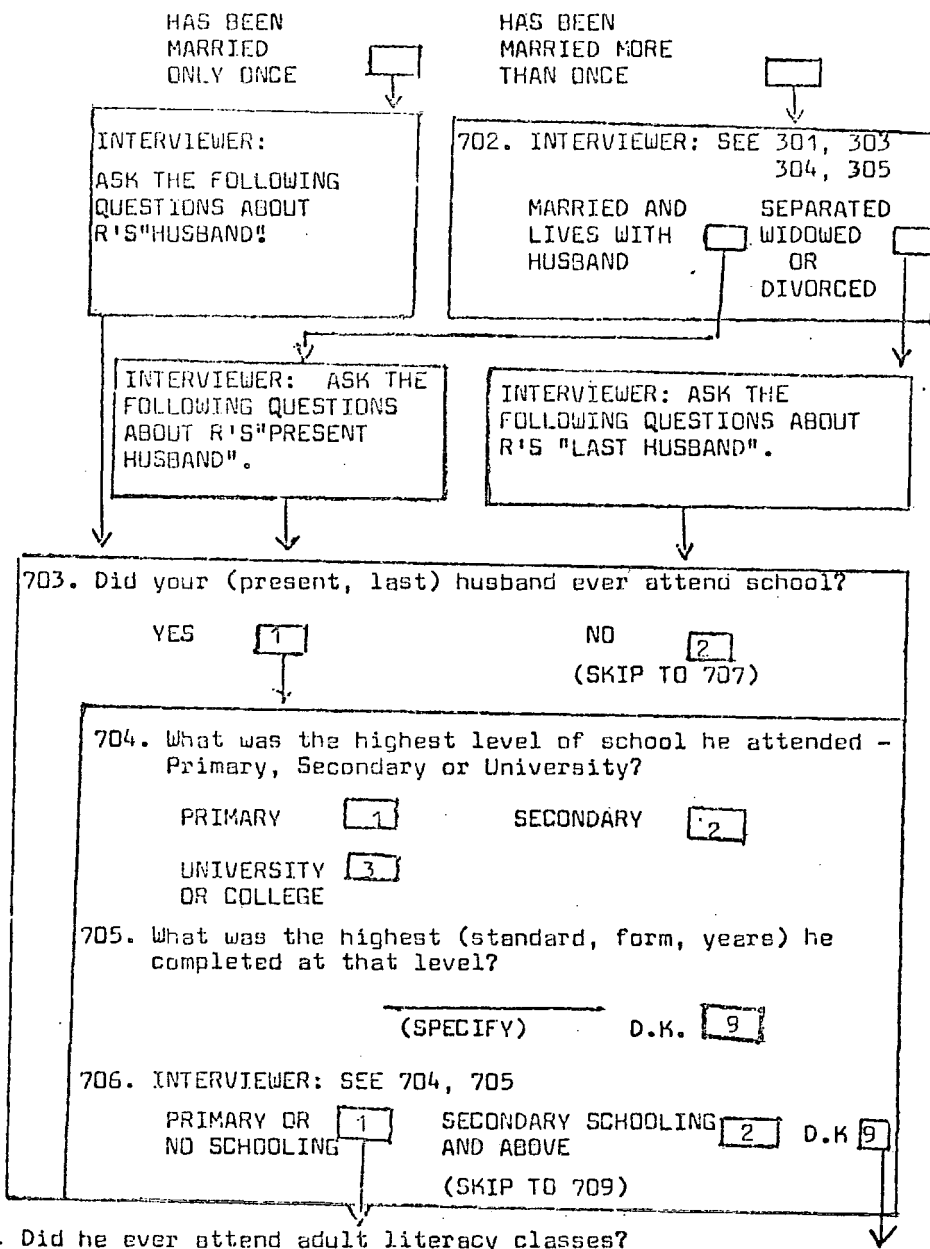
20

21

22

CURRENT (LAST) HUSBAND'S BACKGROUND

701. INTERVIEWER: SEE 312, 313



- 35
- 36
- 37
- 38
- 39
- 40
- 41

INTERVIEWER'S OBSERVATIONS

(TO BE FILLED IN AFTER COMPLETING INTERVIEW)

715. VERSION OF QUESTIONNAIRE USED

KIKUYU 01 LUHYA 05 MERU 09
 KAMBA 02 KALENJIN 06 KISII 10
 UP-COUNTRY SWAHILI 03 LUO 07 ENGLISH 11
 DOWN-COUNTRY SWAHILI 04 MIJIKENDA 08

50

716. LANGUAGE USED IN INTERVIEW

52

717. DEGREE OF CO-OPERATION. (SPECIFY)

BAD 1
 AVERAGE 2
 GOOD 3
 VERY GOOD 4

54

DATES:

RESPONDENT KNEW	SOME PROBING	ESTIMATED BY INTERVIEWER	NOT APPLICABLE	COMMENTS
FIRST MENSTRUATION				
CHILDREN'S BIRTH DATES				
DATES OF OTHER PREGNANCIES				
MARRIAGE DATE(S)				
HUSBAND'S AGE				

55

56

57

58

59

LIST ANY QUESTIONS WHICH THE RESPONDENT HESITATED TO ANSWER OR FOUND EMBARRASING:

OTHER COMMENTS:

60

FOR SUPERVISORS ONLY.

Was this woman interviewed in the National Demographic Survey?

YES 1 NO 2

Enter her National Demographic Survey Identification numbers.

61

H/HOLD NO

LINE NO

62

63

STEPS FOLLOWED IN STANDARDIZING FOR AGE AT FIRST
MARRIAGE/DURATION OF MARRIAGE

Table 2-1 Mean number of children ever born to all women - by level of education and current age and age at first marriage

CURRENT AGE 25-34 Level of Education	AGE AT FIRST MARRIAGE						Never married	Total unstand- ardized
	<15	15-17	18-19	20-21	22-24	25+		
None	5.43 (308)	4.84 (452)	4.21 (235)	3.82 (99)	2.61 (67)	2.91 (29)	1.82 (24)	4.55 (1214)
1-4 yr.	5.76 (94)	5.26 (183)	4.90 (106)	3.57 (47)	2.82 (31)	2.56 (11)	2.36 (8)	4.84 (478)
5-8 yr.	5.36 (44)	4.88 (188)	4.81 (168)	4.05 (122)	3.54 (69)	2.90 (15)	2.00 (27)	4.42 (632)
9+	7.66 (2)	5.27 (18)	4.14 (34)	3.52 (39)	2.54 (40)	1.76 (12)	1.21 (19)	3.26 (165)
All	5.50 (448)	4.95 (841)	4.52 (542)	3.83 (307)	2.94 (207)	2.64 (67)	1.79 (77)	4.49 [2489]

* Figures in brackets show the number of frequencies

Due to a small number of cases in certain cells, the first step before standardizing for age at first marriage is to merge some categories in the above distribution to reduce the effect of small cells as follows:

Level of Education	<17	18-19	20-24	25+ and never married	Total
None	5.08 (760)	4.21 (235)	3.33 (166)	2.42 (53)	4.55 (1214)
1-4 yr.	5.43 (277)	4.90 (106)	3.27 (78)	2.48 (19)	4.84 (478)
5-8 yr.	4.97 (232)	4.81 (168)	3.87 (191)	2.32 (42)	4.42 (632)
9+	5.51 (20)	4.14 (34)	3.02 (79)	1.42 (31)	3.26 (165)
Number of cases	[1289]	[542]	[514]	[144]	[2489]
Proportion of women to the total pop. in the age group	.52	.22	.21	.06	1.00

The proportions in step one are multiplied by the respective marginal means in each cell combination of education and age at marriage. The results are then added to yield standardized means for each level of education. The last column thus gives the standardized means for

Level of education	AGE AT FIRST MARRIAGE				Total Standardized
	<17	18-19	20-24	25+ and never married women	
None	2.64	0.93	0.70	0.15	= 4.42
1-4 yr.	2.82	1.08	0.69	0.15	= 4.74
5-8 yr.	2.58	1.06	0.81	0.14	= 4.59
9+	2.87	0.91	0.63	0.09	= 4.50

age group 25-34.

