

FERTILITY AND CONTRACEPTIVE USE IN MERU DISTRICT

BY

MICHAEL MUTEKI WA! MUGO

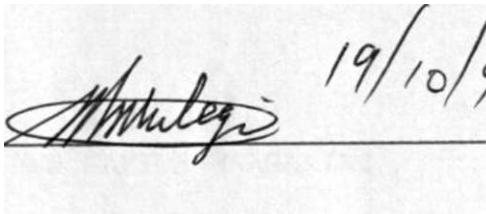
A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIREMENT OF A POST-GRADUATE DIPLOMA IN POPULATION
STUDIES AT UNIVERSITY OF NAIROBI


OCTOBER 1990

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DECLARATION

This project is my original work and has not been presented for degree or diploma in any other University.


19/10/90



MUGO, MICHAEL MUTEGI WA

This project has been submitted for examination with my approval as a University Supervisor.

a t

MR. B.O. KOYUGI

Lecturer, population Studies and Research Institute

PAULO MUTEGI M'MUCHIRI

CATHERINE KANYUA MWAGAKIRI

AND

PURITY LITA KAGWIRIA

Who knows who they are, and therefore need no
further identification

ACKNOWLEDGEMENT

I would like to express my special thanks to Mr. B.O. Koyugi who tirelessly and patiently supervised this study. My lecturers at P.S.R.I and fellow comrades for their timely suggestions and advice in this study.

My indebted gratitude to my wife Nelly, for her deep understanding and encouragement and to my son Derrick, who despite his tender age seemed to accept my periodic absence from home during this course.

I am indebted to Ephraim N. Magambo, my friend and companion, for having kept my stay in Nairobi as comfortable as possible.

I wish to thank Dr. Nyamwaya, Rosemary A. Otunga, Betty Olela and Margaret Ombegi all of AMREF and Charles Olenja of UNFPA for their report on Chogoria.

My special thanks to Eunice H. W. Wanjohi for her unbelievable stamina in typing this work in time.

Lastly great regards to my parents Mr. and Mrs P.Mugiira Mugo for their unconditional efforts to educate me to the zenith of their financial capabilities.

THE PEOPLES' SONG

Lord we beseech your help
To guard us from the iniquities of the world

Let our country grow and be known.
All over this broad earth.

Let everyone prosper in it.
Without fear and without persecution.

Help our land find honour
Place her on the path of truth.

Help her prosper, let there be wealthy
Everywhere in Kenya.

so that we will be people to be proud
That we are living in Kenya

And thank God

That he placed us among the people of Kenya.*

*See Mugo, Kenyatta University, 1986.

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ABSTRACT

The study Fertility and Contraceptive use in Meru District estimate fertility levels in Meru district, examines fertility differentials within Meru district and examines contraceptive differentials within the district.

The methods used by KDHS to collect the data for the survey was based on the National Sample survey and education Programme (NASSEP) master sample which is a two-stage design, stratified by urban-rural residence. The method of analysis used by the author was the P/F Ratio method and cross-classification method to analyse the data collected for Meru district from the KDHS survey of 1989.

The study found out that the district TFR was 5.2 per woman and the age specific fertility rate recorded for the district was much lower than those for the entire nation.. Contraceptive use was low and the pill the most popular. Education influences contraceptive use with women with no formal education constituting very few who use modern methods, contraceptive use among the married is very high (82%) in Meru and this accounts for the fall in fertility in the district. Working women have smaller families compared to non-working women.

The study recommends an intensification of Family Planning education to increase contraceptive use especially among women with

no formal education. The study calls for female labour absorbing services and industries to increase proportion of working women in the district and recommends the government to make complete primary education compulsory for girls and encouragement of secondary and higher education for girls in order to postpone early marriages and reduce demand for large families.

CHAPTER ONE

1.1 Introduction

The study intends to estimate fertility levels in Meru district, examine fertility differentials within Meru district and examine contraceptive differentials within the district. The data generated in the study would be useful to scholars, policy makers and program administrations in the district.

The study therefore concerns itself with the total fertility rate in the district, children ever Born and contraceptive use and differentials in the district. This is done by age of mother, education of mother, place of residence and marital status.

The study is arranged in four chapters. Chapter one deals with the Introduction, background of the study area, statement of the problem, the study objectives, hypothesis of the study, justification of the study, the literature review, the theoretical framework and finally the conceptual model.

Chapter two deals with methods of data collection and

analysis while chapter three deals with analysis and findings and lastly chapter four gives the summary and recommendations of the study.

11.2 Background of the study area

Meru district is one of the six districts in Eastern Province and one of the largest in the republic of Kenya covering an area of 9,222 square kilometers. The district lies to the east of Mt. Kenya whose peak cuts through the south-west border. The district shares borders with the agricultural districts of Embu to the south, Laikipia to the west, Nyeri and Kirinyaga to the south-west, as well as the drier districts of Kitui and Isiolo. It straddles the equator, lying within less than one degree on either side of it. It is within 37 degrees and 38 degrees east longitude. Meru town, the district headquarters is 250 kilometers from Nairobi and 750 kilometers from Mombasa by road.

The district falls within the eastern highlands zone of the country. The most striking physical features in the district are the two great massifs of Mt. Kenya in the west and the Nyambeni Range in the North-east, both of which lend striking diversity to the physical landscape. The two elevations affect the physiography and the entire environment potential of the district. From its greatest western zenith of point Mbatian at 5199m. above sea level, the vast Mt. Kenya slopes down gently northwards and eastwards, blending into the east plateau of Kenya,

finally reaching an altitude of 300m above sea level near Tana River. This great range of altitude gives the district a diverse climate and a wide range of agro-ecological zones.

Mt.Kenya massif has its peak the meeting point of 5 districts, Meru, Embu, Kirinyaga and Laikipia. Northwards and north-eastwards the part of massif which is in the district has gentle slopes. The terrain of most of the district attests to the volcanic nature of both Mt. Kenya and the Nyambeni Range.

The Nyambeni Range, aligned south-west to north-east rises sharply above the surrounding plateau . The summit is to the south where the peak, Itiene, reaches 2515m. The slopes of the Nyambeni are steeper than those of Mt.Kenya but the crests are much lower and flow out into basement complex, their profile gradually flattening and lateral erosion becoming predominant.

The remainder of the district is dominated by the plains to the north and lowlands in the eastern and south-eastern parts. The plains to the north are composed of volcanic Nyambeni lava, low-lying and with particularly shallow and rocky soils. These plains gently descend northwards to 850m. Their even surface is broken in the

south by volcanic cones and in the north by non-volcanic inliers of the basement complex.

The lowlands in the east and south-east stretch from the lower slopes of Mt. Kenya to the edge of the district and beyond into Kitui and Tana river districts. Mt. Kenya volcanic materials give way to pre-cambrian basement whose surface then descends gently to the Tana River at about 300m. The eastern part of the district consists of a rocky plateau surface roughened by steep inselbergs and characterised by a drainage system in its maturity.

The 1979 census put the Meru district population at 830,179 which when compared to the 1969 census (596,506), represents an intercensal increase of 3.36% per annum. The last district development plan gave the projected district population for the year 1988 as 1,214,950.

It has been observed that there has been a marked decline over the period in the level of fertility. This is due to improvement in the general understanding of the people. The projections for Meru district population assuming a constant level in both fertility and mortality give the estimated population of 1,315,145 in 1990. (CBS, population projections for Kenya 1980-2000).

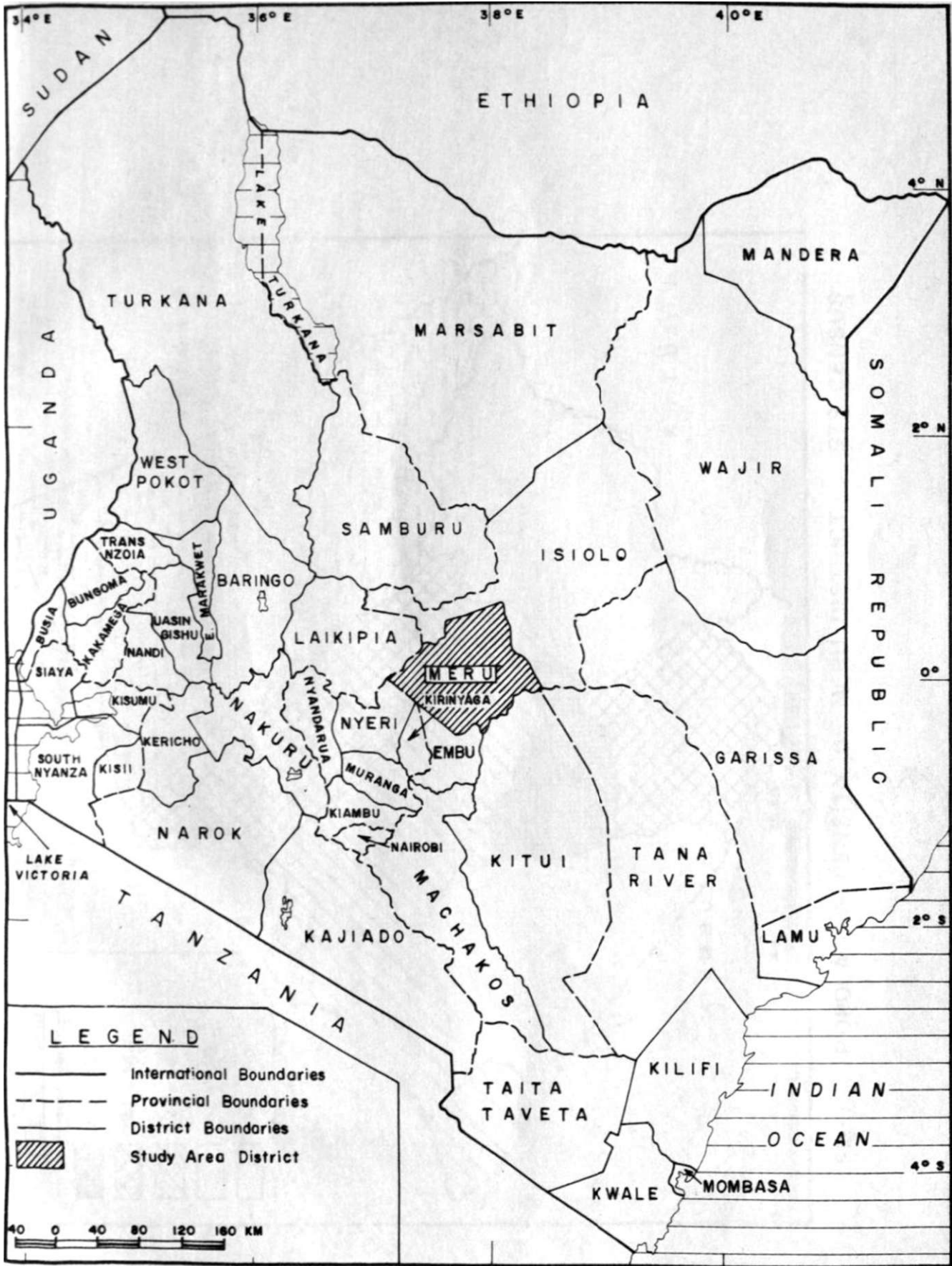


Fig. 7 : LOCATION OF MERU DISTRICT IN KENYA

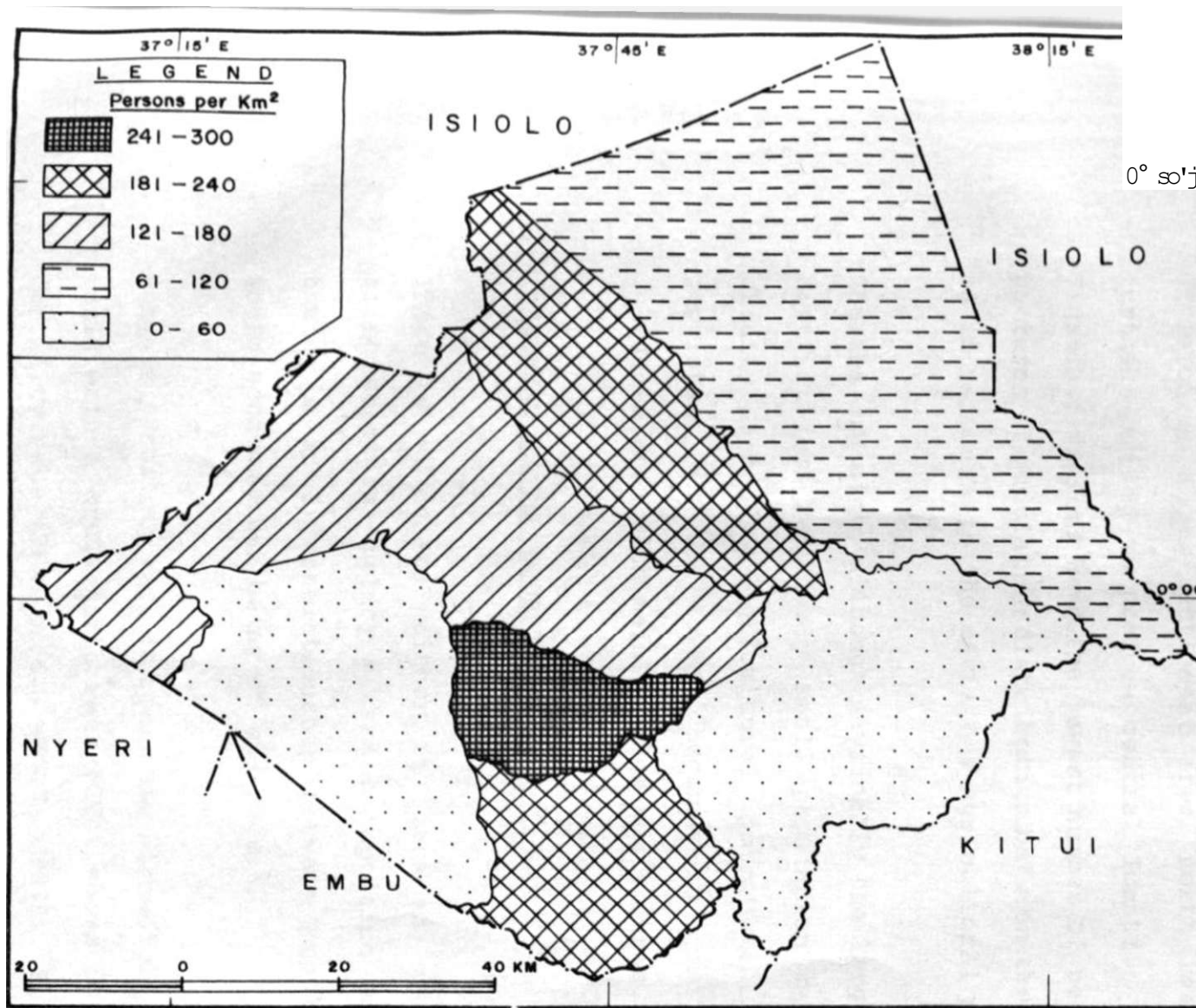


Fig. 2 : POPULATION DENSITY OF MERU DISTRICT : 1979 CENSUS

Timau, which by 1979 was a location in north Imenti division is a new settlement area, north Imenti was a further divided to produce central Imenti. Nithi and Tigania divisions have the lowest number of people. The patterns of population distribution between the divisions is in response to the divisions agricultural potential.

Tharaka division, although physically the largest in the district has relatively small population because its aridity and low agricultural potential. Timau's population is the lowest because it used to be a scheduled area with mainly large-scale farms.

STATEMENT OF THE PROBLEM

- 1.3 There is no debate neither is there any disagreement among scholars, policy makers or decision makers that there is an interrelationship between population and socio-economic wellbeing of any people.

Kenya's fertility rate is among the highest in the entire world with a crude birth rate (CBR) above 50 and total fertility rate (TFR) of 6.7 (KHDS, 1989). Reduction of this high rate can be achieved through high contraceptive prevalence.

Contraceptive use in rural Kenya is low (only 27 per cent

of currently married women, KHDS, 1989). This low rate cannot have any meaningful impact on the desired low total fertility rate.

Kenya's objective is to increase contraceptive prevalence rate to desired levels in order to lower its fertility rate. Detailed analysis of differentials in fertility and contraceptive use among women in Meru district has not been undertaken.

A case study for Meru district focusing on fertility and contraception use among married women is likely to generate information that will assist in understanding of the impact of Family Planning programmes and contraceptive use in rural Kenya.

THE STUDY OBJECTIVES

- 1.4 The specific objectives of the study is
- (1) Estimate fertility levels in Meru district.
 - (2) Examine fertility differentials within Meru district.*
 - (3) Examine contraceptive differentials within Meru district.

The ultimate objective is to provide policy makers and program administrators with a better understanding of fertility and contraceptive use in the district.

1.5 Hypothesis of the study

(a) Broad hypothesis

The age pattern and levels of fertility and contraceptive use by various social economic groups in Meru district are likely to be different from other rural Kenyans.

(b) Operational hypothesis

(1) Differentials infertility and contraceptive use exists within the district.

(2) The age pattern of contraceptive use by method and by various social- economic groups is likely to be different compared to those experienced in rural Kenya.

1.6 Justification of the study

The objectives and goals of achieving lower fertility levels in rural Kenya has been met with numerous inhibitors. The national contraceptive prevalence use as been too low as to achieve the above objectives and the total fertility rate in rural Kenya has been at all

time high-8 children per woman.

The contraceptive use and family planning in Meru has been a success in the community-based programme of Chogoria hospital where TFR was 5.2 and contraceptive use was 43%. The other parts of the district had not reached this levels and hence need to ascertain the district levels in recent years. Scholars and policy makers can draw useful experiences from the area and utilise community-based approach in other parts of the district with localised modifications and adaptations. The problem relate to a broad social economic and health issues e.g unemployment, income maldistribution, status of women, education, and maternal and child health / survival . Elevated contraceptive use and reduced fertility in the area would tackle the above issues and would provide useful input to service providers in the district.

1.7 Literature Review

Economic factors exert a powerful influence on human fertility. Robinson (1964) and Van Nort (1985) argue that underlying rationale of the traditional theory of "demographic transition" was that with social and economic development fertility became an economic process whereas it had previously been a biological one. Mamdani (1972) observes that experience in Taiwan's Family

Planning program showed that "No matter how primitive he may be, man seems to have the 'rationale' to adjust his numbers in accordance with resources available and the environment to which he is subjected." Delayed marriage, coitus interrupts and other means are used by couples who had come to see large families as an economic burden and a barrier to economic and social advancement.

Leibenstein (1958) laid the groundwork for what has become the "economic theory of fertility". Others in this school of thought include Becker (1960), Easterlin(1969, 1975), Schult (1973, 1974) and later work of Leibenstein (1974). Despite several versions, the basic core of the theory remain as propounded by Leibenstein 42 years ago.

Becker (1960) differed from Leibenstein by adding the notion of "Child quality" to explain raising purchase "price" of children which also explains why family size fell as income rose whereas demand for most "normal" consumer goods would rise as did income. If parents demand a higher "quality" child which cost a higher price even at higher income, a smaller family size would result. Others in the school of thought include schulty, Nerlone and Walls. The major cost element for obtaining child-services is the time of the housewife mother. The

labour force potential of the wife is important i.e. household with a working wife will have a greater opportunity cost of children than one with a household with a non-working wife. In short "quality" is more time-intensive (costly) than sheer quantity.

Recently Leibenstein argues for the effect of "Social influence groups" (SIG'S). The family as a social "group" based on historical, social-cultural and economic factors with exert an effect upon desired living standards, consumption patterns and family size. Moving from one SIG to another may lower fertility desires, but increase fertility.

Easterlin argues that demand for children is affected by background characteristics of religion, education, residence and family type. Using concept of relative "income" he observes family units have a "model" expected income, given their income, age and education. Income in excess of this tends to lead to higher fertility. Expected 'model' income for most families is rooted in the comparable income level of their parents. "Tastes" are a function of income and one's basic desires change as change as one changes income groups. He agrees with Leibenstein, all versions of economic approaches sees fertility as resulting from a rational decision based

on an effort to maximize an economic payoff subject to direct and indirect (opportunity) costs, within income/resource constraints and in the light of other possible payoff from alternative uses of resources. Key variables of the theory are: expected utilities to be gained from acquiring a child; cost of obtaining it, including opportunity costs; resources available household. Utility is based on a given preference pattern which reflects subjective, individual "tastes".

Easterlin says of "economic framework for fertility analysis" that ".....the desirability of adding a third set of fertility determinants disregarded in the usual economic theory (demand for children and cost of fertility control being the other two), namely, those shaping the potential output of children.....this depends, in turn, on natural fertility and the probability of a baby surviving to adulthood

Natural fertility depends partly on physiological or biological factors and partly on cultural practices....."(Easterlin, 1975, Ohadike 1977), natural fertility is a complex process which unfolds and is modified as the natural biological conditions of maturation and reproduction interact with human demographic and social process. Changes in the "supply" of children occur as income rises, due to improved

nutrition, health and other biological factors, just as change in demand because of changes in income, prices and "testes". A given society may find that supply exceeds demand or vice-versa. Easterlin argues for low income countries demand does tend to typically be high and supply low, due to biological restraints on fecundity. This leads to an "excess" demand and also to the virtually total absence of family limitation practices. For high levels of income, demand is low and potential supply high, leading to "excess" supply and widespread family planning practices.

The great bulk of demographic analysis has been sociological. Freedman (1962), Hawthorne (1970), Davis and Blake (1956) have advanced sociological theoretical framework for fertility analysis. Human reproduction is an exceedingly complex phenomenon in which genetic, physiological, psychological and societal forces are all operative, "people make their 'voluntary' reproduction choices in an institutional context that severely constraints them not to choose childlessness, not to choose only one child, and even not to limit themselves solely to two children. The Davis-Blake schemata provides a framework for conceptualizing the ways in which biological processes (shifts in nutritional status, diseases status, general health status, surgical or

chemical intervention), Social groups (changing family relationships and roles, development of "Singles culture," shifting roles and statuses of women) and individual behavior (changes in knowledge, shifts in social economic or marital status, acceptance of new beliefs or values, shifts, in reference group identification, exposure to rewards and statuses of women) to produce an observed level of fertility. The "intercourse, conception and gestation" variables all affect decisions, behavior and outcome. Judith Blake (1968) argue that "economic issues are secondary to normative ones" If poor have more children than the rich it is because they are more strongly influenced than the rich by the society's pro-natalist norms. These three intermediant variables are the only means by which fertility change can be affected. Higher incomes, better education, different social institutions, new roles and status of women, modernization, improved health and other benefits of economic and social developments do not themselves directly alter fertility.

Marshall, A (1989) working in Malawi found that nearly all women breastfeed for as long as two years and this inhaibit conception and protects the newborn. He noted social pressures also: do not resume sexual activity too soon after a birth and a woman who finds herself pregnant

before her last child is weaned and the correct rites performed to protect it can expect ridicule and hostility. She risks serious illness according to local belief. Regulating childbirth in Malawi can also be caused by other events, especially death of parent, spouse or child since they also demand abstinence for a longer or shorter period. When a woman becomes a grandmother her own childbearing should cease. Married women who do not wish to become pregnant tie a knot string round their waists. There are traditional methods of contraception, or withdrawal may be used but when all these fail herbal remedies are known to prevent or terminate pregnancy.

Olenja (1987) found that the sources of Family Planning information in Chogoria are the nurses, field educators, friends, volunteer workers, radio and traditional births attendants. The case for open model called organisation development (OD) leading to the success of this programme becomes important.

Mugo (1986) argue O.D attempts to go beyond the locus of small group theory and has ardent zeal to "democratize" the bureaucracies. O.D is planned, organization-wide attempt directed from the top designed to increase organizational effectiveness and viability through

interventions in the active working of the organization relying heavily on concepts from behavioural sciences. Organisation development stresses on planned changes, Systematic analysis, top-management and the objectives of organizational effectiveness. It's action oriented and hence its influence on public bureaucraciestand can be used in maximizing communication between diverse groups. O.D becomes useful as an organisational tool to be used in Family Planning Programmes and other community-based programmes.

Olenja (1978) found out that Chogoria hospital, through the community Health Department, has trained field educators and volunteers to assist the nurses in carrying out health and population education functions. The field educators and volunteers are the backbone of the community-based programmes. Traditional birth attendants are also used in the programme, constant supervision of these personnel is in-built in the programme and frequent visits are made by the director of the community Health Departments and the Officer-in-charge of community-based programme, information Officers are also deployed in the field and deal with all aspects of health and development programmes in the catchment area. Besides these, there are health teams at the community levels to ensure that individual family matters are properly attended to by the

hospital personnel in the field. A referral system at every level from the community through to the hospital exists and is very well coordinated. This actually ensures the continuous functioning and sustenance of momentum in this community-based programme and the entire Chogoria hospital operations.

Kalule-Sabiti(1984) found that the proportion married among the population, the level of contraceptive use and post-partum lactational infecundibility account for much of the observed marital fertility differentials, modernization through education and urbanization have offsetting effects on fertility by reducing lactation and increasing contraception.

Muinde and Mukras (1979) found that education, female labour force participation and family income were all negatively related to fertility. But polygamy and infant mortality were found to be positively correlated with fertility. In polygamy there is competition for children to gain respect.

Anker and Knowles (1982) found that contraceptive use reduced fertility and its use increase with education. Female Labour force participation, urbanization, polygamy and separation were all found to be negatively related

to fertility.

Cochrane (1979) and Henin (1979) argue that just primary education for girls will lead to higher fertility levels.

Osiemo (1986) recommended secondary education for girls in Kenya for any substantial reduction in fertility.

Kpedekpo (1982) notes fertility varies with age, duration of marriage, area of residence (rural urban), level of educational attainment, occupation, religion and many other factors.

1 • 8 Theoretical Framework

The complexity of fertility and degree it is supported and promoted by solid social institutions and shared values make it rather cumbersome in devising adequate strategies for reducing it. Judith Blake and Davis (1956) provided a means of fertility control. Three intermediate variables are the only means by which fertility change can be affected. These variables include the inter course variables, the conception variables and the gestation variables.

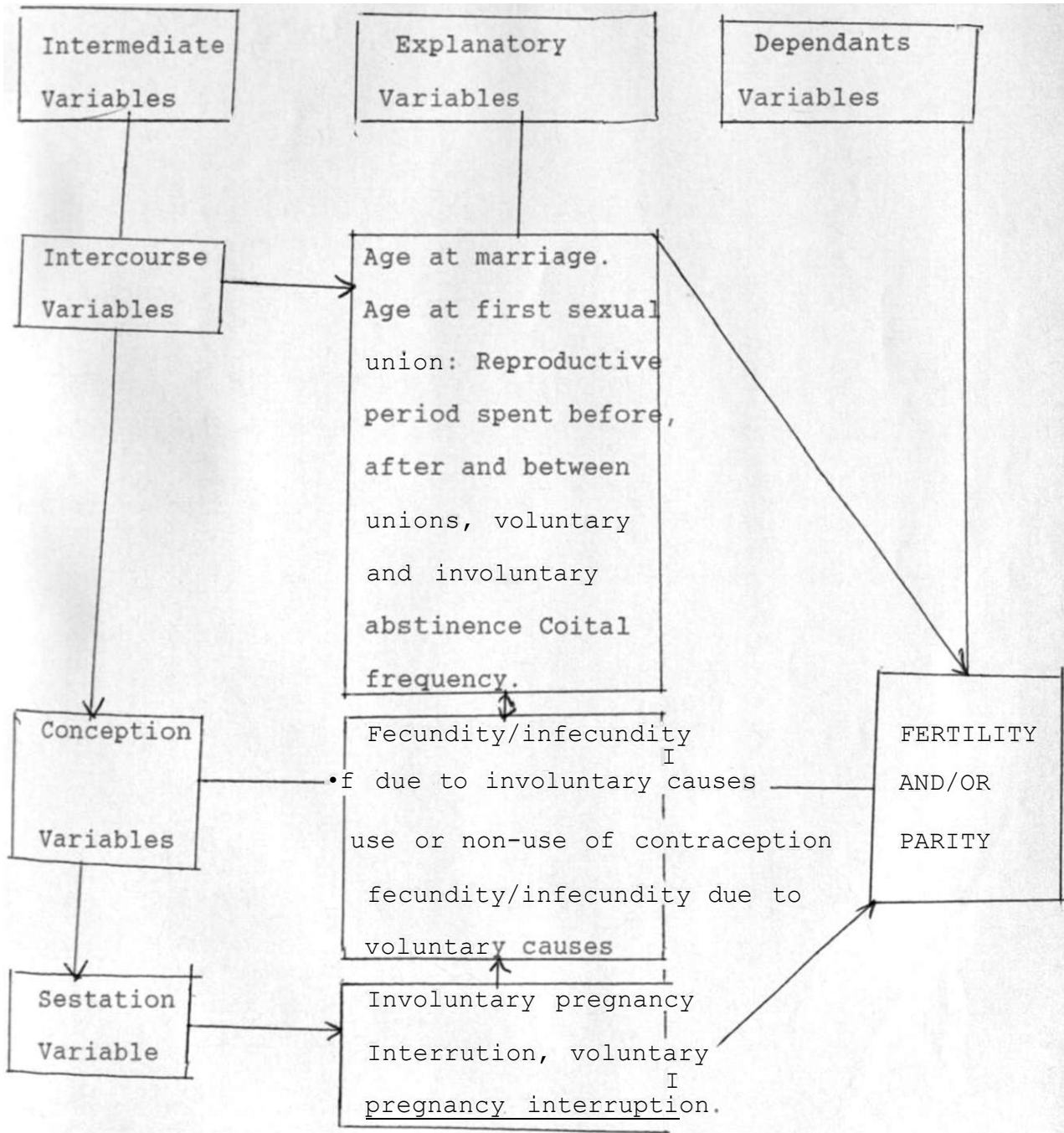
Any policy that aims at affecting fertility, directly or

indirectly has to do it by changing behavior related to intercourse, conception and gestation or risk in festing time and resources in actions that are not likely to have much payoff in fertility change.

For example, Kenya has a policy to inhibit deliberate pregnancy termination through making it illegal. This has not worked but has resulted in backdoor abortions and consequent risk in maternal mortality. The world Health organsition reports that about 200,000 women die each year in developing nations due to abortions that are done clandestinely (Daily nation, September 12, 1990). Yet in countries that have offerred legal abortion eg Japan, Eastern Europe and U.S.A have had great demographic effects.

The above theoretical framework can be presented as a conceptual model as shown below.

1.9 Conceptual Model.



In this study no attempt will made to explain the above

observed fertility and contraceptive use. Hence the theoretical and conceptual model will not be used in the study.

CHAPTER TWO

2.0 METHODS OF DATA COLLECTION AND ANALYSIS2.1 Data Collection

The Kenya Demographic and Health Survey (KDHS) was a national survey that is as carried out by NCPD in collaboration with the Central Bureau of Statistics (CBS) and the Institute for Resource Development (IRD) in 1989.

The sample for the KDHS is based on the national sample survey and evaluation programme (NASSEP) master sample maintained by the CBS. The KDHS sample is national in coverage but excludes North Eastern.

The NASSEP master sample is a two-stage design, stratified by urban-rural residence, and within the rural stratum, divided by individual district. In the first stage, 1979 census enumeration areas (EAS) were selected with probability proportional to size. The selected EAS were segmented into expected number of standard-size

clusters, one of which was selected at random to form the NASSEP cluster. Selected clusters were then mapped and listed by CBS field staff. In rural areas, household listings made between 1984 and 1985 were used to select the KDHS households, while KDHS pretest staff were used to relist households in urban clusters.

The KDHS utilised three questionnaires: one to list members of the selected households; another to record information from all women aged 15-49 who were present in the selected households the night before the interview; and the third to record information from the husbands of interviewed women in a subsample.

Data generated thus has been used as secondary data for the present study.

.2 The P/F Ratio Method

The term P/F ratio method has come to be widely used for the comparison of cohort and current fertility measures obtained from the mean number of children ever-born per woman in the standard five year age group. The $F(i)$ are the parity equivalent values calculated by the cumulation of the current age specific fertility rates from the

start of reproduction upto ages corresponding to these for the $P(i)$. Normally the $F(i)$ corresponding to the $P(i)$ requires interpolation. This has to be done in various ways depending on how the current age specific fertility rates are derived. Most commonly they are based on reports of births in the past year by the ages of the women at the time of the census.

(a) Bases of P/F method and its Rationale:

The P/F ratio method seeks to adjust the level of observed age specific fertility rates which are assumed to represent the due age pattern of fertility, to agree with the level of fertility indicated by the average parities of the women in age groups lower than age 30 or 35, which are assumed to be accurate. Measure of average parity equivalents, $F(i)$, comparable to reported average parities, $P(i)$, are obtained from period fertility rates by cumulation and interpolation. Ratios of average parities, $P(i)$, to the estimated parity equivalents, $F(i)$, are calculated age group by age group, and an average of the ratios obtained for younger women and for women in all the age groups, are used as adjustment factors by which all the observed period fertility rates are multiplied. Note that P/F ratios are generally calculated for the entire age range from 15 to 49, even

though not all the ratios are used for adjustment purposes. However, where the ages of women are pushed up or down, a wide age range (recommendably the entire age range) is more applicable. This practice is recommended because the pattern of the ratios with age may reveal data errors. Hence the mean of the ratios will take care of the up-and-down pushing of the ages of women.

(b) Data Required

(1) The number of children ever born classified by five-year age group of mother.

(ii) The number of children born during the year preceding the census classified by five-year age group of mother.

(iii) The total number of women in each five-year age group irrespective of marital status.

(iv) The total population for the calculation of the birth rates.

(c) Computational Procedure,

Step 1 Calculation of reported average parities.

The reported parity of women in age group 1 is denoted by $P(i)$. Its value is obtained by dividing the total number of children ever born to women in age group 1 by the total number of women in that age group (whether married or single, fertile or not).

Step 2 Calculation of a Preliminary fertility schedule from information on births in the past year;

The fertility rate of women in age group 1 is denoted by $F(i)$. This value is computed for each i by dividing the number of births occurring to women in age group i during the year preceding the interview by the total number of women (whether childless or not, ever married or not) in that age group.

Step 3 Calculation of cumulated fertility schedule for a period.

To calculate this schedule, denoted by $Q(i)$, the fertility rates computed in step 2 are added, beginning with $F(1)$ and ending with $f(i)$. The value of this sum multiplied by five is an estimate of cumulated fertility

up to the upper limit of age group i . The formal definition of $Q(i)$ is $Q(i) = \sum_{j=0}^i f(j)$.

Step 4 Estimation of average parity equivalents for a period

Average parity equivalents, $F(i)$, are estimated by interpolation using the period fertility rates $f(i)$ and the cumulated fertility values $Q(i)$ calculated in previous steps. Coale and Trussell proposes fitting a second-degree polynomial to three consecutive values of $Q(i)$ and estimating the average parity of women of an age group within the range by evaluating the integral of the polynomial, in an actual application, $F(i)$ is obtained as

$$F(i) = Q(i-1) + a(i)f(i) + b(i) + (i-1)c(i)Q(i)$$

for $i=1, \dots, 6$

and

$$F(7) = Q(6) + a(7)f(6) + b(7) + (7)c(7)Q(7)$$

Values of the parameters a, b , and c were estimated by using the Coale- Trussell fertility model (1974). Table 1 shows the values of the co-efficient required for the use of equation a and b.

5 calculation of a fertility schedule for conventional
five-year age groups.

When age-specific fertility rates have been calculated from births in a 12-month period classified by age of mother at the end of the period, they are specific for unorthodox age groups that are shifted by six months. A fertility schedule for conventional five-year age groups, $f+(i)$ can be estimated by weighing the rates referring to unorthodox age groups according to equations c and d below, and using the coefficients displayed in table 1

Table 1 Co-efficient for interpolation B/W cumulated f.Rates to estimated parity Equivalent

Age	Index 1	a(i)	b(i)	c(i)
1	2	3	4	5
15-19	1	2.531	-0.188	0.0024
20-24	2	3.321	-0.754	0.0161
25-29	3	3.265	-0.627	0.0145
30-34	4	3.442	-0.563	0.0029
35-39	5	3.518	-0.763	0.0006
40-44	6	3.862	-2.481	0.0001
45-49	7	0.392	-2.608	-

Source: un manual x, 1983, P.34

Note that when fertility rates have been calculated from births classified by age of mother at the time of delivery, this step is not required.

$$f_{+}(i) = (1-w(i))f(i) + w(i)f_{(1+i)}$$

where $f(i)$ and $f_{+}(i)$ are respectively, the unadjusted and adjusted age-specific fertility rates, and the weighing factor, $w(i)$, is calculated as

$$w(i) = x(i) + Y(i) f(i)/Q(7) + Z(i) f_{(1+i)}/Q7$$

The values of $x(i)$, $y(i)$ and $z(i)$ were obtained by fitting equation d by least-square regression to the same model cases used in deriving the co-efficients presented in table (1) above. No weighing factor is needed for $l=7$, and child bearing is assumed to cease after age 50, and $f+(7)$ is therefore taken to be $(1-v(6))f(7)$.

Table 2

Co-efficient for calculation of weighing factors to estimate age-specific fertility rates for convectional age groups from age group shifted by six months

Age Group	Index i	Co-efficient		
		$x(i)$	$x(i)$	$z(i)$
(1)	(2)	(3)	(4)	(5)
15-19	1	0.031	2.287	0.114
20-24	2	0.068	0.999	0.233
25-29	3	0.094	1.219	0.977
30-34	4	0.120	1.139	1.531
35-39	5	0.162	1.739	3.592
40-44	6	0.270	3.454	21.492

Step 6 Adjustment of period fertility schedule:

With the quantities computed in step 1-4, the ratios $P(i)/F(i)$ are calculated. If p_2/f_2 and p_3/f_3 are reasonably consistent, either of them can be used as an adjustment factor for the period fertility rates. If they are not way cinder, a weighted average of the two can be used. However if the ages of women are believed to have been pushed up or down, then the mean of all the $p(i)/f(i)$ ratios can be used.

Once an adjustment factor has been chosen (one may denote it by k) an adjusted fertility schedule is computed by multiplying the fertility rates for convectional age groups $(f + (i))$, by k , to yield adjusted age-specific fertility rates for convectional age groups, $f \times (i)$:

$$f_x(i) = kf+(i)$$

The total fertility rate is calculated as:

$$TFR = 5(\quad +X(i))$$

An estimate of the adjusted crude birth rate can be obtained by multiplying each of the adjusted fertility rates by the number of women in the relevant age group to estimate number of births, adding these results for

all ages and then dividing their sum by the total population.

2.3 CROSS CLASSIFICATION METHOD

Data presented higgledly-piggledly are far harder to understand than data presented in a clear and orderly manner. After figures have been collected the next step is to lay them out in an orderly way so that they are more readily comprehended. A good form of layout is one of columns and rows known as tabulation.

Imagination and common sense are needed and the sounder the common sense, the better the tables will be. However there are certain principles in table construction. The basic principle is: construct it so that the table achieves its object in the best manner possible. Other principles includes: Simplicity, comprehensive explanatory title, source must be stated, units must be clearly stated, headings and columns and rows should be unambiguous, double-counting should be avoided. Totals should be shown where appropriate and percentage and ratios should be computed and shown if appropriate.

Advantage of this method includes enabling required figures to be located more quickly, enabling comparisons

between different classes to be made more easily revealing patterns with the figures which cannot be seen in the narrative form and finally takes up less room.

CHAPTER THREE

3.0 ANALYSIS AND FINDINGS3.1 Estimates of Fertility levels in Meru

At the district level we used 1989 KDHS survey to estimate the fertility level and differentials. The fertility differentials were estimated for education and marital status and place of residence. The approval approach p/f ratio applied.

The main aim of this chapter is to show the computational procedures followed in the estimation of the fertility level.

Table No. 3 shows data on the number of children ever born and children born in the year preceding the survey for women who were interviewed during the survey conducted in Meru in 1989.

Table 3 Children ever Born and Births in the Past year by age of mother. Meru, 1989.

Age Group (1)	Number of Women (2)	Children ever born (3)	Births in past year (4)
15-19	73	18	6
20-24	43	55	9
25-29	53	189	17
30-34	40	185	10
35-39	42	227	3
40-44	31	151	5
45-49	27	121	0

Source: KDHS, 1989 (computer print out)

The values of reported average parities, $P(i)$, are obtained by dividing the number listed in column (3) of table 3 by those appearing in column (2). Results are

given in table 4, shown below, values of P(3), for example, is calculated as

$$P(3) = (189/53) = 3.5660$$

Table 4 Average Parities, period fertility rates and cumulated fertility, by age group of mother. Meru 1989

Age group	Index	Average parity per woman	Period fertility rate	Cumulated fertility
		P(1)	F(1)	Q(1)
1	2	3	4	5
15-19	1	0.2466	0.0822	0.411
20-24	2	1.2791	0.2093	1.4575
25-29	3	3.5660	0.3208	3.0615
30-34	4	4.6250	0.25	4.3115
35-39	5	5.4045	0.0714	4.6685
40-44	6	4.8709	0.1613	5.475
45-49	7	4.4815		6.2815

Source: Author's results from table 3

The Values of this schedule, denoted by $f(i)$, are computed by dividing the entries in column (4) of Table 3 by those in column (2). The values of $f(3)$, for example, is calculated as

$$f(3) = (17/53) = 0.3208$$

Other values of $f(i)$ are given in column (4) of Table 4.

The values of $Q(i)$, the cumulated fertility schedule, are obtained by adding the values of $f(i)$, beginning with $j=1$ and ending with $j=i$, and then multiplying this sum by five (this number is used because five year age groups are being considered). Final results are shown in column (5) of Table 4. For example

$$\begin{aligned} Q(3) & \text{ is computed as} \\ Q(3) & = (0.822 + 0.2093 + 0.3208) \\ & = 5(0.6123) = 3.0615 \end{aligned}$$

Period fertility rates were calculated from births in the 12 months preceding the survey, tabulated by age of mother at the time of the survey, therefore co-efficients of table 1 should be used to estimate the current average fertility equivalents, $f(i)$. Computation of $F(3)$ is illustrated, using values of $Q(i)$ and $f(i)$ listed in table 4

$$\begin{aligned} F(3) & = Q(2) + a(3) f(3) + b(3) f(4) + c(3) Q(7) \\ & = 1.4575 + (3.265) \times (0.3208) + (- 0.627) \times (0.25) + \\ & \quad (0.0145) \times (6.2815) \end{aligned}$$

$$= 1.4575 + 1.074 + -0.1568 + 0.0911$$

$$= 2.4392$$

Full results are shown in column (4) of table 5.

Table 5 Average Parities, estimated parity equivalents and p/f ratios, Meru, 1989.

Age group	Index	Average Parity per woman	Estimated Parity equivalents	P/F ratio
1	2	3	4	5
		P(i)	f(i)	P(i)/F(i)
15-19	1	0.2466	0.4051	0.6087 -
20-24	2	1.2791	4.847	0.2639
25-29	3	3.5660	2.4392	1.4619
30-34	4	4.6250	3.9001	1.1859
35-39	5	5.4045	4.4399	1.2173
40-44	6	4.8709	5.2915	0.9205
45-49	7	4.4815	5.475	0.8185
				mean 0.9252

Source: Author's results computed from Table 4

Because what is being considered now is a case in which births in the past year use tabulated by age of mother at the time of the survey, the reported period rates, $f(i)$, need to be converted into fertility schedule, $f+(i)$, for convectional age groups. Conversion is carried out using equations c and d. An example of the calculation of $f+(i)$ is given below; other ratios are shown in table 6

$$\begin{aligned}
 f+(i) &= [1-w(i)] f(i) + w(i) f(1+i) - c \\
 w(i) &= x(i) + y(i) f(i)/Q7 + z(i) f(1+i)/Q7 \\
 w(i) &= 0.031 + 2.287 \times 0.0822/6.2815 + 0.114 \times \\
 &\quad 0.2093/6.2815 \\
 &= 0.2082 \\
 f+(i) &= (1 - 0.2082) \times 0.0822 + 0.2082 \times 0.2092 \\
 &= 0.1087
 \end{aligned}$$

Table 6 Reported Period fertility rates and fertility ratio for convectional age groups, Meru, 1989

Age group	Index	Reported fertility		Fertility rate for convectional age group
	i	f(i)	w(i)	f+(i)
1	2	3	4	5
15-19	1	0.0822	0.2082	0.1087
20-24	2	0.2093	0.0266	0.2046
25-29	3	0.3208	0.1184	0.3788
30-34	4	0.25	0.1479	0.2237
35-39	5	0.0714	1.3622	0.1938
40-44	6	0.1613	0.3622	0.1938
45-49	7	-	-	0

Source: Authors Results

The first step in selecting an adjustment factor, k , for the converted fertility rates obtained in the previous step is to calculate the p/f rates. They are shown in column (5) in table 5.

The p/f ratios show a masked decline from age 40 onwards, probably due to omission of children ever born by women over

age 40.

Four k values were calculated as given below,

$$k_1 = p_2/f_2 = 1.2791/4.847 = 0.2639$$

$$k_2 = p_3/f_3 = 3.5660/2.4392 = 1.4619$$

$$k_g = (p_2/f_2 + p_3/f_3)/2 = 0.2639 + 1.4619/2 = 0.8629$$

$$k = \text{mean} = 0.9252$$

The values p_2/f_2 and p_3/f_3 are not consistent, hence their average is used here. The probable reason for the inconsistent of the ratios is the up and down pushing of the women ages.

Adjusted age-specific fertility rates for conventional age groups, $f_x(i)$, are obtained by multiplying the $f + (i)$ values by the adjustment factor k . Final values for $f_x(i)$ are shown in columns (3), (4), (5) and (6) in table 7.

Table 7 Adjusted Fertility Rates, Meru, 1989

Age group	Female pop	$k=p_2/f_2$ (3)	$k=p_3/f_3$ (4)	$k=kg$ (5)	$k=mean$ (6)
15-19	73	0.0287	0.1589	0.0899	0.0109
20-24	43	0.0539	0.2991	0.1765	0.1892
25-29	53	0.0999	0.5538	0.3269	0.3504
30-34	40	0.0590	0.3270	0.1930	0.2069
35-39	42	0.0511	0.2833	0.1672	0.1793
40-44	31	0.0273	0.1512	0.0892	0.0957
45-49	27	0.000	0.000	0	
TOTAL		0.3199	1.7733	1.0427	1.0324
Estimated TFR		1.5995	8.6665	5.2135	5.162

Source: Author's results

Total fertility, TFR, is estimated by multiplying the sum of the adjusted age-specific-fertility rates $fx(i)$ by five.

Data for contraceptive use and fertility differential was just recorded from the computer sheet.

Table 8 Age specific Fertility rates and TFR 1989 KDHS for Meru and Kenya

Age	1889 KDHS (Kenya)	1989 KDHS Meru
15-19	152	82
20-24	314	209
25-29	303	320
30-34	255	250
35-39	183	71
40-44	99	161
45-49	35	-
TFR	6.7	5.2

SOURCE: 1 KDHS, 1989 Basic Report page
2 Authors Results table 7

In 1989 KDHS found the Country's TFR was 6.7 births per women. For rural Kenya, TFR for Eastern Province where Meru lies was **8.0**

Current TFR in Meru district are much lower than the national levels with only 5.2 births per woman. Table 8 shows in Meru is lower than the national rate and lower within every age

group.

Age specific fertility rate (A.S.F.R.) for Meru district show the rate increase from 82 births per 1000 women in the youngest age group to 320 birth per 1000 women for women aged 25-29 and decreases to women aged 35-39. Figure 1 is a graphical representation of table 8 for comparison at the national level.

Contraceptive use in Meru

Table 9 shows percent contraceptive use by all women respondents. The level of use of any method show a high proportion of women not using.

The pill is the most popular but only 22.6% women respondent aged 25-29, 16.3% women aged 20-24 and 12.5% women aged 30-34 used the pill. All age-groups however use the pill with only very few in the youngest age-group using the pill (1.4%).

While women here use all methods with the condom being rarely used, female sterilization is used by women with ages 35 and over.

Those not using any method are greater for each method than those using the various methods. This indicate low

contraceptive use in the district.

Table 9

Contraceptive Use by Method in each of the Conventional five-year Age Group

* DISTRIBUTION BY METHOD										
AGE	HOT	PILL	IUD	INJECTION	DIAPRAM	CONDOM	FEMALE	PERIOD	OTHER	TOTAL
GROUP	USING						STERILIZA.	ABSTINEN.		:
15-19	90.4	1.4	-	-	-	-		6.8	1.4	100 :
20-24	67.4	16.3	4.7	-	2.3	2.3		4.7	2.3	100 :
25-29	67.9	22.6	5.7	3.8	-	-	-		-	100 :
30-34	57.5	12.5	5	12.5	-	2.5	2.5	7.5	-	100 :
35-39	54.8	7.1	19	4.8	-	-	14.3		-	100 :
40-44	6.5	6.5	6.5	3.2	-	12.9	3.2		-	100 :
45-49	85.2	3.7	-	-	33.2	-	15.4		-	100 :

SOURCE: KDHS,1989 (COMPUTER PRINT_OUT)

Table 10 show those who have never used any method by education show much difference between those with no education. Only a small number (8%) of the women with secondary education have never used any method. The figure for those with no education is 28.7%, those with primary incomplete 32.7% and those with completed primary education 30.7%. Those that have used a traditional method do not show sharp differences by education standard of women, though those with lower education tend to use more of traditional method than those with high education i.e 26.5% for those with no formal education and 23.5% for those with secondary education and higher.

Those who have used a modern method differ. Those with primary incomplete education appear to use more modern contraceptive (39%) than those with completed primary education (18.4%) and secondary (21.6%). Women with not formal education constitute very few who use modern methods.

Table 10

Contraceptive use by Education

% distribution by level of Education

	NO. Education	Primary Incomplete	Primary Complete	Secondary & Higher	Not Stated	Total
NEVER USED	28.7	32.7	30.7	8.0	-	100
USED TRA- DITIONAL METHOD	26.5	26.5	23.5	23.5	-	100
USED MO^DERN METHOD	20.0	39.2	18.4	21.6	8	100

Source: KDHS, 1989 (Computer Print-out)

Table 11 shows women respondent's marital status affect contraceptive use. Women who have never used any method are about 47.3% for both never married and the married but the widowed (0.7%) not living together (0.7%) and the divorced (4%) show little use. Those who have used only traditional method are 52.9% for never married, 41.2% for the married, 2.9% for widowed 4% for divorced and 0.7% for those not living together.

There is a great variation on those who have used a modern method: 12% for the never married, 81.6% for the married, 0.8% for those living together, 1.6% for the widowed, 2.4% divorced and 1.6% for those not living together. The married women, therefore constitute the largest number of those using efficient modern method. This explains the low total fertility rate in the district.

Table 12 show those who have never used any contraceptive by age are mostly between 15-19 years (37%) but the rate declines and is not dissimilar in subsequent age groups.

Those who have used modern methods show only 4% for the 15-19 but 23% for 25-29, 20% for 30-34 and 19% for the 35-39 age group. Other ages show lower use.

Table 11

Contraceptive use by Marital Status

% Distribution by Marital Status

Never Married	Married	Living Together	Widowed	Divorced	Not Living Together	TOTAL
47.3	47.3		.7	4.0	.7	100
52.9	41.2		2.9		.7	100
12.0	81.6	.8	1.6	2.4	1.6	100

Source: KDHS, 1989 (Computer print-out)

Table 12

Contraceptive use by Age

	<u>% Distribution by age-group</u>							
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	Total
Never used	37.3	13.3	13.3	10.0	10.0	7.3	8.7	100
Traditional method	35.3	17.6	11.8	_	8.8	11.8	14.7	100
Modern Method	4.0	13.6	23.2	20.0	19.2	12.8	7.2	100

Source: KDHS, 1989 (Computer print-out)

Children Ever Born

Table 13 and 14 depict women fertility performance by education of mother and mothers work status. Extended formal

education is negatively related to fertility and only 36% of women with secondary education and higher have had four children. None in this category has more than four children completed primary education show lesser fertility than incomplete primary and those with no formal education depict large families. Extended formal education has been found to be one of the main reasons for the postponement of marriage among educated women.

Those women who are not working also have very large families while the working have very small families. Working status of women affect fertility negatively.

Extend education and working status of the women affect fertility.

In Meru all the women in the KDHS survey were rural and hence we are not able to give the rural-urban differential in this study.

Table 11

DISTRIBUTION OF THE NUMBER OF CHILDREN EVER BORN BY EDUCATION OF MOTHER IN THE SAMPLE.

WIFE'S t FOR EACH REPORTED NO. OF CHILDREN EVER BORN																	
EDUCATION	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16 :
NO	1.4	3.2	3.2	18.5	28	26.5	64	47.6	84.6	57.1	80	16.7	100	100			
EDUCATION																	
PRIMARY	28.4	48.4	48.4	51.9	20	41	32	14.3	7.7	42.9	20	83.3			100		
INCOMPLETE																	
PRIMARY	50	29	25.8	14.8	16		4	33.3	7.7								
COMPLETE																	100 :
SECONDARY	20.3	19.4	22.6	14.8	36												
* HIGHER																	
NOT								4.8									
STATED																	
TOTAL *	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100 :

SOURCE: KDHS.1989 (COMPUTER PRINT-OUT)

Table 11

DISTRIBUTION OF THE REPORTED NUMBER OF CHILDREN EVER BORN BY WORK STATUS.

WORKING STATUS	* FOR EACH REPORTED NO. OF CHILDREN EVER BORN																
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
NOT WORKING	94.6	90	93.5	92.6	72	94.1	100	95.2	100	100	100	100	100	100	100	0	
WORKING	5.4	10	6.5	7.4	28	5.9	0	4.8	0	0	0	0	0	0	0	100	
TOTAL t	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	

Source: NB: 1. All woaen respondents in the survey were rural woaen

2. Implies zero percent

CHAPTER FOUR

4.0 SUMMARY AND RECOMMENDATIONS4.1 SUMMARY

The objective of this study was to estimate fertility levels in Meru district, examine fertility differentials within the district, examine contraceptive differentials within the district and finally to provide policy makers and programme administrators with a better understanding of fertility levels and contraceptive use in the district.

The study found that the districts TFR was 5.2 birth per women compared to Eastern Province TFR of 8.0 and the Country's TFR of 6.7.

For all ages, except ages 25-29 and 40-44, the age specific fertility recorded for the district is much lower than those for the entire nation.

Contraceptive use in the district is very low and the most popular method is the pill. Education was seen to be an influential factor in the use of contraceptive.

Only very few women with secondary education and higher (8%) have never used any contraceptives. Women with lower education tend to use more of traditional methods than those with high education. Women with no formal education constitute very few who use modern methods.

Contraceptive use and marital status reveal interesting results. Modern effective contraceptive use is as follows: 12% for the never married; 81.6% for the married; 0.8% for those living together; 1.6% for the widowed; 2.4% for those divorced and 1.6% for those living together. The married users of modern contraceptive users in the district is extremely high and this accounts for the low fertility in the district. The above figures also demonstrates differentials in contraception use by marital status in Meru district.

Contraceptive use by age of women also indicate that a larger percentage of those using efficient modern methods are between 25-39 ages.

The study also revealed that extended formal education is negatively related to fertility and only 36% of women with secondary education and higher have had four children and none has more than four children. Those with no formal education record very large families.

Working women also record very small families while those not working have extremely large families. Working status therefore affect fertility. It's important to note that the findings conform to other studies elsewhere as noted in the literature review.

RECOMMENDATION:

From the study a few recommendations were presented.

(a) Intensive Family Planning education should be undertaken especially to reach those with no formal education in order to increase contraceptive use among this group. This will enhance their knowledge and use of modern contraceptive which are efficient in fertility control.

(b) The government and non-governmental organisations in the district should introduce female labour absorbing services and industries to employ more women. This would increase opportunity cost for an extra child and thus encourage lesser families.

(c) The government should make complete primary education compulsory for girls and encourage secondary

and higher education for them. This would increase modern contraceptive use, postpone early marriages among women and reduce demand for large families.

(d) "Barazas" and field days centered on informing the people about dangers on large families currently being done by provincial administrators and politicians should be intensified to break the cultural demand for high fertility.

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APPENDIX: A CHRONOLOGY OF EVENTS FOR FAMILY PLANNING/POPULATION IN
KENYA

19 ⁴	First census to count African population
1952	Kenya's Governor requests a Royal commission on population and land
1953/55	East African Royal commission on land and population
November 1955	Formation of Family Planning Committee of Mombasa
December 1956	Formation of Family Planning Association of Nairobi
May 1957	Opening of first Family Planning Clinic in Kenya for an African clientele
July 1959	First overseas grant for family planning work (pathfinder fund donation to FPA of Nairobi to hire an organizing secretary)

- April 1965 Release of African Socialism and its Application to Planning in Kenya, which proposes a program of family planning education to counter deleterious effects of rapid population growth
- June 1965 Introduction of free out-patient services through__all government medical facilities
- June 1965 Arrival of Population Council mission to advise government on population problems
- August 1965 Submission of mission's report recommending a comprehensive national family planning program
- October 1965 Population Council assigned sociologist to University college to teach demography and conduct a KAP Survey
- Early 1966 Issuance of revised version of first Development Plan, which incorporates many

of the findings and recommendations of the
Population Council mission

- March 1966 Release of christian Council of Kenya report
on After School
- November 1966 First foreign advisor in family planning
arrives (provided by population council to
Ministry of Health)
- December 1966 Circular sent to medical Officers of central
and local government explaining implications
of population growth and stating that family
planning would be integrated into health
services (signed by the Minister for Health)
- 1967 Registration Act passed, making registration
of births and death compulsory in selected
areas.
- February 1967 Formation of National Family Planning Council
(NFPC)
- April 1967 Publication of population council mission

report by the Ministry of Economic Planning
and Development

May 1967	Decision to establish National Family Planning Program (NFPP) announced by the Minister for Health at Twentieth world Health Assembly, Geneva
August 1967	First formal meeting of NFPC
October 1967	Dissolution of NFPC
November 1967	Circular sent to Government Medical Officers local authorities, and mission hospitals announcing the establishment of the NFPP (signed by Director of Medical Services/Permanent Secretary, Ministry of Health)
January 1968	Opening of first family planning clinic under Government auspices (Central Province)
April 1968	Establishment of first IPPF mobile team (Kericho area)

November 1968 Dutch advisors arrive to help set up family planning evaluation system

April 1969 Seminar on "Inter-Professional Teamwork for the Family" first major Government Conference on Family Planning held in Mombasa

August 1969 First national census since Independence

October 1969 Release of World Bank report stressing need for strengthened family planning program

October 1969 Decision taken to allow paramedics to operate family planning clinics (including IUD insertions) after appropriate training

December 1969 Release of second Development plan (1970-1974), which proposes doubling of family planning facilities during plan period

December 1969 African-wide seminar in "Population Growth and Economic Development" sponsored by University of Nairobi

Late 1969 Agreement reached between Ministry of Health and FPAK that the latter would concentrate efforts in public information and education

December 1970 Ministry of Health sponsors four-day planning meeting for NFPP in Mombasa

February 1971 Seminar to inform representatives of mass media about the NFPP held in Nyeri

April 1971 UNDP office sponsors first meeting on population/family planning between Government and all major donors involved or interested in the program

April 1971 Seminar on population problems and family planning for field staff of planning Division, Ministry of Finance and Economic planning

September 1971 Appointment of a Senior Deputy Secretary (Family Planning) to administer the NFPP and of a Kenya physician to take charge of the medical aspects of the program

- January 1972 Initiation of a journal (jami) for staff
and friends of NFPP*
- 1973 Demographic Baseline Survey conducted
- 1976 National Family Welfare Center established
- 1977 Population studies and Research Institute
established
- 1977 First National Demographic Survey conducted
- 1977/1978 Kenya Fertility Survey undertaken as part of
of the World Fertility Survey
- 1978 Second National Demographic Survey conducted
- 1978 First seminar on population and development
organized by the population Studies Research
Institute for provincial and district senior
civil servants held in Kericho
- 1979 National population census carried out
- 1979 First batch of M.A./M.Sc. candidates join
the population studies and Research Institute

M

- 1981 First batch of M.A./M.Sc. candidates complete their graduate work in population studies at the Population Studies and Research Institute
- 1982 First PH.D. candidate completes his PH.D. work at the population studies and Research Institute
- 1982 National Council for population and Development established
- 1982 First post-doctoral fellow sent by the PSRI to Princeton University returned to the Institute
- 1983 Third National Demographic Survey undertaken
- 1984 Private Sector (CBD) Family Planning Project started
- January 1984 Three PH.D. candidates sent by PSRI to U.S. Universities returned to the Institute after completing their work
- 1984 First contraceptive Prevalence Survey conducted

July 1984 Country leaders seminar attended by ministries members of Parliament, and others and chaired by the Vice President

August 1984 Kenya's delegation under the leadership of the Vice President attended the U.N. International Conference on population in Mexico

1989 Kenya Demographic and Health Survey reported a decline in fertility rate in Kenya. This study is based on the survey.

Source *Up to this date, this appendix is based on David Radel's chapter "Kenya's Population and Family Planning Policy: A challenge to Development Communication" George Allen and Unwin Ltd, in The politics of Family Planning in the Third World. T.E. Smith (Ed.) (London:

Appendix B. Contraceptive knowledge and use, Sub-Saharan Africa
Most recent Estimates

<u>Percent of married women -15-49</u>					
<u>Current use.</u>					
Year	Knowledge	Ever- use	Any method	Modern method	
Western Africa					
Benin	1981-82	40	34	9	1
Burundi	1987	78	30	9	1
Cote D'Ivoire	1980-81	85	71	3	1
Ghana	1988	79	37	13	5
Liberia	1986	70	19	7	6
Mali	1987	43	19	5	1
Mauritania	1979	8	2	1	0
Nigeria	1981--82	34	13	5	1
Senegal	1986	92	38	12	3
Togo	1988	96	74	34	3
Middle Africa					
Cameroon	1978	34	11		
Eastern Africa					
Kenya	1989	93	45	27	18
Rwanda	1983	72	18	10	1
Sudan (North)	1978-79	51	13	5	4
Uganda	1988-89	84	22	5	3
Zimbabwe	1988-89	99	79	43	36
Southern Africa					
Botswana	1988	95	63	33	32
Lesotho	1977	65	23	5	2
South Africa	1980			48	45
Swaziland	1988			20	17

Source: UN Levels and Trends of contraceptive use as assessed in 1988. Population studies, No.10 New York, 1989, Tacies 2 and A.I.T.I; **Institute** for Resource **Development** macro systems, Inc.

