Population Change Among the Maasai

Isaac Sindiga

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Population Change Among the Maasai

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On OSSREA's Research Report Series

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Acronyms

DC: District Commissioner
KCPS: Kenya Contraceptive Prevalence Survey, 1984
KDHS: Kenya Demographic and Health Survey, 1989
KFS: Kenya Fertility Survey, 1977/78
KNA: Kenya National Archives, Nairobi
MCH-FP: Maternal-Child health and family planning not available
N/A: Not Available
M.A.R.: Maasai Annual Report
NGO: Non-governmental organization
PEM: Protein-energy malnutrition
PID: Pelvic inflammatory disease
SIM: Spontaneous intra-uterine mortality
STD: Sexually transmitted disease
TB: Tuberculosis
TFR: Total Fertility rate
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Tropical Africa's annual population growth rates have varied between 2.5 and 3.0 percent over the past three decades. Amidst these high rates are areas with much slower growth and depressed fertility (Adadevoh, 1974; World Bank, 1984; Doenges and Newman, 1989). Available data show that a broad belt across tropical Africa extending from West Africa (Senegal, Ivory Coast, Nigeria, Upper Volta, Cameroon and Niger; to Central Africa (Central African Republic, Gabon, Zaire, Chad, and Congo Republic); to Eastern Africa (Sudan, Kenya, Uganda and Tanzania) suffers from impaired fertility (Adadevoh, 1974). The recorded total fertility rate varies from 2 or 5 children for such areas compared to 6 to 9 children in the high fertility regions (Doenges and Newman, 1989). However, the problem of subfertility and involuntary infertility is suspected to be far more widespread (Adadevoh, 1974: 3). Data are not available to allow a generalized statement.

Despite the existence of these significant subfertility and infertility problems, inordinate attention by both scholars and the mass media has gone into the phenomenon of high fertility and population growth rates. Yet, it is clear that, once the impediments have been removed from the peoples and areas experiencing lower completed fertility, there will be population booms and busts. These will increase rather than reduce fertility. The ultimate consequence will likely negate the purpose and effects of various population planning programmes currently going on in various countries.

Kenya is an example of a country with a relatively high population growth rate averaging some 3.8 percent per year in 1990. National level data show that the total fertility rate is consistently above 6.5. The TFR has varied over time from 6.8 in 1962 to 7.6 in 1969 and to 7.9 (Kenya, 1983a). The recent Kenya demographic and health survey conducted between December 1988 and May 1989 shows a TFR of 6.7, reflecting some decline in TFR (Kenya, 1989a).

Kenya's rapid population growth rate is a consequence of an increasing fertility rate as well as declining mortality. However, the national fertility and population growth picture tends to conceal large geographic areas of the country with relatively low growth and completed fertility. Nomadic pastoral peoples of Kenya, of whom the Maasai are an example, appear to record an annual population
growth rate of only about 2.2 percent (Kenya, 1984). Their completed fertility similarly is lower with an average of about 5 live births.

This study is population change among the Maasai of Kenya attempts to probe the factors which may be responsible for the impaired fertility among the pastoralists. This analysis is done within the framework of proximate determinants of fertility as proposed by Davis and Blake (1956) and refined by Bongaarts and Potter (1983) and applied to tropical Africa by Doenges and Newman (1989).

As explained above, most of the studies heretofore have concentrated on the areas of high and even increasing fertility. Little has been done on the zones with lower-than normal fertility. Should the significance of the factors associated with the low fertility wane, population is likely to increase rather than decrease. Policy makers should therefore be sensitized to this probable future scenario. This is particularly so because the consequences of such population growth are likely to be substantial, albeit negative, in ecologically fragile and economically uncertain environments.

This study has taken more time than initially anticipated because of a number of events. I departed from Kenyatta University, where the project was initiated to take up my present post of associate professor of geography at Moi University towards the end of 1988. This decision translated into time loss as the family and myself had to settle down in a new, if somewhat colder environment. Then there were the heavy teaching duties at my new workplace - I stated teaching within barely two days of my reporting on duty at Moi University! My departure from Nairobi also meant removal from the major documentary and research centres in Kenya. Above all, the time taken to complete this study says something about conducting sensitive socio-cultural investigation into a group which has remained relatively isolated from the progress achieved elsewhere in Kenya (Sindiga, 1984).

My thanks are due to my research assistant who endured difficult environmental and cultural circumstances in Narok. Joel Meitamei Ole Naisuako of the Central Bureau of Statistics, Narok, assisted in data collection in Megwara; Philip Sompe worked in Poroko, Kilgoris; whereas Mrs. Grace Saiyuah left her household chores to interview women in Sikawa, Uasin Gishu West location. Grace and her husband Paul, a Supplies Officer at South Nyanza Sugar Company graciously welcomed my research party to their home and frequently served soda. They
encouraged us to endure the treacherously muddy and virtually impossible "roads" of Kilgoris. To Shem Onsare, for much kindness. I would be remiss not to acknowledge the companionship and assistance of Charles Gichana in executing numerous tasks.

This study would of course, have remained only a dream were it not for the financial assistance of the Organization for Social Science Research in Eastern Africa. My thanks are due to the organization and the understanding of its Executive Secretary.

This is only a small contribution to population change among the Maasai. I hope it shall stimulate further inquiry.

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A significant portion of this report has been edited and improved. I would like to thank Michael Kivova for partly assisting in the reviewing.

To Mrs. Josephine Ouyinkwa and Mildred Onyango for the patience in deciphering my handwriting and typing this work.

Finally, this study would not have succeeded were it not for the cooperation of Maasai women and other interviewees.
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The preparation of this report has been aided by many people. I would like to thank Michael Kivuva for partly assisting in preparing the figures.

To Mrs. Josephine Onyinkwa and Mildred Okech for their efforts in deciphering my hand writing and typing this work.

Finally, this study would not have succeeded were it not for the cooperation of Maasai women and other interviewees.

Among the specific objectives of this study were the following:

1. Examining the effects of population and fertility changes on the Maasai and their landscape;
2. Investigating the way Maasai pastoral lifestyle and social structure regulated fertility both past and present; and
3. Finding out women's roles in Maasai society and their effect on fertility.

2. Rationale to the Statement of the Problem

Kenya's annual population growth rate of about 3.8 per cent in 1990 is one of the highest in the world. The total population of about 24 million is expected to exceed 38 million in the year 2000 assuming constant fertility and mortality, will be 37.5 million with constant fertility and mortality, and 34.8 million assuming declining fertility and mortality (Kenya, 1983b: 7). This high growth rate is a consequence of an increasing fertility rate as well as declining mortality. The country's total fertility rate (children per woman) increased from 6.8 in 1962 to 7.6 in 1969 and to 7.9 in 1979; it stood at 7.7 in 1984 (Kenya,
"Infertility poses a major problem to gynecologists working in East Africa, and in our own practice nearly two-thirds of clinical time is spent seeing cases of infertility" (Mati, Anderson, Carty and Mc Glashan, 1973: 94).
1. INTRODUCTION

1.1. Objectives of the Study

This study sought to investigate four intertwined problems:

1. population change among the pastoral Maasai of Kenya and to establish the effects of that change on society and landscape;

2. the validity of the claim that women in pastoral societies, as represented by the Maasai, have generally lower fertility than neighbouring peoples especially cultivators (Adadevoh, 1974; Newman and Lura, 1983; Sindiga, 1987);

3. factors which determine fertility among the Maasai, in particular the relationship between women's roles and fertility; and

4. the widely-held assumption that there are high levels of sterility, infant mortality among the Maasai and to establish their causes.

Among the specific objectives of this study were the following:

1. examining the effects of population and fertility changes on the Maasai and their landscape;

2. investigating the way Maasai pastoral lifestyle and social structure regulated fertility both past and present; and

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1.2. Rationale to the Statement of the Problem

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The problem of sub-fertility and infertility could be a geographically wider
issue. Involuntary sub-fertility and infertility have caused very high fertility.
In tropical Africa extending from West Africa through Central Africa to East
Africa covering diverse ethnic groups (Table 1; Adadevoh, 1974; Belsey, 1976;
David and Voas, 1981). Involuntary sub-fertility and infertility have caused
tropical Africa, the country's areas of low fertility tend to co-exist with those
of very high fertility.

These national level data on population growth and completed fertility,
however, conceal large geographic areas of low growth and completed fertility.
It is well known, for example, that Kenya's Coast province which is inhabited
primarily by the Mijikenda peoples suffers from comparatively lower levels of
completed fertility (Kenya, 1978). This is not a result of contraception; it is
pathological infertility and sub-fertility. In addition, the country's nomadic
pastoral peoples who inhabit over 80 per cent of Kenya's territory in the
northern and southern parts of the country also suffer from non-contraceptive
infertility. They appear to record an annual population growth rate of only
about 2.2 per cent (Kenya, 1984). Their completed fertility similarly is lower
with an average of about 5 live births. What is more is that, as elsewhere in
tropical Africa, the country's areas of low fertility tend to co-exist with those
of very high fertility.

Kenya's zone of impaired fertility is not isolated. It is part of a large belt in
tropical Africa extending from West Africa through Central Africa to East
Africa covering diverse ethnic groups (Table 1; Adadevoh, 1974; Belsey, 1976;
David and Voas, 1981). Involuntary sub-fertility and infertility have caused
negative population growth in parts of Gabon, Zaire, Upper Volta, Central
African Republic, Cameroon, Guinea Bissau and Sudan (Eraj, 1985:2; Belsey,
1976). Eraj (1985) claims that in the northern parts of Zaire, about half of the
women aged 50 are childless. This is true also for parts of Gabon, Sudan,
Cameroon and Zaire where rates of childlessness for the same category of
women ranged between 20 per cent and 40 per cent during the 1960s (Belsey
1976: 322). This computation was however based on incomplete data.

Birth rates in north-eastern Zaire and Gabon are half what they could be were it
not for infertility (Eraj, 1985). Generally, areas suffering from sub-fertility and
infertility have a total fertility rate of less than 5 children compared to between
6 and 9 for high fertility areas (Eraj, 1985:2; Doenges and Newman, 1989).
The problem of sub-fertility and infertility could be a geographically wider
matter but data are lacking to back authoritative generalizations (Adedevo,
It is suspected that sub-fertility extends to Somalia and Ethiopia and Southern African countries such as Botswana.

The postulated causes of impaired fertility appear to be as diverse as the areas represented. However, it is generally held that the dominant cause of infertility in tropical Africa is chronic gonorrhoea (Frank, 1983; David and Voas, 1981). This is probably the case for parts of Uganda, Zaire, Cameroon, Congo and other countries. Syphilis was found to be responsible for high levels of intrauterine mortality and hence inability to get a live birth among the Bobo of Upper Volta (Retel-Laurentin, 1974). Pelvic tuberculosis is responsible for infertility in Chad, Gabon, Cameroon and Central African Republic (Adadevoh, 1974). Schistosomiasis is implicated as a cause of women infertility in the Central African Republic whereas trypanosomiasis is endemic in Central Africa and the areas around Lake Victoria, areas which experience comparatively lower fertility. In East Africa areas of infertility tend to be those in which malaria is endemic, for example the Coastal region.

Table 1.1 identifies certain ethnic groups which are reported to suffer from high rates of subfertility and infertility; however, childlessness is not necessarily ethnic group-specific. Rather, it perhaps reflects the social, environmental and health conditions experienced by a particular ethnic group (Belsey, 1976:323). Nonetheless, a group's cultural attributes, for example, marriage, sexuality outside marriage, kinds of marriage, bride wealth, control over the means of production and so on can lead to variations in "demographic regimes" observed from one ethnic group to another (Kreager, 1982). Moreover, fertility is not merely a biological function; it is heavily influenced by cultural behaviour (Bongaarts and Potter, 1983).

Table 1.1 also shows that nomadic pastoralists suffer infertility in each country in which they are present (see also, Newman, 1986). The focus of this study is the Maasai, a pastoral group living in Narok district in Southern Kenya. It will inquire into the factors which may be responsible for the general low fertility and how these factors operate to depress fertility.
1.13 Organization

To tackle the above task, the remaining part of this report is organized in the following way. Section 2 deals with determinants of fertility within the framework of proximate determinants. In section 3, the fertility and population situation in Kenya in general are assessed. Then in the next section is background data on the physical and human environments of the study area. Section 5 discusses fertility and population change in Narok with specific reference to the Maasai people. Section 6 summarizes the methodology and study design employed in field data collection. In section 7, the findings from the field study are presented. The discussion, conclusions and recommendations emerging from the entire study and the emergent socio-economic changes and fertility futures are discussed in sections 8 and 9. The next section comprises of sources consulted while researching and preparing this work. Finally, the questionnaire used in the field survey appears as Appendix 1.
Fertility varies over space and time. The variation is a result of the interaction between the biological capacity to reproduce and the cultural behaviour of population groups. It is now well established that human reproduction goes beyond biology and is heavily influenced by the cultural mechanisms that a society utilizes with regard to marriage patterns, age at marriage, control over women and so on (Bongaarts and Porter, 1983; Page and Lesthaeghe, 1981; Bongaarts, 1980). But how do the biological and behavioural factors operate to influence fertility outcomes? Which elements in each factor mediate to determine fertility? Can these factors be analyzed within a common framework in order to improve understanding of spatial and temporal differentials in fertility?

2.1 Proximate Determinants

Davis and Blake (1956) proposed a framework by which biological and behavioural factors are linked to affect fertility. This framework is what is termed "proximate determinants" or "intermediate fertility variables" (Table 2.1). By definition, "proximate determinants of fertility are the biological and behavioural factors through which social, economic and environmental variables affect fertility" (Bongaarts and Potter, 1983:1). In reality, a proximate determinant is "anything that directly affects a given behaviour, which in this case is fertility" (Doenges and Newman, 1989:101). Should a proximate determinant, for example, age at marriage especially for women, change and assuming that other proximate determinants remain constant, fertility also changes (Bongaarts and Potter, 1983:1; Bongaarts, Frank and Lesthaeghe, 1990).
Table 2.1: Proximate determinants of fertility or "intermediate fertility variables"

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<thead>
<tr>
<th>I. Factors affecting exposure to intercourse (&quot;intercourse variables&quot;)</th>
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<td>A. Those governing the formation and dissolution of unions in the reproductive period</td>
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<tr>
<td>1. Age of entry into sexual unions</td>
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<td>2. Permanent celibacy: proportion of women never entering sexual unions</td>
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<tr>
<td>3. Amount of reproductive time spent after or between unions</td>
</tr>
<tr>
<td>a. When unions are broken by divorce, separation, or desertion</td>
</tr>
<tr>
<td>b. When unions are broken by death of husband</td>
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<tr>
<td>B. Those governing the exposure to intercourse within union</td>
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<tr>
<td>4. Voluntary abstinence</td>
</tr>
<tr>
<td>5. Involuntary abstinence (from impotence, illness, unavoidable but temporary separations)</td>
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<td>6. Coital frequency (excluding periods of abstinence)</td>
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<tr>
<th>II. Factors affecting exposure to conception (&quot;conception variables&quot;)</th>
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<tbody>
<tr>
<td>7. Fecundity or infecundity, as affected by involuntary causes</td>
</tr>
<tr>
<td>8. Use or nonuse of contraception</td>
</tr>
<tr>
<td>a. By mechanical and chemical means</td>
</tr>
<tr>
<td>b. By other means</td>
</tr>
<tr>
<td>9. Fecundity or infecundity, as affected by voluntary causes (sterilization, subincision, medical treatment, etc.)</td>
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<tr>
<th>III. Factors affecting gestation and successful parturition (&quot;gestation variables&quot;)</th>
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<tr>
<td>10. Foetal mortality from involuntary causes</td>
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<td>11. Foetal mortality from voluntary causes</td>
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Source: Davis and Blake, 1956

Table 2.1 provides the eleven proximate determinants as developed by Davis and Blake (1956). From a review of the literature, Bongaarts and Potter (1983) attempt to simplify the initial framework and identify seven proximate determinants. These are briefly discussed below.

2.2 Societal marital fertility control

2.2.1 Marriage

Most children are born within marital unions. This means that the proportion of women of reproductive age who are married or live in a sexual union will influence fertility. In addition, age at first marriage for women is significant because it determines the period of potential reproduction available and ultimately the number of births. In ideal circumstances, if marriage is close to the onset of ovulation (menarche), there would be more years available for potential reproduction for a couple. And assuming a woman is exposed (to sex with a fertile man), she would get more live births. This relationship, however, is not linear.
There are instances among certain cultural groups where marriage may precede menarche. It is possible that such a woman exposed to sex may contract venereal disease at an early age leading to infertility (Adadevoh, 1974: 9). It has now been demonstrated by empirical studies from many countries that young people face the greatest risk of contracting sexually transmitted diseases (Population Reports, 1985). STDs cause pelvic inflammatory disease (PID), permanent damage to the fallopian tubes, ectopic pregnancy of infertility (Population Reports, 1985). Other problems experienced by young mothers include birth complications resulting from an immature pelvis, i.e. the infant's head is too big to pass through the pelvis, a condition called cephalopelvic disproportion (Adadevoh, 1974) which is widespread in tropical Africa (Gebbie, et. al., 1971: 266; Doenges and Newman, 1989); higher chances of perinatal mortality, giving birth to premature and/or low weight babies with the attendant risks of high infant morbidity and mortality (Population Reports, 1985). Yet, young mothers especially those in the teenage group may suffer high blood pressure, a condition called preeclampsia or toxemia, which may in turn cause heart failure or stroke (Population Reports, 1985). Adolescent mothers may also suffer from anaemia resulting in premature birth and maternal and foetal death (Population Reports, 1985). Anaemia may come about because of under- and mal-nourishment. Both cephalo-pelvic disproportion and anaemia appear to be the leading complications of pregnancy in Africa in that order (Gebbie, et. al., 1971: 66).

Other factors which have a bearing on marriage relate to traditional practices with regard to pregnancy and delivery. Yet, patterns of marriage, for example, monogamy and polygyny may influence exposure and frequency of sex within marriage. Other related factors are marriage stability and the incidence of divorce (Adadevoh, 1974; Bongaarts and Potter, 1983).

2.2.2. Contraception

Contraception may be achieved via sexual abstention or through sterilization.

2.2.3. Induced abortion

This is used by certain societies and it involves deliberate interruption of normal gestation. Both contraception and induced abortion may be used for marital fertility control.
2.2.4 Natural marital fertility control

Natural marital fertility is fertility without the use of either contraceptives or induced abortion. The body biological function itself can control fertility through postpartum infecundability.

2.2.5 Postpartum infecundability

A nursing woman's body offers contraceptive protection for a few months following parturition. This is attained through the "postpartum anovulation and amenorrhoea caused by elevated prolactin levels which inhibit the release of pituitary and ovarian hormones" (Gray, 1981: 102)

Lactational amenorrhoea is achieved because of prolonged breastfeeding. A sexually exposed woman who does not breastfeed can conceive within a period of 3 months after giving birth. This period can last as long as 1.5 years or more for one who is breastfeeding (Bongaarts and Potter, 1983; Gray, 1981)

However, postpartum amenorrhoea does not provide complete cover from conception. As Gray (1981) notes, ovulation can occur before the first postpartum menstrual flow is realized. Moreover, a healthy and well nourished woman may get a conception despite breastfeeding. Lactational amenorrhoea provides higher chances of immunity when breastfeeding is intense and an infant is not provided with food supplements (Bongaarts and Potter, 1983). The immunity is greatly diminished when breastfeeding is irregular. Breastfeeding then, is not an insurance against conception. Perhaps this is one of the reasons why certain cultures devised postpartum sex taboo.

2.2.6 Sterility

Sterility may be caused by any of several factors e.g. genetic disorders affecting one spouse and sexually transmitted diseases. Generally, some 3 per cent of the couples in any population are sterile at the beginning of their reproductive years (Bongaarts and Potter, 1983).

2.2.7 Spontaneous intrauterine mortality (SIM)

This usually involves spontaneous abortions and stillbirths. SIM really is a measure of successful conceptions which do not end up in live births. SIM is termed spontaneous abortion when the foetus dies before the 28th week of
gestation, it is a stillbirth when death occurs after the foetus is viable, usually after the 28th week (Bongaarts and Potter, 1983).

SIN may be caused by undernutrition, environmental stress, and a host of other complications. Among the latter are such diseases as syphilis, malaria and sleeping sickness.

### 2.2.8 Frequency of intercourse

This involves all factors interrupting intercourse, save for deliberate abstinence (Doenges and Newman, 1989). Frequency of intercourse has a significant effect on fecundity (Lesthaeghe, et al., 1981-5; Menken, 1979). According to an intriguing study by Barrett and Marshall (1969: 459), fecundity rises from 0.14 where coitus takes place once per week to 0.68 when there is daily intercourse. Also, it is now generally agreed that frequency of coitus declines with age (Bulatao, 1984:61).

### 2.3 Proximate determinants: A summary

There are numerous variables which aeffect fertility. Fitting these variables into the framework of the seven proximate determinants makes it possible to give "order to the seemingly endless and bewildering array of fertility variables. Each socioeconomic, biological, cultural, and environmental factor that influences fertility must operate through at least one of the seven proximate determinants" (Doenges and Newman, 1989: 101).

In tropical Africa, there is no evidence for customs which permit voluntary contraception and even induced abortion (Caldwell and Caldwell, 1981; Page and Lesthaeghe, 1981; Doenges and Newman, 1989). Nearly all traditional African peoples favour large family norms. Children are desired by couples as they help to stabilize a marriage and enhance the status of the family into which they are born (see, for example, Mbii, 1969; Kenyatta, 1984).

It is possible, at least for tropical Africa, to reduce the list of proximate determinants of fertility to five i.e. marriage, postpartum infecundability, sterility, spontaneous intrauterine mortality, and frequency of intercourse. However, detailed statistical data are lacking to allow a quantitative assessment on how each proximate determinant affects the fertility rate of any given population. It is possible, though, to isolate factors prosecuted for low fertility and attempt a qualitative study of the influence of the factors on the proximate
determinants (Doenges and Newman, 1989). This approach is attempted in the present study.

Below, I discuss a number of factors which inhibit fertility and how these may affect the proximate determinants. These factors are marriage, nutrition, disease, postpartum taboo, and breastfeeding.

2.3.1 Marriage

"For African peoples, marriage is the focus of existence .......... Everybody, therefore, must get married and bear children: that is the greatest hope and expectation of the individual for himself and of the community for the individual" (Mbiti, 1969: 133, 134).

The above quotation shows clearly that each person in tropical Africa is expected to marry. Marriage is a central institution in African life and as such marital fertility is significant. This is the case in Kenya (Table 2.2). Thus, the proportion of women who are married may not be important; celibacy is not institutionalized and it is insignificant.

A myriad socioeconomic and cultural factors operate to influence patterns of marriage and ultimately fertility. As shown above, age at marriage especially for women is important. Before marriage is consummated, various ceremonies and rites of passage must be performed (Kenyatta, 1984; Mbiti, 1969). Among the Maasai for example, an uncircumcised girl, that is, one who has not undergone clitoridectomy cannot get married. Such circumcision is usually conducted when the girls are between 14 and 17 years old. Women are free to get married after circumcision is concluded.

A related factor is that women who do not go to school tend to marry at an earlier age. Inevitably, those who attain higher education must delay their reproductive intentions (Tables 2.3). Table 2.3 also shows that rural women in Kenya on average marry earlier than their urban counterparts.
Table 2.2: Kenyan women who have never married, by age group, 1962 - 1989
(Figures are percentages)

<table>
<thead>
<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>15-19</td>
<td>55</td>
<td>64</td>
<td>71</td>
<td>72</td>
<td>71</td>
<td>74</td>
<td>80</td>
</tr>
<tr>
<td>20-24</td>
<td>13</td>
<td>18</td>
<td>22</td>
<td>21</td>
<td>25</td>
<td>24</td>
<td>32</td>
</tr>
<tr>
<td>25-29</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>4</td>
<td>9</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>30-34</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>35-39</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>40-44</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>45-49</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

The data sources for this table are:
a. The 1962 national census;
b. The 1969 census;
e. The 1979 census;
f. Kenya Contraceptive Prevalence Survey;
g. Kenya Demographic and Health Survey;


Table 2.3: Average age at marriage for women in Kenya

<table>
<thead>
<tr>
<th>Category</th>
<th>Age (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No education</td>
<td>16.5</td>
</tr>
<tr>
<td>Post-primary education</td>
<td>23.5</td>
</tr>
<tr>
<td>Women in rural areas</td>
<td>17.8</td>
</tr>
<tr>
<td>Women in urban areas</td>
<td>19.2</td>
</tr>
</tbody>
</table>

Source: Kenya, 1984a: 6

Yet, the form of marriage consummated has been implicated in fertility differentials. Claims have been made that women in monogamous unions have a higher total fertility rate than those in polygynous families. This conclusion is however tenuous in light of evidence, which points to the opposite direction (Henin, 1969; Aboramph, 1987). Higher completed fertility has been shown among women in polygynous unions in Mali whereas the contrary is true among the Ibo and Ibibio of Nigeria (Adadevoh, 1974).

Many scholars (David and Voas, 1981; Henin, 1969; Ohadike, 1974) agree that family marriage instability does have a bearing on fertility. Studies conducted in certain French-speaking countries in Central and West Africa have shown that marital instability is associated with a lower level of completed fertility (Ohadike, 1974: 30). This is attributed to a reduced period of risk to pregnancy (Ohadike, 1974: 30).
Henin's (1969) study on the fertility of the nomadic Baggara of Western Sudan and the settled Kawahla of the Gezira irrigation settlement also found a higher incidence of infertility among women with broken marriages than those in stable ones. Marriage instability was also implicated as one of the factors causing infertility among the settled Fulani of northern Cameroon (David and Vargas, 1981). The latter found that economic problems led both men and women to travel widely during the dry season. Further, divorce is relatively easy to obtain. It merely needs a man to repudiate his wife in the presence of two other people. Thus separation and divorce do have an impact on the exposure to the risk of pregnancy; this translates to reduced chances of conception. This conclusion is itself controversial as the relationship between marriage instability and infertility or reduced fertility is not linear. There are many cases in which infertility is the cause of marriage instability leading to divorce (Adadevoh, 1974).

2.3.2 Nutrition

Nutrition is another factor which may influence fertility. Frisch (1978) has argued that undernutrition and malnutrition in females may delay the onset of ovulation and bring forward the timing for menopause. Another effect is that of enhancing the chances of miscarriages and stillbirths, and the period of Lactational amenorrhoea. Conversely, better nourished women would experience early onset of menarche and delay in menopause. This has the effect of prolonging the potential reproductive period available. Theoretically, such women would have an enhanced fertility (assuming all other variables are held constant).

There is some disagreement on the exact impact of malnutrition on fertility (Bongaarts and Potter, 1983). What seems to be agreed upon is that sharp famine may reduce fertility (Bongaarts, 1980; Bongaarts and Potter, 1983). However, poor nutrition may cause anaemia which, as shown above, can cause premature births, and maternal and foetal mortality.

It is possible that malnutrition per se has little impact on fertility. But there may be other factors operating. In pastoral communities, severe dry seasons may lead to periodic food shortages necessitating the movement of people in search of water and pastures for their herds and flocks, and to purchase grain. This will lead to the separation of couples thereby reducing the frequency of coitus. Also, the harsh environmental circumstances may lead to the decline of the sexual drive of the people involved. Thus, food shortages may influence fertility by acting through other factors.
2.3.3 Disease

Of all the factors individually implicated in causing subfertility and infertility in tropical Africa, disease is the most important. There is a wide list of diseases which may contribute in varying measure to infertility (Table 2.4). Whereas positive correlations have been established between some of the diseases and infertility (Table 2.5), there are many which are held suspect (Table 2.4). Extensive and urgent research is required especially for areas in which these diseases are endemic and fertility remains impaired.

Table 2.4: Infections associated with infertility

| 1. Pelvic inflammatory disease | gonorrhoea | genitourinary tuberculosis | treponemal infection | Schistosomiasis | T. vaginalis | T. mycoplasma | non-specific urethritis |
| 2. Syphilis | | | | | | | |
| 3. Malaria | | | | | | | |
| 4. Rickettsiae | | | | | | | |
| 5. Brucellosis | | | | | | | |
| 6. Histoplasmosis | | | | | | | |
| 7. Toxoplasmosis | | | | | | | |

Source: Adadevoh, 1974: 17
Table 2.5: Some diseases associated with infertility

<table>
<thead>
<tr>
<th>Infection</th>
<th>Effect</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Gonorrhoea</td>
<td>infertility</td>
<td>Chronic gonorrhoea causes tubal occlusion in females and thickening of the vas deferens which obstructs sperm passage in males.</td>
</tr>
<tr>
<td>2. Syphilis</td>
<td>intra-uterine mortality/pregnancy wastage</td>
<td>Chronic syphilis causes spontaneous abortions; the infection is passed from expectant mother to foetus.</td>
</tr>
<tr>
<td>3. Genitourinary or pelvic tuberculosis</td>
<td>infertility</td>
<td>When TB attacks the genitals it causes complications similar to those of gonorrhoea in both men and women.</td>
</tr>
<tr>
<td>4. Schistosomiasis</td>
<td>infertility</td>
<td>Generates the production of chemicals in the cervix and vagina which repulse sperms thereby hindering conception. There is little evidence that it causes infertility in all areas.</td>
</tr>
<tr>
<td>5. Malaria</td>
<td>abortion</td>
<td>Not clear how it acts but malaria causes anaemia, thus affecting food supply to the foetus. Also certain malaria parasites infect the placenta.</td>
</tr>
<tr>
<td>6. Sleeping sickness</td>
<td>infertility; abortion</td>
<td>Infertility occurs in areas where sleeping sickness is endemic but this association is tentative.</td>
</tr>
<tr>
<td>7. Sickle-cell anaemia</td>
<td>infertility</td>
<td>Especially important in marital unions where both spouses carry the sickle-cell gene.</td>
</tr>
</tbody>
</table>

Perhaps the single most important gynaecological disorder which causes infertility in tropical Africa is pelvic inflammatory disease (PID) (Mati et al., 1973; Doenges and Newman, 1989). Doenges and Newman (1989: 103-104) report that PID affects genitals, the uterus and the fallopian tubing. In its chronic form, PID may cause great pain which is suspected to lessen the frequency of coitus and cause tubal occlusion which may in turn lead to infertility and ectopic pregnancies (Doenges and Newman, 1989).

In section 1, we specified some of the areas in which various diseases associated with infertility are located in tropical Africa. It would appear that gonorrhoea is the leading sexually transmitted disease (STD) which is responsible for infertility in many countries. Mati and his colleagues (1973), in a study of 104 women at Kenyatta National Hospital, Kenya's premier referral institution, found gonorrhoea to be the main cause of pelvic inflammatory disease. STDs are particularly important in communities where people are highly sexually mobile (see also section 5).

As seen above, pastoral communities also suffer from marital instability occasioned by the separation of spouses during the long dry season. This may add to gonorrhoea to depress fertility.

2.3.4 Postpartum Taboo and Breast-Feeding

Postpartum infecundability is attained by virtue of breastfeeding by a nursing mother. However, lactational amenorrhoea can provide complete immunity from conception only when breastfeeding is regular, intense, and no food supplements are given.

Recognizing this problem most cultures have a taboo against postpartum sexual intercourse. Different communities explain the purpose of the taboo in different ways. For some, sexual intercourse with a nursing mother will lead to the poisoning of mother's milk with the consequence of infecting the infant; others look at it as indecent and immoral (Caldwell and Caldwell, 1981). What seems to be agreed on is that the taboo helps in delaying subsequent conception thereby improving the health of the mother and child, and maximizing child survival.
African societies regulate fertility by child spacing within marriage. In traditional African societies, fertility control appears to have been part of a larger cultural arrangement where child spacing through prolonged breast-feeding and postpartum sexual abstinence worked together with mechanisms of social regulation (Lesthaeghe, 1980). The Rendille of northern Kenya weaned their children during the period of the long wet season when milk and other foods were abundant (Spencer, 1973). This improved the probability of a child's survival against protein-energy malnutrition and related infections. Elsewhere in Kenya the child spacing period ranged from 2.5 to 3.5 years for the Kikuyu, 3 years for the Akamba, 2 years for the Luo and Luhya (Ndeti and Ndeti, no date) and 2 years for the Gusii (Le Vine and Le Vine, 1966:112).

The postpartum taboo was practised everywhere in tropical Africa (Schoenmaeckers, et al., 1981). The period of observance tended to vary very widely from a few days in some communities to months and a year or more. Schoenmaeckers and his associates (1981: 43-65) provide a long list of the time variation of the observance of the postpartum taboo for various communities in tropical Africa for which data were available.

Whiting (1964) cited in Schoenmaeckers et al. (1981) hypothesized that areas of the world suffering from protein-energy malnutrition tend to have a long postpartum taboo. While accepting Whiting's nutrition hypothesis, Saucier (1972) suggested that the postpartum taboo is related not only to malnutrition but also the women's work roles and the social organization of society (Schoenmaeckers, et al., 1981). Saucier believes that long postpartum taboo is merely one element within a given social organization.

In order to uphold the postpartum taboo, men practised polygyny. But couples in monogamous unions could circumvent the taboo without publicly appearing to violate the child-spacing norm by using coitus interruptus. This practice was widespread in East Africa (Lesthaeghe, 1980: 528).

Some societies in Africa, however, partly regulated fertility through late marriages rather than early marriage and child-spacing within marriage. This was particularly so for pastoral groups that insisted on young men going through a period of residence as warriors. In such communities, male elders controlled social and
economic institutions in society. They also controlled livestock and procreating women, the means of production (see section 5 for the case of the Maasai).

The postpartum taboo then was part of the cultural patterning of society as suggested by Saucier. In many areas of tropical Africa, the taboo has become severely eroded especially since the onset of European colonial rule. This is also a result of education and general social and economic progress. The spread of the universal religions of Islam and Christianity has also been instrumental in the decline of the postpartum taboo (Schoenmaechers, et al., 1981).

From the review of the factors which cause subfertility and infertility, it is clear that there is probably no single factor responsible for the problem in any given area. Rather, several factors may be acting together in a synergistic manner ultimately leading to depressed fertility (Sindiga, 1987). This is however not to say that all the factors discussed above must exist at a place. The reality may be one in which there is a primary determinant and one other or more factors acting in a secondary role.

It is therefore necessary to take various areas (and communities) individually and investigate in detail both the health-environmental circumstances and the cultural patterning which influence infertility. The task would then be to identify the major and minor factors responsible for infertility at a particular place within a certain time framework. This will make it possible to devise useful ameliorative measures to cope with the problem.

3. FERTILITY AND POPULATION CHANGE IN KENYA

In section 1 it was shown that Kenya's fertility rate is one of the highest in the world. In fact, fertility increased over the various census years since 1948 (Table 3.1). Life expectancy and the rate of population growth have been gaining as well. And with rising numbers of women expected to enter their child-bearing ages (Table 3.2), no significant decrease in the population growth can be expected until well into the next century.

Fertility is the most significant factor responsible for Kenya's rapid population growth (Kenya, 1984a: 7). By the end of her reproductive period, a woman would