FERTILITY AND ITS PROXIMATE DETERMINANTS IN LESOTHO

BY

TŠOAMATHE 'MASERIBANE

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DECLARATION

I here by declare that this is the result of my own research, where necessary other people's work have been duly acknowledged, I have never presented it in whole or in partial for another degree and I accept responsibility for errors in it.

Signed..

Tŝoamathe 'Maseribane

(Candidate)

Date....29/07/2003...........................

ACCEPTANCE

Accepted by the School of Development Studies, University of Natal, Durban in partial fulfilment of the requirement for the degree of Masters in Population Studies.

Signed..

Prof. Akim Mturi

(Supervisor)

Date...

DEDICATION

This study is dedicated to my

daughter, 'Mabatho (Tsananapi)

"Princess we did it again"

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MAY THE LORD BLESS YOU ALL IN RETURN

Abstract

There is a belief that economic resources are growing at a slow pace such that they fail to meet the demands made by an increase in population. Because of the critical contribution fertility makes to the high growth rates of a nation it is important to understand factors behind its change. This study seeks to contribute to such an understanding by providing an assessment of fertility and its proximate determinants in Lesotho. It utilises data from the 2001 Lesotho Demographic Survey and the 2002 Lesotho Demographic Survey Supplementary Enquiry.

The study reveals a moderate decline in fertility between 1977 and 2002 (from 5.8 to 4.5). This decline in fertility is attributable to a rise in contraceptive prevalence and an increase in non-marriage. The index of marriage declined by 27.5 percent between 1977 and 2002, from 0.69 to 0.50 and the singulate mean at marriage increased from 20 years to 24 years among females. Thus making non-marriage the greatest fertility- reducing factor in 2002. While, the index of contraception decline by 30.1 percent from 0.93 to 0.65 and the national CPR increased from 23.2 percent in 1991/92 to 43.9 percent in 2002. As a result contraception became the second greatest inhibitor of fertility. Though the actual effect of postpartum infecundability could not be determined due to non-availability of data, the study shows that in 1977 and 1991/92 the index of postpartum infecundability had the highest fertility-reducing effect in Lesotho. Moreover, the effect of sterility and abortion on fertility decline in Lesotho was found to be small. However, further research needs to address these factors as their effect could be masked by non-availability of data.

It seems that further decline in fertility in Lesotho will be a result of an increase in contraceptive use and age at marriage. To promote these two the government should: 1) show a strong commitment both politically and financially, to limiting population growth through family planning 2) expand women's educational and economic opportunities.

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CHAPTER ONE

Introduction

1.1 Background of the study

On the average a Mosotho woman experiences 4 live births in her entire reproductive span. This fertility level is low by African standards but it is high by international standards. For instance countries like Yemen, Mozambique, Burundi and Nigeria experience very high fertility levels they have total fertility rates of 7.9, 6.3, 6.3, and 6.0 respectively. (Saxena and Jurdi, 2001, United Nations, 2000, World Bank, 2000).

There have been differentials in Lesotho's fertility since 1976 (Bureau of Statistics (BOS), 1998). A number of explanations have been given for these different fertility levels. Some of such factors are education, economic status, marriage, contraception, induced abortion, lactational infecundability and postpartum abstinence; some of these factors affect fertility directly while others affect it indirectly (Tuoane, 1995, Makatjane and Toeba, 1999).

Because of the critical contribution that fertility makes to the high growth rates of a nation it is important to understand factors that play a part in changing it so that they can be manipulated to the best interest of the country. In most cases countries with high population growth rates are not accompanied by equivalent growths in basic economic resources such as land and employment opportunities (Tuoane, 1995). This can lead to hazardous situations like environmental degradation, poor housing, high rates of unemployment and high rates of crime (ibid). On this note it is important for government to be informed of factors that can help ease this problem of high population growth rates which is a problem of most sub-Saharan African countries.

1.2 Features of the Country

Lesotho is a small mountainous country completely landlocked by the Republic of South Africa. It has a very high latitude it is situated between 5,000 and 11, 720 feet above sea level. It is termed one of the smallest countries because it occupies only 11,720 sq miles (30,355 sq. kilometres). Lesotho is predominantly rural with over 80 percent of its population

living in the rural areas, where the main source of income is migrant workers remittances followed by subsistence farming (BOS, 1998). When it comes to education Lesotho is an exception to most African countries in the sense that it has high levels of educated females as compared to males. The 1996 population census recorded that 22 percent of males were illiterate while 15 percent of females were illiterate.

Lesotho is made up of ten administrative districts namely Butha- Buthe, Leribe, Berea, Maseru, Mafeteng, Mohale's Hoek, Quthing, Qacha's Nek, Mokhotlong and Thaba-Tseka. The country is also divided into four ecological zones: lowlands, foothills, mountains and the Senqu River Valley (SRV). The mountains occupy about 59 percent of the country; the lowlands occupy 17 percent while the foothills and the Senqu River Valley cover 15 percent and 9 percent of the total surface area respectively. The mountains are characterised by cool summers, harsh winters that are often accompanied by snow and thin soil. The thin soil as well as the climate does not favour agriculture, which happens to be one of the important sources of income in Lesotho.

Table 1.1 shows that the population of Lesotho has been growing at an increasing rate from 1976 to 1986. But it took a dip in 1996. It also shows that the population growth rate was 2.3 percent in 1976 and it increased to 2.6 percent in 1986 but declined to 1.5 percent in 1996. These trends could be attributed to constant fertility and declining mortality (Tuoane, 1995).

Table 1.1 further shows that there are more females than males when one looks at the sex ratio recorded in three most recent censuses. Lesotho has an unusual low sex ratio, which can be attributable to the high mortality rates of males as compared to females. Table 1.1 also depicts an improvement in health facilities and health care because mortality has been declining dramatically over the past three decades. The infant mortality rate, which is sometimes, used as an indicator of development declined from 110 in 1966 to 74 in 1996. However, the expectation of life at birth of the two sexes differs, females seem to have experienced higher expectation of life at birth than their male counterparts. This seems to have been the case in all censuses. It should be noted that the differences between the expectation of life at birth of both sexes experienced between 1986 and 1996 could be attributed to the different methods that were used to estimate the two (BOS, 1998). This

improvement in mortality was accompanied by a decline in fertility as the estimates of the total fertility rate and crude birth rate estimates show in the various censuses.

Table 1.1 Summary of Recent Demographic Indicators in Lesotho from 1976 to 1996

Year	1976	1986	1996
Sex Ratio	93	95	96
CBR	41.5	38	30.0
TFR	5.4	5.2	4.1
CDR	15	12	12.8
IMR	110	85	74
e^o (males)	49.3	54.0	51.7
e^o (females)	52.7	56.7	61.6
Population	1,217,000	1,605,00	1,960,000
Growth Rate %	2.3	2.6	1.5

Source: Lesotho Population Census Analytical Report, Vol. III A, 1998

1.3 Statement of the Problem

Although most sub-Saharan countries have adopted the agenda that was discussed at the International Conference on Population and Development (ICPD) in Cairo in September 1994, a large number of the population policies adopted prior to Cairo, and those revised afterwards, have not progressed much beyond the mere recognition of population and development problems (Guengant and May, 2001). Lesotho is no exception. Most governments in sub-Saharan Africa are still yearning for fertility declines because there seems to be a delay in the fertility transition in this part of the world even though its documented that a few countries are experiencing massive fertility declines (Kenya, Botswana, Zimbabwe and South Africa). However much as Lesotho has been marked by an almost constant fertility level between 1966 and 1986 (5 children per woman) there was a decline in 1996 to 4.1 children per women. However the recent 2001 Lesotho Demographic Survey has shown a slight increase in fertility between 1996 and 2001, it increased to 4.5 children per woman.

This fertility level is substantially low by African standards but still very high by international standards hence why the Lesotho government still desires to reduce it further.

There is a belief that economic resources are growing at a slow pace such that they fail to meet the demands made by an increase in population (Tuoane, 1995). As a result a need to reduce fertility levels arises. To achieve this goal it is imperative to understand factors at play in the decline of fertility in Lesotho. This understanding is important because it can indicate ways in which the national population programme can be made more effective. This study seeks to contribute to such an understanding by providing an assessment of fertility and its proximate determinants in Lesotho.

1.4 The Rationale of the Study

High levels of fertility are still viewed as a problem in most sub Saharan countries hence why the government of Lesotho wants to reduce its fertility to 2.1 children per woman by the year 2011. In order to assist the government to reach its target demographers in Lesotho on past research have contributed in various ways in trying to answer two important questions: Why levels of fertility differ widely across sub populations and what major factors contribute to the fertility trends? In trying to answer these questions much focus was placed on factors that affected fertility indirectly such as socio-economic factors, environmental, and cultural factors while less emphasis was put on proximate determinants of fertility, which these indirect factors work through in order to affect fertility. Consequently, this study will shed some light on the effects of proximate determinants of fertility in Lesotho.

1.5 Objectives of the Study

The main objective of the study is to examine fertility change by analysing its proximate determinants.

Specific Objectives

❖ To estimate the fertility-inhibiting effects of the five principal proximate determinants of fertility: marriage, contraception, induced abortion, postpartum infecundability and sterility

❖ To estimate the fertility-inhibiting effects of the five principal proximate determinants of fertility across sub-populations

❖ To determine the most important proximate determinant of fertility in decreasing fertility in Lesotho.

❖ To provide a basis for drawing out some policy implications and making recommendations with the aim of achieving a further decline in fertility in Lesotho.

1.6 Organisation of the study

This study is made up of eight chapters. The introductory chapter is followed by a chapter that highlights the work already done in relation to fertility and its proximate determinants in various parts of the world. The third chapter presents the methodology and data used in this study. The fourth, fifth, sixth and seventh chapters will give the actual findings of the study. While the last chapter summarises important aspects of the study and gives a conclusion pertaining to findings. Recommendations will be given in the last chapter as well.

CHAPTER TWO

Literature Review

2.1 Overview

There have been notable changes in fertility across different societies and most parts of the world. The literature shows that a lot of factors are shaping these changes in fertility. These changes have been largely accepted as being brought about by social, economic and other intermediate determinants on one hand and by proximate determinants on the other (Guengant, 2002). For instance it has been observed that in those populations where there is no contraception, such as the Hutterites, fertility has been as high as 10.9 children per woman, and as low as 5.1 children per woman among Chinese farmers (Reinis, 1992). However, in contracepting populations, as in several European countries marital fertility has been lowered below replacement level, with women having 2.1 children over their lifetimes (ibid). Therefore a need to search for an understanding in variation of fertility arose and much attention was focused on the proximate determinants of fertility.

Davis and Blake (1956) made explicit the distinction between factors which directly and indirectly influence fertility, they did this by identifying the direct factors referred to as 'proximate determinants or intermediate variables' of fertility as they mediate between fertility and any other variables. For instance, before the level of education of women affects fertility it first has to affect factors such as age at first marriage or use of contraception and the age at marriage or contraception will transfer this effect directly to fertility (Bongaarts, 1978).

In addition, Bongaarts (1978) showed that in any population the actual level of fertility achieved by a woman is influenced by seven intermediate variables or proximate determinants: marriage, contraception, induced abortion, lactational infecundability, fecundability, spontaneous intrauterine mortality and sterility. These variables together constitute a complete set of proximate determinants through which socio-economic and cultural factors affect fertility. Using data from 41 developed and developing countries Bongaarts and Potter (1983) showed that 96 percent of the difference in the total fertility rates of these populations could be explained by four principal determinants of fertility namely

marriage, contraception, induced abortion and lactational infecundability. All these can determine the length and pace of the reproductive activity and are therefore important for understanding fertility levels and trends (Palamuleni n.d.). It seems reasonable therefore to concentrate on these four variables in data collection and subsequent analysis (Islam and Islam, 1993). To quantify the fertility-inhibiting effect of the four major proximate determinants, Bongaarts developed a model, which is now widely used in fertility analysis. However, Bongaarts et al (1984) showed that pathological sterility is also an important proximate determinant of fertility in sub-Saharan Africa therefore it is crucial to be included in the model.

Guengant (2002) showed that further declines in fertility will depend more on proximate determinants than on other determinants. He stated that major fertility declines will not be brought about by present and future levels of socio-economic variables in regions where fertility transition is already taking place. Furthermore, future fertility levels and trends will depend on various combinations of growth in the contraceptive prevalence, future marriage patterns and potential trade-off between abortion and contraception to control fertility. To substantiate this Warren et al (1992) showed that postpartum infecundability is the most important direct determinant of fertility followed by marriage and contraceptive use in Swaziland.

In addition, Indonesia as well experienced a dramatic fall in fertility from a TFR of 5.6 in 1970 to 4.1 in 1980, and the decline was attributed to two proximate determinants: a sharp rise in contraceptive prevalence and an increase in age at first marriage (Gertler and Molyneaux 1994). Two important institutional factors were cited for the changes in these proximate determinants: 1) a strong government commitment both political and financial, to limiting population growth through family planning, and 2) expansion of women's economic welfare and opportunities.

2.2 Proximate Determinants of Fertility

Marriage

Marriage patterns and sexual initiation signal the onset of women's exposure to the risk of childbearing (Palamuleni, n.d). Different issues that relate to marriage can be used to measure the extent of exposure to intercourse and pregnancy during the reproductive period, these can be: age at first marriage, age at first birth, proportion of ever married women at a given point in time, level of polygyny, level of spousal separation and remarriage rates (Bongaarts et al, 1984). Also knowledge of marital status distributed by age can help in deciding when contraceptive information and services are needed (Letamo, 1994). Although marriage and fertility have no necessary biological relationship it is considered a prerequisite to childbearing (Riddfuss and Parnell, 1989). The demographic importance of marriage comes from the fact that formal or informal unions are the primary indicators of exposure to the risk of pregnancy (Palamuleni, n.d). Hence why the proportion of a woman's reproductive years spend unmarried, and thus presumably not exposed to the risk of pregnancy helps to explain differences in fertility (Westley et al, 1996). This normally refers to the number of years before marriage plus those spend divorced, widowed or separated. Thus fertility tends to be lower in regions where women spend more reproductive years unmarried (ibid).

However it is imperative to recognise the fact that marriage forms and practises vary across countries and culture (Jolly and Gribble, 1993). For instance marriage in most Sub-Saharan countries is not a one-time event it normally includes a series of events (ibid). Therefore knowledge of variations in sexual exposure should be understood in the context of socially recognised unions.

It has been noted that the onset of a fertility transition occurs generally where entry into first marriage is late (Coale, 1992). Bloom and Reedy (1987) state that higher aggregate rate of fertility and higher population growth are seen in populations where marriage is universal and age at marriage is low. In addition, substantially fertility declines were observed in the United States after the 1960's due to an increase in delays of marriage, age at childbearing after marriage, proportions never married, proportions separated and proportions divorced (Riddfuss and Parnell, 1989). Furthermore, a considerable percentage of the fall in fertility in

Navarre between 1986 and 1991 was attributable to the postponement of marriage by women (Sanchez, 1998). Likewise, in the 1980's one of the main factors that was holding Kenyan fertility below its potential maximum was an increase in the mean age at marriage (Frank and McNicoll, 1987). These observations support the hypothesis that age at first marriage is negatively related to fertility therefore it can be used to regulate fertility.

The effect of marriage on fertility is affected by an array of factors one of them being years spend in school. It is often observed that among educated women marriage is relatively late (Bongaarts, 1978) thus leading to lower fertility because the period of exposure to pregnancy is cut. This shows that education works through increases in age at first marriage to reduce fertility. In sub-Saharan Africa, women who enter marriage late have high education and are not supportive of high fertility as compared to those who marry early (Jolly and Gribble, 1993). Similarly, in India early marriage is typically associated with lower rates of school attendance and lower rates of labour force participation of women (Bloom and Reedy, 1987). Islam et al (1998) as well observed a positive relationship between age at first marriage and economic activity by indicating that women who are economically active have a greater fertility reducing effect due to marriage than those who are economically inactive. This could result from the fact that most economically active women would have already spent most of their time in school and do not see marriage as an investment like their economically inactive counterparts. van de Walle and Foster (1990) also argued that economic hardships could be accountable for forced delay of marriage, spousal separation or temporary incentives to delay the next pregnancy and therefore fertility would go back to higher levels when bad times cease.

Norms about marriage and fertility are less universally adhered to in urban areas than in rural areas. For instance, Jolly and Gribble (1993) observed that late age at marriage reduced fertility substantially in sub-Saharan Africa but it was found to be most effective in the urban areas. Warren et al, (1992) also observed that women in urban areas are more likely to have higher age at first marriage than women in the rural areas and experience lower fertility levels than women in the rural areas. It could be that greater opportunities for schooling in urban areas and high enrolment rates are a contributing factor in raising the net cost to urban parents and this brings into play quality-quantity trade-offs (Becker, 1991).

Another aspect that is deemed as important in marriage is the level of polygyny. There is a polygyny-fertility hypothesis, which states that polygynously married women have lower fertility than monogamously married women but there has been mixed evidence on the effect of polygymy on fertility. The mixed evidence is attributable to the methodology bias inherent in the analysis of polygyny and fertility (Hern, 1992). Reasons given for this hypothesis state that polygynously married women have lower fertility than monogamously married women because of lower frequency of intercourse (Bongaarts et al, 1984). Furthermore, polygynously married women beyond the first wife tend to have older husbands than monogamously married women (ibid). Polygyny is also said to facilitate long periods of postpartum abstinence, which is a major proximate determinant of African fertility (ibid). In addition, polygyny is observed to be highest in women who reside in the rural areas and those with low education (BOS, 1998).

Contraception

Contraception is referred to as a deliberate parity dependent practice undertaken to reduce the risk of conception (Bongaarts et al, 1984). It can also mean to prevent/delay conception or pregnancy. It is argued that if there is a deliberate attempt to limit fertility, one would expect to see changes in contraceptive use (van de Walle and Foster, 1990). It has been observed that better knowledge of contraception methods is not necessarily associated with higher usage of contraception methods (Bongaarts et al, 1984). Contraceptive use is said to be the most powerful direct influence of fertility because fertility levels have dropped most sharply where use of family planning has increased most dramatically (Pritchett, 1994). Differences in contraceptive prevalence explain about 90 percent of the variation in fertility (ibid). Bongaarts et al. (1984) stamped the belief that fertility decline will occur in populations where there is high contraceptive use. Despite the 1994 ICDP slogan that 'development is the best contraceptive' it has been proven that desirable fertility declines can be achieved without necessarily experiencing improvements in socio-economic development. For instance, Bangladesh experienced amazing fertility declines within a short period of time due to an increase in use of modern contraceptives coupled with a commitment in government in providing effective ways of family planning (Islam and Islam, 1993). This does not disregard the fact that development and social change create conditions that encourage smaller family size but to show that 'contraceptives are the best contraceptive' (Pritchett, 1994).

It is hypothesised that no other indicator of reproductive behaviour predicts a population's fertility better than contraception (Bongaarts, 1987). The magnitude and rapidity of the fertility transition in developing countries compared to the historical transition in the now developed countries provides strong evidence of the importance of contraception in reducing fertility (Pritchett, 1994). Furthermore contraceptive use and fertility are strongly negatively associated across countries, across households and overtime (ibid). It was observed in Tanzania that contraceptors take considerably longer to conceive; median waiting time to conception for parous women was 22 months for contraceptors, compared to 15 months of non-contraceptors (Larser, 1997). The dramatic fertility decline that was observed in the Netherlands in the 1980's was due to a wide use of effective contraceptive methods (Evert, 1983). However, contraceptive use was seen to have a minimal fertility reducing effect in sub-Saharan Africa with the exceptions of Botswana, Kenya and Zimbabwe (Jolly and Gribble, 1993).

However there are countries that have fertility rates that exceed what one would expect given the level of their contraceptive prevalence. For instance, it was observed that Zimbabwe in 1984 experienced a much smaller decline in fertility compared to the high contraceptive prevalence of 38 percent it had (Pritchett, 1994). This indicates the importance of other proximate determinants in explaining fertility variations. It is quite possible for fertility to remain constant or even rise temporarily as contraception increase, because other proximate determinants are exerting an upward pressure on fertility (Pritchett, 1994) and may be contraceptives usage procedures are not followed properly or there are high levels of discontinuation in contraceptives usage. However if contraception prevalence continues to rise fertility will inevitably decline (Pritchett, 1994).

Gertler et al (1994) further showed that educational and economic factors coupled with adequate contraceptive delivery system can contribute to a dramatic increase in contraceptive use, and hence a fertility decline. They came to this decision after realizing that fertility decline in Indonesia from 1982 to 1987 was a result of a large rise in contraceptive use. In particular improvements in females' educational attainment as well as wage employment accounted for 45 to 65 percent of the decline. In this case education and economic factors strictly worked through increases in contraceptive use to reduce fertility.

Bongaarts et al, (1984) also observed that educated women are more likely to use contraceptives than uneducated women thus lowering their fertility. The reason being that: 1) educated women are familiar with formal institutions and health providers, therefore are better informed about available contraceptive options and sources, 2) educated women are less prone to having a fatalistic attitude towards life and to accept the unpredictability of unregulated fertility, 3) they are also more likely to use contraceptives effectively and 4) have lower rates of discontinuation and failure (ibid). To further stamp this observation Martín (1995) revealed that better educated women are more likely than others to desire smaller families and thus have a stronger motivation to practice contraception. While it might be the reverse with women who are not well educated. Contraception is particularly high among women with eight or more years of schooling than among women with fewer years of schooling, (Jolly and Gribble, 1993). This insinuates a positive relationship between education and contraceptive use.

Contraceptives use, has been observed to have a higher reducing effect on fertility in urban area as compared to rural areas (Shapiro and Tambashe, 2001). Jolly and Gribble, (1993) also observed that contraceptive use is higher among women who reside in urban areas than women who reside in rural areas. Hence why before a fertility decline could emerge at a national level, there are clear signs of fertility decline in urban areas (Shapiro and Tambashe, 2001). From a theoretical or conceptual perspective the emergence of fertility transition in urban areas is not at all unexpected. Looking at the question from the perspective of Caldwell's wealth flow theory one can make a good case that the net benefits of parents of having large numbers of children are distinctly lower in urban than in rural places (Shapiro and Tambashe, 2001). In rural areas children contribute to agricultural production at an early age but this benefit of children to parents is either not present or else substantially diminished in urban areas (ibid).

Postpartum Infecundability

Postpartum infecundability refers to that time after birth when women are not at risk of contraception because either they are not ovulating or they do not engage in sexual intercourse (Bongaarts et al, 1984). In those societies where contraceptive prevalence is low fertility is suppressed by the powerful dampening effects of certain customary practises

(breastfeeding and postpartum abstinence) that can offset the traditionally strong upward pressure on childbearing (Frank and McNicoll, 1987). If a woman breastfeeds, the period of lactational amenorrhea is determined mainly by the duration, intensity and pattern of breastfeeding (Jolly and Gribble, 1993). Breastfeeding lengthens the birth interval by postponing the returns of ovulation after birth and the returns of menstruation (Goldman et al, 1987). The length of the period of lactation is strongly related to the timing of a subsequent birth. In most societies breastfeeding is accompanied by sexual abstinence because it is believed that sperms will contaminate the breast milk thus poison the baby; this further reduces chances of conception. These practises are believed to preserve the lives of the baby and the mother (Jolly and Gribble, 1993).

In societies where extended abstinence is practised, women do not begin to be exposed to conception until after their last child is weaned; this can result in four years of spacing between successive children (Goldman et al, 1987). To stamp the importance of this practise in Lesotho rules were put in place such that a man would be fined if found to be having sexual intercourse with another man's wife while breastfeeding (Makatjane and Toeba, 1999). To assist couples to abstain when the woman is breastfeeding, the woman after birth had to sleep in a different room as the man for at least two months (ibid).

By causing a delay in the resumption of ovulation in the postpartum period, breastfeeding postpones the next pregnancy and lengthens the subsequent birth interval (Bongaarts, 1987). The average length of the last birth interval increases with prolonged breastfeeding, on average one month of breastfeeding adds about 0.4 months to the birth interval (Anrudh and Bongaarts, 1981). When Bongaarts model of the proximate determinants of fertility is applied to the WFS data set, lactation inhibited an average of 4.0 births per woman in Africa and 6.5 births per woman in Bangladesh (Weis, 1993). Moreover the risk of conception for women who are still breastfeeding is between one quarter and two thirds lower than that of woman who had weaned their children (Guz and Hobcraft, 1991). This effect of breastfeeding was seen to be most powerful in Lesotho, Ivory Coast, Sudan, Haiti and Ecuador (ibid).

Most women in Sub Saharan African experience long periods of postpartum abstinence; Lesotho women in particular were estimated to abstain for over 15 months (Goldman et al, 1987). However, it should be noted that most sub-Saharan African countries experience

longer durations of breastfeeding than of postpartum abstinence (ibid) especially where there are increases in use of modern contraception.

Jolly and Gribble (1993) revealed that generally postpartum infecundability is the most significant inhibitor of fertility in most sub Saharan African countries even though prolonged breastfeeding and postpartum abstinence are not universal. Further more, Mturi and Hlabana (1999) observed that breastfeeding was responsible for most of the decline in Lesotho's fertility. But there is an indication that this practise is getting eroded given the large differentials in urban and rural practises, educational groups and employment groups (Bongaarts et al, 1984). It is hypothesised that during the initial stages of the demographic transition, slight increases in fertility may result from a decline in breastfeeding in the absence of increased usage of modern family planning methods (Huffman, 1984).

Longer periods of postpartum abstinence can still be observed in rural areas as compared to urban areas and it is the effect of these longest periods that have the greatest relevance to fertility (Bongaarts et al, 1984). It was observed that women in rural areas who did not have a second birth within 24 months breastfed on average five months longer than women who did (Pebley, 1981). Makatjane and Toeba (1999) showed that rural women breastfeed for longer periods of time (21 months) than urban women (19 months) in Lesotho. Moreover, older women seem to breastfed a month longer than (22 months) young women (21 months) (ibid). However, they found that there were no differences in duration of breastfeeding across educational groups of women. But women whose husbands had secondary school education or above, breastfed for shorter periods of time (less than two months) than women whose husband had primary school education or no education. They also discovered that women who were economically active breastfed two months shorter than women who were economically inactive.

Abortion

Induced abortion has long been identified as one of the main determinants of fertility regardless of its legal status (Johnston and Hill, 1996). It has been suggested that induced abortion averts about 0.4 births in the absence of contraception and 0.8 births when moderate contraception is practised (Bongaarts, 1978). Moreover abortion was seen to have a similar

effect on fertility to that of contraception (Johnston and Hill, 1996). It was observed to reduce fertility by 38-55 percent in Latin America while it reduced fertility by 6-19 percent in the Near East and 0-32 percent in Africa (ibid). In countries where data on abortion was available this reductive effect seemed to increase over time (ibid). The potentiality of induced abortion to reduce fertility in a short time should not be doubted, it is evident in the experiences of Japan, China and India (Foreit and Nortman, 1992).

Variations in levels of abortion can intensify or dampen the effect of changes in contraception or vis versa (Foreit and Nortman, 1992). Abortion in most cases is a key indicator of latent contraceptive demand (ibid). "When women first become motivated to reduce their fertility but have yet to adopt effective contraception, declines in fertility are often associated with increased abortion rates" (Foreit and Nortman 1992:127). Over time, women substitute effective contraceptive for induced abortion (ibid). Rates of induced abortion are likely to be low or moderate in places where contraceptive use is intensive and highly effective. It has been documented in a lot of countries such as Japan, Hungary and the Republic of German that increases in contraception lead to substantial declines in abortion (ibid). It should be noted however that this inverse relationship between contraception and abortion is not the only pattern observed. In 1982 it was discovered in Korea that both abortion and contraception increased concurrently after an introduction of the national family planning program (ibid).

It is evident from the past paragraph that induced abortion can work in various ways to affect fertility. Unfortunately throughout sub Saharan Africa abortion is highly restricted. Only a few counties permit abortion for reasons other than those directly threatening a women's life (Coetaux, 1990). Abortion also happens to be a very sensitive and private issue which people are reluctant to disclose, this coupled with its illegal status in most sub-Saharan African countries make its data collection very difficult if not impossible. Lesotho is no exception. Accurate information on induced abortion is essential to understand the fertility dynamics of a population and for making future projections. Due to the uncertainty of the information on induced abortion it is difficult to know whether abortion rates are increasing or decreasing since a few studies have provided figures even for small areas. That is, if a sincere effort is made at all to collect these statistics. It is however assumed to be increasing even though it is officially illegal. It should be noted that the restrictive laws do not necessarily mean that

abortion services are unavailable. Qualified physicians still risk to perform abortions may be because laws are not vigorously enforced or they are interpreted with flexibility (Coeytaux, 1990).

Assuming that abortion is not there is very misleading and can result in people making wrong assumptions. For example there is a popular believe that people who resort to abortion are younger, more highly educated urban women as well as unmarried adolescents (Coeytaux, 1990). However a study done in Lagos showed that 30.4 percent of septic abortion occurred to women aged above 25; 34.8 percent of the abortees were married and 52.2 percent had two or more children (ibid). While not denying that induced abortion is a growing problem among young, educated women, evidence suggests that the problem is not limited to them. Bongaarts et al (1984) also state that overall, abortion is probably used in a number of urban areas among the very youngest before marriage. But the urban phenomenon in sub-Saharan is reported variously to represent an increasing public health problem but at the regional level it has a negligible fertility effect (Bongaarts et al, 1984). Abortion does exist in rural areas but reliance is on traditional methods because of lack of medical facilities in these areas however, lack of actual figures on abortion makes it difficult to compare the rural and urban phenomenon (Henshaw, 1990).

Sterility

Sterility is associated with diseases in Africa especially those that are sexually transmitted like gonorrhoea (Bongaarts et al 1984). Bongaarts et al (1984) indicate that a small percentage of women are sterile at the beginning of the reproductive years though this might increase with age, it reaches almost 100 percent at age 50. A population is said to have a sterility problem if the proportion of ever-married women who are childless exceeds 3 percent (Bongaarts et al, 1984). There are three types of sterility namely natural sterility, primary sterility and secondary sterility. Natural sterility occurs at the beginning of the reproductive years without a woman necessarily contracting any sterilising diseases (ibid). There are two types of sterility namely primary sterility and secondary sterility. Primary sterility occurs if a sterilising disease is contracted before a first birth (ibid). While secondary sterility occurs after contracting a sterilising disease such that additional children cannot be borne, (ibid). For any level of sterility there is an accompanying larger proportion of women who have incurred their

secondary fertility (Bongaarts et al 1984). The normal percenatage of childless women makes it possible to gain a good indication of the extent of accompanying secondary infertility (ibid).

The incidence of permanent sterility is generally a less important determinant of fertility differentials (Jolly and Gribble, 1993). It does not vary much across sub-populations (ibid). However it has been recognized as one of the main determinants of fertility differentials in sub-Saharan Africa (Bongaarts et al, 1984). One of the factors attributable to the stability of Tanazania's fertility since the 1970's is a decline in sterility; it declined from 10 percent to 3 percent between 1973 and 1991/92 (Larsen, 1997). Urbanisation and education may affect infertility in various ways: 1) rapid urbanisation that is not accompanied by development of health infrastructure could promote increased infertility, 2) while the mere availability of antibiotics might reduce infertility even if there is insufficient infrastructure, 3) women with low levels of education, generally have higher levels of fertility than women with no education at all, which may be in part due to lower infertility 4) while higher education levels begin to show various other effects on fertility behaviour, infertility per se can be expected to decline fairly systematically as women have increased access to health resources and make effective use of these resources with their increased educational exposure (Bongaarts et al, 1984).

It is apparent from the literature that variations in fertility among countries, among regions and socio-economic strata within countries and among individual women are due to the effects of one or more of the proximate determinants of fertility (Bongaarts et al, 1984). If all proximate variables as well as a complete model were available all variance in fertility could be explained (ibid). Unfortunately measures of some proximate determinants can be unavailable or incomplete such that it is not possible to provide a detailed and comprehensive explanation of the variations in fertility (ibid).

CHAPTER THREE

METHODOLOGY AND DATA

3.1 Sources of Data and Their Limitations

The study will utilise data from the 2001 Lesotho Demographic Survey (LDS) and the 2002 Lesotho Demographic Survey Supplementary Enquiry (LDSSE).

The 2001 LDS and the 2002 LDSSE were conducted within the framework of the National Household Survey Compatibility Programme (NHSCP). The 2001 LDS was mainly conducted to evaluate the results of the 1996 population census, at the same time providing current demographic data. The Bureau of Statistics in collaboration with the UNFPA later on realised that it was not wise in this time and age to have carried out such an important survey (2001 LDS) without having included issues pertaining to reproductive health, sexual behaviour and HIV/AIDS therefore an enquiry was carried out in February 2002 to supplement this deficiency in the 2001 LDS. The 2001 LDS as well the 2002 LDSSE employed a nationally representative sample, which was selected from the main sample frame created by Lesotho Bureau of Statistics based on the 1996 population census data.

Like all other surveys conducted by the Bureau of Statistics, these two surveys under went a two-stage sample design. The districts, as usual were the domains of study and the agro-ecological zones, namely; lowlands, foothills, mountains and the senqu river valley were the strata. The first stage of sampling units or Primary Sampling Units (PSUs) were the clusters. A cluster is a group of two or more adjacent Enumeration Areas (EAs). These enumeration areas were delineated for the 1996 Population and Housing Census. The primary sampling units were selected with probability proportional to size (PPS). The number of households within the clusters indicated the size of the cluster.

The secondary sampling units or Second Stage Sampling Units (SSUs) were the individual Enumeration Areas. These enumeration areas were selected at random. Within the selected enumeration areas, all the households were enumerated. For the 2001 LDS 130 EAs were

selected, 110 EAs from the rural stratum and 20 EAs from the urban stratum. While 33 Eas were selected for the 2002 LDSSE, 30 EAs from the rural stratum and 3 EAs from the urban stratum.

The main source of fertility data collected in the 2001 LDS was total birth history by each female aged 12-49. Each female was asked to provide information on contraceptive use, date of birth of each child, sex of the child, survival status, age of death of child if any died and breastfeeding. The data was collected from all the ten districts of Lesotho in 16,394 households and 23,070 females aged 12-49 were successfully interviewed from these households. On the other hand the 2002 LDSSE interviewed 2,651 women aged 12-49 but did not offer a detailed birth history like the 2001 LDS, because it only had a few questions on current fertility, retrospective fertility, contraceptive knowledge and usage, but it is a rich source of sexual and reproductive health data. Much as the two surveys collected fertility information using females aged 12-49, I will be using data collected from females aged 15-49 because the technique employed focuses on these age groups.

The information on the 2001 LDS sounds more promising to the requirements of this study than that of the 2002 LDSSE. However data on breastfeeding was not yet ready for public consumption at the time of this study. The information on breastfeeding is derived from the 1991/92 Lesotho Demographic and Health survey by assuming that the average duration of postpartum infecundability caused by breastfeeding or postpartum abstinence has been constant over the past ten years. This assumption might be violated given the fact that there has been a lot of advocacy on breastfeeding over this period. But this was the best option under the given circumstances.

Last but not least is the problem of data on abortion. The 2002 LDSSE does offer this information but it cannot be used to get a plausible estimate of abortion rate because only 11 females admitted to having had an abortion. As known abortion is a very sensitive issue and it is still not legal in Lesotho thus making data collection pertaining to it very difficult, especially in quantitative surveys where the interviewee and the interviewer do not have time to build rapport.

3.2 Discussion of the Model

This study is going to use the Bongaarts (1978) model. With the availability of more advanced data sets the Bongaarts model underwent a lot of modifications and adjustments from researchers such as Jolly and Gribble, Stove, Reinis, and Hobraft and Little. The modification suggested by Jolly and Gribble (1993), and Stover (1998) will be taken into account in this study.

Bongaarts (1978) developed a framework for proximate determinants of fertility where he identified seven basic proximate determinants of fertility namely: marriage patterns, use and effectiveness of contraception, period of postpartum infencundability, frequency of sexual intercourse, spontaneous intra-uterine mortality, induced abortion and pathological or natural sterility (Bongaarts et al, 1984). Five out of the seven were termed principal factors affecting fertility differentials and trends in sub-Saharan Africa; these were marriage, contraception, period of postpartum infecundability, induced abortion and pathological sterility. The study analyses these five proximate determinants of fertility in Lesotho.

The Bongaarts model formulates that total fertility rate (TFR) is determined by total fecundity (TF) inhibited by the indices of non-marriage (C_m), contraception (C_c), induced abortion (C_a), postpartum infecundability (C_i) and pathological sterility (I_p). TF is a hypothetical maximum number of children a woman would have in her lifetime, if she was married, not using contraception, not breastfeeding or abstaining postpartum, not inducing abortion nor under going any form of sterility throughout her entire reproductive period. TF is said to range between 13 and 17. Bongaarts says that if a woman is subjected to some level of non-marriage, contraception, breastfeeding and postpartum abstinence, induced abortion and sterility TF will be reduced to TFR. The model can be quantified through the following equation:

$$TFR = C_m \times C_c \times C_a \times C_i \times I_p \times TF \quad \textbf{(1)}$$

$$TM = C_c \times C_a \times C_i \times TF \qquad \textbf{(2)}$$

$$TN = C_i \times TF \qquad \textbf{(3)}$$

Where total fertility rate (TFR) is the number of births a woman would have at the end of her reproductive period if she were to bear children at the prevailing age-specific fertility rates and remain alive during the entire reproductive period.

Total marital fertility rate (TM) is the number of births a woman would have at the end of the reproductive years if she were to bear children at the prevailing age-specific marital fertility rates and remained alive and married during the entire reproductive period.

Total natural marital fertility rate TN, is the total number of children a woman would bear at the end of her reproductive period if she was contracepting or inducing abortions and she were to bear them at the prevailing age-specific marital fertility rates. Therefore, in the absence of contraception and induced abortion TN equals to TM.

and C_m, Cc ,C_a, C_i, and I_p are the indices of marriage, contraception, induced abortion, postpartum infecundability and sterility respectively. The indices can only take values between 0 and 1. When there is no fertility-inhibiting effect of a given intermediate fertility variable, the corresponding index equals 1, if the fertility inhibition is complete, the index equals 0. These indices can be estimated from measures of the proximate variables and these estimates are given below

The index of marriage, C_m

$$C_m = \sum \{m(a)*g(a)\}/ \sum g(a) \qquad (4)$$

Where m (a) = age specific proportions currently married among females aged 15-49,

g(a) = age specific marital fertility rates.

C_m operates under the assumption that all births occur within marriage.

The index of contraception C_c

$$C_c = 1 - 1.08 \times u \times e \qquad (5)$$

Where u = proportion currently using contraception among married women of reproductive age,

e = average use effectiveness of contraception.

Given the following levels of effectives:

Pill   0.90

IUD   0.95

Sterilization   1.00

Other modern methods   0.70

Traditional methods   0.30

C_c works under the assumption that contraceptive use is random and only fecund women use contraceptives.

The index of induced abortion

$$C_a = TFR \,/\, TFR + 0.4 \times (1+u) \times TA \qquad (6)$$

Where TA = total abortion rate.

Due to lack of data on abortion, C_a is estimated indirectly as a residual by rearranging the Bongaarts model equation as $C_a = TFR/(TF*C_m*C_c*C_i*I_p)$ (Johnston and Hill 1996). This then would call for use of one figure for the total fecundity rate (TF), which was estimated by Bongaarts in his framework. Johnson and Hill (1996) state that there are three errors that could arise from rearranging the equation: there could be measurement errors in the indices of the fertility- reducing effects of the major determinants, the effects of omission of the other three proximate determinants not included in the model (permanent sterility, spontaneous intrauterine mortality and postpartum fecund ability), the use of a single value of TF and using different choices of TFR. The accuracy of the estimate and the size of the residual will be affected by any underestimation or overestimation of values of the variables in the model, as it usually happens in residual models.

The index of postpartum infecundability

$$C_i = 20 / 18.5 + i \qquad\qquad (7)$$

Where, i = average duration of postpartum infecundability caused by both breastfeeding or postpartum abstinence. However, I in this analysis would mean breastfeeding only because of lack of data on postpartum abstinence.

C_i operates under the assumption that the overlap between postpartum amenorrhea and contraception is greater for those who have the longest period of amenorrhea.

Index of sterility

$$I_p = (7.63 - 0.11s)/7.3 \qquad\qquad (8)$$

Where s is the percentage of ever-married women between ages 40-49 who have ever been married but never had any children

I_p operates under the assumption that most women would have given birth by age 40 and it is normal for a population to have 3 percent of women aged 40-49 who have ever been married but never gave a live birth.

Suggested Revisions

Some researchers realised weakness in the Bongaarts model as advanced data sets became available. As a result modifications and revisions were suggested to the model.

Jolly and Gribble (1993) discovered that the assumption pertaining to the index of marriage which states that births occur within marriage only; poses as a problem for the Bongaarts model. Especially, because a lot of countries are experiencing some form of nonmarital births let alone high rates of these births. In these settings this assumption is highly violated, especially in Africa where marriage is not a one-time event (Jolly and Gribble, 1993). Jolly and Gribble (1993) also realised that if nonmarital births are excluded from the analysis the

TFR is underestimated but the TMFR is estimated accurately. But if these births are included in the equation, TFR will be accurate while TMFR is inflated giving the impression that marriage patterns reduce fertility by a much bigger margin. To circumvent this and thus maintain a consistent definition of other variables in the Bongaarts model using women currently in union they added two variables M_o and C'_m to the model. M_o is meant to capture the effect of births outside union on total fertility while C'_m captures the effect of specific observed union patterns on total fertility, under the assumption that no births occur outside marriage. The two indices are related because if all women were in union from age 15 to age 50 there would be no births outside marriage, M_o would be equal to 1 hence there would be no effect on fertility and C'_m would equal C_m. M_o is not a fertility-reducing parameter of the model, but a device to maintain comparability across culture in the interpretation of other parameters of the model. The revised model in this instance is as follows:

$$TFR = M_o * C'_m * C_c * C_a * C_i * I_p * TF$$

Where

$$C_m = TFR / TMFR$$

$$M_o = TFR / TUFR$$

$$C'_m = TUFR / TMFR$$

TUFR is the sum of the age-specific union fertility rates (ASUFRS)

ASUFRS = marital births at age i / midyear population of women aged i

Stover (1998) on the other hand revised the whole Bongaarts model and came up with a refined model below:

$$TFR = C_x * C_i * C_a * C_f * C_u * PF \qquad (1)'$$

Where TFR= Total fertility rate, C_x= Sexually active, C_i= Insusceptible postpartum, C_f= Sexually active and infecund, C_u= Practising contraception, PF= Potential fertility.

Stover (1998) argues that the marriage index C_m in the Bongaarts model is supposed to express reduction in fertility if women are not sexually active throughout their reproductive period but marriage was used as a proxy due to lack of data. Lately a lot of countries have data on recent sexual activity, which is believed to be a more direct measure of exposure to pregnancy than marriage. Therefore a new index C_x was developed to take care of this problem.

$C_x = s$ **(2)'**

s = the proportion of women aged 15-49 who were sexually active in the last four weeks

Stover (1998) acknowledges that even though much data on abortion might be available today than in the past, the information is still limited and of such uncertain accuracy that a detailed examination of the abortion index is not possible. Therefore he suggests that the contraceptive prevalence be multiplied by the effectiveness of contraception to give a more accurate description of the proportion of women protected by contraception when estimating C_a. Giving an abortion index of:

$C_a = TFR / (TFR + 0.4 * (1 + u * e) * TAR)$ **(4)'**

Where u = the proportion of sexually active, fecund women using contraceptives that does not overlap with experiencing postpartum amenorrhoea, e = the average effectiveness of contraception, TAR = the total abortion rate

Stover further developed another index C_u, which replaces the index of contraception C_c in the Bongaarts model. His justification being that the adjustment factor 1.08 in C_c is designed to remove the infecund women from the equation, so that C_c would become zero if effective prevalence reached 92.5 percent (the remaining women are assumed to be infecund) and only fecund women are assumed to use contraceptives. But it has been shown that this assumption is reasonable for most contraceptive methods though a considerable number of infecund women might have undergone sterilization, because protection from conception by sterilization is assumed to continue until the end of the reproductive years (Stover, 1998). In addition, this created an overlap but it was less important in the original model because it considered women aged 15 to 44 to reproduce but now the convention is to use women aged 15 to 49. By the age 45-49, 52 percent of women are considered infecund, a considerable

overlap of women who are sterilized and considered infecund can occur. "This problem is most serious in a country such as India where sterilisation is the principal method of contraception. In this case, if more than 48 percent of women are sterilized, the contraceptive index would become negative...and the model will calculate that fertility among women 45-49 should be zero" (Stover 1998). As a result, the infecundability considerations were entirely removed from the contraceptive index, because infecundability should be included in the sterility index. Therefore the index equation became:

$$C_u = 1 - u * e \qquad \textbf{(5)'}$$

Stover (1998) concludes by showing that the new definitions may be more precise descriptors of the actual fertility –inhibiting factors but they might be measured less accurately than the original definitions. Where additional data lacks the original model will be sufficient.

3.3 The model chosen

This study will adopt the modifications suggested by Jolly and Gribble (1993). The model is as follows:

TFR= M_o * C'_m * C_c * C_a * C_i * I_p * TF

Where

M_o = TFR / TUFR

C'_m = TUFR / TMFR

TUFR is the sum of the age-specific union fertility rates (ASUFRS)

ASUFRS = marital births at age i / midyear population of women aged I

C_c = 1 - 1.08 x u x e

Where u = proportion currently using contraception among married women of reproductive age,

e = average use effectiveness of contraception.

C_a = TFR / TFR +0 .4 x (1+u) x TA

Where TA = total abortion rate.

C_i = 20 / 18. 5 + i

Where, i = average duration of postpartum infecundability caused by breastfeeding.

I_p =(7.63-0.11s)/7.3

Where s is the percentage of ever-married women between ages 40-49 who have ever been married but never had any children

This modification is preferred because it has been documented that Lesotho is experiencing increasing rates in non-marital births (Makatjane 1997). As noted this can pose as a problem for the Bongaarts model. Therefore, to overcome this problem it would be wise to employ the modifications suggested by Jolly and Gribble's (1993). Keeping in mind that this does not necessarily change the Bongaarts model but simply brings out the impact of marriage and non-marriage on fertility explicitly unlike the Bongaarts model that covers the two in one (but leaving the other indices as in the original model).

Stover's revision cannot be employed because additional data is required to utilise the new definitions. It would be really interesting however to apply these revisions in Lesotho and see how they work but there is no sufficient data to compute all the revised indices, but that on sexual activity.

CHAPTER FOUR

MARRIAGE PATTERNS

4.1 Effect of Marriage Patterns on Fertility

In most societies marriage is viewed as an indication of sexual initiation and ultimately an indicator of exposure to childbearing. Different issues that relate to marriage can be used to measure the extent of exposure to intercourse and pregnancy during the reproductive period, these can be: age at first marriage, age at birth, proportion of ever married women at a given point in time, level of polygamy, level of spousal separation and remarriage rates. This section will give a picture of age at first marriage, age at first birth, polygyny, sexual intercourse and indices of marriage in Lesotho.

4.2 Age at First Marriage

Age at first marriage represents a period where by a women is in constant exposure to sexual intercourse and consequently childbearing. It is indicated by singulate mean age at marriage (SMAM), which is the mean age at first marriage for those who ever married. This indicator is based on the assumption that no marriage occurs before age 15 or after age 50 and that sex only occurs in marriage. These assumptions can be misleading in societies where abstinence until marriage is not adhered to, because high estimates of SMAM are likely to be estimated thus portraying a false picture. In the sense that it will be saying that exposure to sexual intercourse begins at a late stage though it starts earlier in actual fact but SMAM fails to capture this. If other proximate determinants of fertility and other indicators of exposure to intercourse inside marriage were to be held constant mean age at marriage would be negatively related with fertility.

The past four census and the recent 2001 LDS indicate an increase of both males and females remaining single. The mean age seems to have increased from 26 years in 1966 to 28 in 2001 among males and from 20 to 24 years among females, indicating postponement of marriage by both sexes but females increased by a larger margin. However males seem to enter into first marriage at a later stage than females. This increase in age at first marriage insinuates loss of reproductive exposure, which in turn can lead to fertility decline. This is an indication

that increases in first age at marriage over the years have contributed to Lesotho's fertility decline.

4.3 Age at First Birth

Although some births occur outside marriage, the age at which a woman gives birth for the first time is usually used as an indication of age at first marriage, which is an essential demographic indicator. Postponement of first birth can contribute to overall fertility decline. The 2001 LDS revealed that most females gave their first live birth when they were aged 18-24. This age range is high as compared to other countries such as India and Yemen. Since part of the reproductive exposure time has been wasted the number of births that would be given had it not been wasted are reduced thus resulting in fertility reduction.

4.4 Polygyny

Polygyny is another aspect that can affect the extent of exposure to childbearing within marriage and during the childbearing span. There is a belief that women in polynynous marriage might have lower fertility than those in monogamous marriages because of lower frequency of intercourse however evidence is mixed in this regard. Lesotho experienced decreases in polygynous marriages (2.6 percent to 1.7 percent) between 1996 and 2001 (BOS, 1998 and 2001 LDS). However there were more women in rural areas who were in polygynous marriages than in urban areas. Women in polygynous marriages were also seen to decreases as educational attainment increases. Generally this indicates that polygyny has a minute role in reducing fertility in Lesotho

4.5 Spouse separation

Women who do not stay with their husbands are said to have longer birth intervals and as a result have lower fertility than those who stay with their husbands on a permanent basis (Bongaarts and Potter, 1983). Lesotho has been characterised by high male labour migration for many years (Makatjane and Toeba, 1999). These men mostly worked in the mining industry of South Africa. It is often believed that the spousal separation that arose from this male labour migration was responsible for the constant fertility levels Lesotho has been enjoying for years (ibid). These migrant labourers were not allowed to be accompanied by their families and it used to be difficult for them to make regular visits home (Mturi and

Hlabana, 1999). But presently this has changed and these migrants make regular visits home (ibid). Some writers believe that the decline in proportion of male labour migrants and the regular visit are threatening the suppression effect male migration used to have on Lesotho's fertility (ibid).

4.6 Sexual intercourse

Sexual intercourse is said to be a more accurate way to measure exposure to the risk of pregnancy than marriage. Table 4.1 presents women aged 15-49 who had sexual intercourse four weeks prior to the survey by marital status. It indicates that currently married women are more exposed to the risk of childbearing than other women. As a result fertility is likely to be higher in this category as compared to others holding all things constant. This support the hypothesis that currently married women are more likely to have a child than never or post married women. However, it can be deduced from table 4.1 that marriage is a necessary condition to the exposure of pregnancy but it not a sufficient condition because there are women who were currently married but did not have sexual intercourse in the last four weeks for one reason or another and those who were not married but had sexual intercourse in the last four weeks.

Table 4.1: Percentage of Women Aged 15-49 Who Had Sex in the Last Four Weeks by Marital Status, 2002

Marital status	Sex last four weeks (%)
Never married	8.2
Currently married	52.4
Living together	42.9
Separated	24.8
Divorced	38.2
Widowed	21.7

Source: 2002 LDSSE data

4.7 Indices of Marriage

Table 4.2 presents the values of TMFR, TFR, C_m, C'_m, and M_o. The index of marriage is supposed to measure exposure to sexual intercourse. It measures the proportion by which the TFR is smaller than TMFR as a result of non-marriage; it is based on the assumption that all childbearing occurs within marriage (Jolly and Gribble, 1993). However this assumption is problematic because in reality not all births occur within marriage (ibid). M_o is meant to

capture the effect of births outside union on total fertility while C'_m captures the effect of specific observed union patterns on total fertility, under the assumption that no births occur outside marriage. The two indices are related because if all women were in union from age 15 to age 50 there would be no births outside marriage, M_o would be equal to 1 hence there would be no effect on fertility and C'_m would equal C_m. It should be noted that M_o is not a fertility-reducing parameter but a device that maintains comparability across culture in the interpretation of other parameters in the Bongaarts model. Since the model employed in this study is the one modified by Jolly and Gribble (1993) the index of marriage that will be discussed is C'_m. But C_m is displayed to reveal how it underestimates the fertility inhibiting effect due to marriage. While M_o is shown to disclose how lower TFR would be if it was calculated using births from marriage only as a result indicates the percent contribution of non-marital births to fertility (TFR).

Table 4.2 also shows that in setting where much childbearing occurs outside marriage, the fertility inhibiting effect of marriage alone is underestimated by C_m, This means it is higher than it should be thus always displays a higher figure as compared to C'_m. However, the lower value of C'_m indicates a stronger inhibiting effect on fertility than C_m. As mentioned earlier the smaller the index the greater the fertility inhibiting effect it has on fertility. The table also shows that a relatively large amount of fertility contributing to the TFR is outside marriage.

Table 4.2 further shows that non-marriage alone suppresses fertility from reaching its potential maximum by 60 percent (C'_m=0.40). This suppression on fertility by non-marriage is greatest in urban areas; fertility is seen to be reduced by 70 percent. While it is reduced by only 41 percent in rural areas. This confirms that the decline of fertility due to non-marriage is mostly seen in urban areas hence why before fertility decline is seen at a national level it will first be seen in urban areas.

In addition table 4.2 shows that the lowlands experiences the greatest fertility suppression due to non-marriage as compared to other ecological zones. In the lowlands fertility was reduced by 49 percent as a result of non-marriage. It is followed by the SRV with 32 percent reduction of fertility. However, the least fertility inhibition (33 percent) due to nom-marriage was displayed in the foothills. One would have expected the mountains to have the least fertility reduction as a result of non-marriage because of the rural characteristics inherent in it.

Moreover table 4.2 reveals that the greatest reduction in fertility due to non-marriage was from the Berea and Mafeteng districts. The two districts experienced a 47 percent reduction in fertility due to non-marriage. The Maseru and Qacha's Nek districts, which experienced 45 percent fertility inhibition due to non-marriage, follow these two. Though the margin in fertility reduction between Maseru district and the two former is small the expectation was that Maseru being the 'city' district would experience the greatest reduction in fertility due to non-marriage. It is surprising though that the Qacha's Nek district which is mostly rural should display an equal fertility inhibition due to marriage as the Maseru district. The district that experienced the least reduction in fertility due to non-marriage is Thaba-Tseka, which had 33 percent reduction in fertility due to non-marriage. The Leribe and Butha-Buthe districts follow with a 38 percent reduction in fertility. This is another interesting observation given the fact that these districts are considered more urbanised than districts such as Qacha's Nek and Mokhotlong which experienced more reduction in fertility due to non-marriage than Leribe and Butha-Buthe districts.

Table 4.2 goes further to show that women who have secondary education or higher experienced the most reduction in fertility due to non-marriage as compared to women in other educational categories. Women who have secondary education or higher had a 52 percent fertility inhibition due to non-marriage. However, those with primary education seem to have experienced a slightly bigger reduction in fertility due to non-marriage (40 percent) than those with primary education (39 percent). This displays a behaviour where women with no education get married later than those with minimal education thus experiencing lower fertility. This points out the importance of extensive education on postponement of marriage and important role of non-marriage in inhibiting fertility. This patterns shows that women with some education, in comparison to women with no education are likely to have higher fertility, but those with even greater amounts of education have the lowest fertility of all. A common explanation of the finding that women with some education have higher fertility is that female education and urbanisation are generally correlated with decreases in duration of breastfeeding and postpartum abstinence, which lead to shorter intervals between births (Jolly and Gribble, 1993). These women are also not likely to use modern methods of contraception thus higher fertility. But women with no education are likely to adhere to tradition thus breastfeeding longer and having longer duration of postpartum abstinence (ibid). Though

women with high education might do away with long periods of breastfeeding and abstinence they are like to use effective methods of contraception thus lowering their fertility.

Table 4.2 also shows that marriage has the strongest inhibiting effect on those women who were not employed as compared to other women in other employment categories. These women experienced a massive reduction of 79 percent reduction due to non-marriage. However those in wage employment experienced a bigger reduction in fertility due to non-marriage (50 percent) than those who were unpaid family workers or housewife, which displayed a 35 percent reduction in fertility due to non-marriage. The expectation though was for women in wage employment to display the greatest fertility inhibition due to non-marriage. The peculiar behaviour could be attributable to the fact that the category of the unemployed comprises of students, who in most cases are known to delay marriage.

Table 4.2: Fertility Rates and the Effect of Marriage Patterns on Fertility

Category	TMFR	TFR	C_m	C'_m	M_o
National	8.96	4.5	0.50	0.40	1.25
Residence					
Urban	7.0	3.1	0.44	0.30	1.48
Rural	6.4	4.6	0.72	0.59	1.21
Zone					
Lowlands	5.1	3.5	0.69	0.51	1.35
Foothills	8.8	6.9	078	0.67	1.16
Mountains	7.5	5.5	0.74	0.63	1.18
SRV	5.8	4.5	0.77	0.62	1.24
District					
Butha-Buthe	5.7	4.3	0.75	0.62	1.21
Leribe	7.0	4.7	0.67	0.62	1.08
Berea	5.7	4.4	0.76	0.53	1.44
Maseru	7.0	5.2	0.75	0.55	1.38
Mafeteng	3.0	2.1	0.72	0.53	1.37
Mohale's Hoek	5.5	4.6	0.83	0.56	1.49
Quthing	5.9	4.3	0.73	0.61	1.19
Qacha's Nek	7.1	5.5	0.78	0.55	1.43
Mokhotlong	9.4	5.9	0.63	0.56	1.13
Thaba-Tseka	6.6	4.5	0.69	0.67	1.04
Education					
None	4.8	3.3	0.67	0.60	1.13
Primary school	6.8	4.9	0.73	0.61	1.20
Secondary/high school+	5.9	4.1	0.70	0.48	1.47
Employment Status					
Paid employee	4.0	2.5	0.63	0.50	1.26
Unpaid worker/housewife	6.8	5.5	0.81	0.65	1.26
Not employed	6.7	2.2	0.33	0.21	1.56

Source: 2002 LDSSE data

CHAPTER FIVE

CONTRACEPTION

5.1 Contraceptive Knowledge Differentials

Contraception is referred to as a deliberate parity dependent practice undertaken to reduce the risk of conception (Bongaarts et al, 1984). It can also mean to prevent/delay conception or pregnancy. It gives women an opportunity to space their children or to stop bearing children prior to menopause. This section will be showing knowledge of contraceptives, usage of contraceptives, the contraceptive prevalence rate and the index of contraception across sub-populations.

The 2001 LDS showed that women know more of modern methods of contraception than of traditional methods. It also revealed that there were variations by urban/rural residence, zones, districts and education. Women in the urban areas displayed a far higher percentage of knowledge of contraceptive method than women in rural areas. Women found in the lowlands also display a higher percentage of (77.7 percent) knowledge of contraceptive methods than women found in other ecological zones. Those found in the mountains display the lowest percentage (53 percent) of knowledge of any method of contraception. Further more women found in the Maseru district seem to know most of any method of contraceptive method. But Quthing recorded the lowest percentage (48.1 percent) of knowledge of contraceptives.

5.2 Contraceptive Use Differentials

The literature notes that differentials in contraceptive use are determined by various factors such as marital status age, residence, education and employment (Bongaarts et al, 1984). This section attempts to show such differentials.

The 2001 LDS showed that modern methods of contraception were more used than traditional methods of contraception. It went on to show that currently married women use any method of contraception more than those who have never been married and those who have ever been married. In particular, those who have never been married display the lowest usage of contraceptives. It further shows that usage of modern methods of contraception in Lesotho

followed this order: injection, pill, condom, intra-uterine contraceptive device (IUCD), female sterilisation, norplant and diaphragm.

5.3 Effects of Contraceptive Use on Fertility

The index of contraception assesses the impact contraceptive use has on fertility by quantifying the difference between TMFR and TNMF. Table 5.1 displays percentages of women using contraceptives by method, the index of contraception and the contraceptive prevalence rate by background characteristics in 2002. Table 5.1 shows that usage of any modern method of contraception is by far higher than that of any traditional methods. Table 5.1 goes on to show that Lesotho has a high contraceptive use, which is indicated by a contraceptive prevalence rate of 43.9 percent and a C_c of 0.65. The C_c indicates that contraception suppressed fertility by 35 percent from attaining its maximum potential in 2002.

It is also evident from table 5.1 that fertility inhibition effect due to contraception is greater in urban areas than in rural areas. Urban areas experienced a 46 percent reduction in fertility due to contraception while rural areas experienced a 34 percent reduction. This indicated that women in urban areas use contraception more than women in rural areas, confirming hypothesis set in the literature. More over the lowlands displayed the greatest fertility suppression resulting from contraception as compared to other ecological zones. Fertility was suppressed by 44 percent as result of usage of contraceptives in this zone. The foothills and the SRV follow with a 36 percent fertility suppression due to contraception. While the mountains displayed the lowest fertility inhibition (22 percent) arising from contraception.

Table 5.1 goes on to show that the Mafeteng district experienced the greatest fertility inhibition due to contraceptive use as compared to other districts. It experienced a fertility reduction of 54 percent as a result of contraception. Leribe, Quthing and Maseru district follow with fertility inhibition of 49 percent, 40 percent and 36 percent respectively. While the Mokhotlong district experienced the least fertility inhibition as a result of contraceptive use. It displayed a 9 percent fertility reduction arising from contraceptive use. It is followed by the Thaba-Tseka, Mohale's Hoek and Butha-Buthe that experienced 14 percent, 18 percent and 23 percent fertility inhibition respectively due to use of contraceptives. Maseru district being the 'city' district was expected to experience the greatest fertility inhibition arising from contraception as well as

districts like Butha-Buthe and Mohale's Hoek because they are situated in the lowlands and thus considered more urbanised.

More over table 5.1 shows that contraceptive use varies across the four educational groups. Women with tertiary education have the highest contraceptive prevalence rate (87.5 percent) followed by those with secondary education (68.4 percent) and those with no education (43.7percent). The interesting observation here is that women with no education have a higher contraceptive prevalence rate than those with primary education. This stems from the high percentage use of traditional methods of contraception by women with no education as compared to those with primary education. However women with primary education have a higher usage of any modern contraception (30.8 percent) than women with no education (28.9 percent). As a result women with tertiary education experienced the highest fertility suppression as a result of contraception. They experienced a 70 percent reduction in fertility due to contraception. Those with secondary education follow with a 58 percent reduction in fertility due to contraception. While those with no education and those with primary education displayed the least fertility inhibition (31 percent) emanating from contraception.

Finally table 5.1 shows that, women who fall in the category of 'not employed' have the greatest percentage usage of any modern method of contraception (58.3 percent) followed by those in the 'paid employee' category with 44 percent. This is a strange behaviour because most of the literature supports the hypothesis that women in paid employment tend to use effective methods of contraception more than women who are not employed because it is believed that they are exposed to environments where small families are more appreciated than big families. This strange observation could have come up because the category of 'unemployed' comprises of those who are still in school and the retired who probably acquired usage of contraceptive in their past economic status. Therefore women in the category of 'not employed' experienced the greatest fertility reduction of 57 percent as a result of contraception. Followed by the 'paid employee' category that experienced a 43 percent fertility inhibition due to contraception. The 'unpaid worker/housewife' category had the smallest percentage of fertility inhibition (32.0 percent) emanating from usage contraception.

Table 5.1: Percentage of Married Women Using Contraceptives by Type of Method Used and Background characteristics, 2002

Category	Any modern	Any traditional	CPR	C_c
National	35.0	8.9	43.9	0.65
Residence				
Urban	49.0	2.8	51.7	0.54
Rural	33.3	9.5	42.8	0.66
Zone				
Lowlands	45.1	7.1	52.1	0.56
Foothills	36.4	6.1	42.4	0.64
Mountains	20.6	11.5	32.1	0.78
SRV	36.2	10.7	46.9	0.64
District				
Butha-Buthe	21.8	10.9	32.8	0.77
Leribe	48.8	11.0	59.6	0.51
Berea	35.6	6.1	41.7	0.66
Maseru	37.7	3.4	41.1	0.64
Mafeteng	55.1	10.2	65.3	0.46
Mohale's Hoek	18.2	1.0	19.2	0.82
Quthing	41.7	7.4	49.1	0.60
Qacha's Nek	31.8	3.5	35.3	0.69
Mokhotlong	7.8	4.9	12.6	0.91
Thaba-Tseka	17.3	0.0	17.3	0.86
Education				
None	30.8	14.7	43.7	0.69
Primary school	30.8	8.6	39.5	0.69
Secondary school	59.9	8.6	68.4	0.42
Tertiary	75	12.5	87.5	0.30
Employment Status				
Paid employee	44.0	11.3	55.2	0.57
Unpaid worker/housewife	32.0	8.4	40.4	0.68
Not employed	58.3	10.0	68.3	0.43

Source: 2002 LDSSE

CHAPTER SIX

POSTPARTUM INFECUNDABILITY, INDUCED ABORTION AND STERILITY

6.1 Effects of Postpartum Infecundability on Fertility

There are a number of exercises a woman may decide to use so that a subsequent pregnancy is delayed such as breastfeeding and sexual abstinence (Bongaarts et al, 1984). Postpartum infecundability was seen to be responsible for most of the decline in Lesotho's fertility (Mturi and Hlabana, 1999). Lesotho has been characterised by massive male labour migration to South Africa over the years (BOS, 1998). Spousal separation that emanated from this migration is believed to have provided an opportunity for prolonged breastfeeding and the constant low fertility Lesotho has been experiencing over the past years (Makatjane and Toeba, 1999). However, changes are occurring in the labour migration system in terms of frequent home visits of labour migrants within contracts, the declining number of new recruits to South Africa and those that are being retrenched from South Africa thus threatening the low fertility levels that Lesotho has been enjoying (ibid). Given this, one would assume that this would impact on the duration of breastfeeding and ultimately on duration of sexual abstinence. In this light Makatjane and Toeba (1999) suggested that male labour migration is an important factor in influencing duration of breastfeeding in Lesotho after discovering that wives of labour migrants had longer duration of breastfeeding than those of non-labour migrants irrespective of the characteristics of the women. However the overall duration of breastfeeding reported has been constant from 1977 to 1991/1992 (20 months) (Mturi and Hlabana, 1999).

Though current data on breastfeeding is unavailable it is likely that duration of breastfeeding has changed over the past decade given the advocacy dedicated to breastfeeding by health experts and various organisations, in particular the WHO. The WHO and health experts are advocating for exclusive six months breastfeeding. They believe that breast milk contains antibodies and nutrients that formula milk lacks therefore breastfeed babies are said to be healthier than those on the bottle. They go on to say that there is a bonus to breastfeeding since it creates a bond between the mother and baby, which the bottle lacks. However, this advocacy has repercussions: the proportions of women that are currently employed in the non-agricultural sector is increasing. Unfortunately this sector does not create a conducive environment for women to breastfeed exclusively for six months because women are given a

maximum maternity leave of three months and are expected to arrive and leave the work place at fixed times.

Due to unavailability of current data on breastfeeding and postpartum abstinence the information on postpartum infecundability is derived from the 1991/92 Lesotho Demographic and Health survey by assuming that the average duration of postpartum infecundability caused by breastfeeding or postpartum abstinence has been constant over the past ten years. This gives an index of postpartum infecundability of 0.65 indicating that postpartum infecundability suppresses fertility by 35 percent.

6.2 Effects of Induced Abortion

Induced abortion has long been identified as one of the main determinants of fertility regardless of its legal status (Johnston and Hill, 1996). However induced abortion need not be an encouraged method of contraception, because it is an expensive means of contraception (Wang et al, 1987). It can put pressure on the few medical personnel and resources (Foreit and Nortman, 1992). There are instances where maternal morbidity and mortality are linked to unsafe abortion and give a light on the prevalence of abortion. However, the demographic impact of abortion on fertility in Lesotho is still uncertain due to lack of data in relation to abortion. Without estimates of abortion demographers cannot accurately model fertility trends nor can they thoroughly understand the relationship between determinants of fertility and fertility levels (Johnston and Hill, 1996). Current rates of abortion do not only bear importance to demographers, they have important public health implications that are often overlooked. Health planners need information on abortion so that they can design and implement programs to reduce adverse effects of abortion.

Researchers in the past in Lesotho could not arrive at useful estimates of abortion due to lack of data. For instance Mturi and Hlabana (1999) had to assume that abortion had no effect on fertility in 1977 and they had to estimate the index of abortion indirectly for 1991/92 due to lack of data in this area. For these two periods the effect of abortion on fertility could not be clearly mapped out.

In Lesotho abortion data is mostly from hospital records and individual surveys. These two sources are liable to underestimating the prevalence of abortion given the sensitivity and the legal status of abortion in Lesotho. For instance Mturi and Hlabana (1999) indicated that the main hospital of Lesotho recorded only 255 incomplete abortions in 1994.

While, the 2002 LDSSE only recorded 11 women out of 2,651 women as having ever terminated a pregnancy. This poor reporting might be occurring because of the paucity of in-depth, qualitative and community-based researches given the sensitivity of the issue at hand (Coetaux, 1990). However, the World Health Organisation (WHO) managed to estimate that 99 recent of the 500,000 maternal deaths that occur in the world annually take place in the developing countries; of these 115,000-204,000 result from complications from abortions performed by unqualified practitioners (ibid). WHO further observed that half of the deaths from illegal abortion occur in South and Southeast Asia; and the next largest portion takes place in sub-Saharan Africa. Lesotho falls in the second portion but it is still in the dark about its individual position. This on its own calls for action because there is evidence that there is a problem but the magnitude of the problem is not known.

6.3 Effects of Sterility on Fertility

Sterility is associated with diseases in Africa especially those that are sexually transmitted like gonorrhoea (Bongaarts et al 1984). Bongaarts et al (1984) indicate that a small percentage of women are sterile at the beginning of the reproductive years though this might increase with age, it reaches 100 percent at age 50. A population is said to have a sterility problem if the proportion of ever-married women who are childless exceeds 3 percent (Bongaarts et al, 1984).

In surveys it is possible to get relatively small cases of sterile women especially in societies where women who have no children are shunned. Women who have never given birth in some societies are called barren and are given horrible names such that it becomes difficult for a woman to admit that she has never given birth. This often results in errors in data relating to women who have never given a live birth.

The incidence of permanent sterility is generally a less important determinant of fertility differentials (Jolly and Gribble, 1993). It does not vary much across sub-populations (ibid).

However it has been recognized as one of the main determinants of fertility differentials in sub-Saharan Africa (Bongaarts et al, 1984). Information on sterility is derived from the 2001 LDS data because the 2002 LDSSE did not have cases of women aged 40-49 who were sterile. However, sterility that resulted due to diseases cannot be shown because there is no data relating to it.

Table 6.1 shows percentage of women aged 40-49 who have ever been married but have never given a live birth from 1977 to 2001. This table shows that the percentage of sterile women increased from 5.2 percent in 1977 to 8.8 in 1991/92. However, percentage of sterile women decreased from 8.8 percent in 1991/92 to 3.6 in 2001, this is a 51.1 percent decrease. However, this indicates that Lesotho has been having a slight problem of sterility over the years given the percentages of sterility that are greater than 3 percent.

Table 6.1: Percentage of Women Aged 40-49 Who Have Ever Been Married but Have Never Given a Live Birth, 1977-2001

Year	Percentage
1977 LFS[1]	5.2
1991/92 LDHS[2]	8.8
2001 LDS	3.6

Source: Mturi and Hlabana (1999), and 2001 LDS data

The percentages of childless women and the corresponding indices of sterility are presented by background characteristics in table 6.2. It can be deduced from table 6.2 that Lesotho has a slight sterility problem given the percentage of sterile women nationally (3.6 percent). This generates an index of sterility that demonstrates a small effect of sterility on fertility, sterility reduced fertility by 1 percent only.

It can also be seen from table 6.2 that the percentage of urban women who are childless (6.65 percent) more than doubles that of rural women (3.1 percent). This could be an indication of confounding factors such as deliberate choice not to have children. Fertility reduction due to

[1] Lesotho Fertility Survey
[2] Lesotho Demographic and Health Survey

the effect of sterility in urban areas is 5 percent while there is no fertility inhibition due to sterility in rural areas. This is another hint to variations in urban and rural areas. The SRV recorded the greatest fertility inhibition due to sterility (7 percent) as compared to other ecological zones. It is followed by the lowlands, which displayed 1 percent fertility inhibition resulting from sterility. However the foothills and the mountains showed no suppression of fertility as a result of sterility.

It should be noted that it is difficult to explain the index of sterility in the context of the proximate determinants analysis because it suggests that low levels of primary infecundity increase fertility because low levels of sterility can yield indices of sterility that are greater than 1 (Jolly and Gribble, 1993). Therefore estimates of the index of sterility that are greater than 1 should be equated to 1. The district that experienced the greatest fertility inhibition due to sterility is Qacha's Nek with a reduction of 4 percent followed by the Mafeteng and Mohale's Hoek districts with reductions of 2 percent. While the Butha-Buthe and Thaba-Tseka districts showed no fertility inhibition due to sterility at all.

Table 6.2 further shows that the illiterate experienced a greater fertility reduction (3 percent) resulting from sterility more than the literate (1 percent). This could be indicating the complexity of incidences of sterility. In addition women with secondary and post primary training displayed the greatest fertility inhibiting effect due to sterility as compared to other women in other educational categories. Their fertility inhibition due to sterility was 10 percent. They are followed by women with no education and those with post high school education whose fertility inhibition due to sterility was 7 percent. While, those with lower primary and those with high school and post secondary training did not experience reduction in fertility due to sterility at all.

Table 6.2: Percentage of Ever-married Women Aged 40-49 Who Have Never Given a Live Birth and the Index of Sterility by Background Characteristics, 2001

Background characteristics	2001		
	No child	Cases	I_p
National	3.6	114	0.99
Residence			
Urban	6.65	27	0.95
Rural	3.1	88	1.00
Zone			
Lowlands	3.6	64	0.99
Foothills	2.5	13	1.00
Mountains	3.1	22	1.00
SRV	7.8	16	0.93
District			
Butha-Buthe	2.1	4	1.01
Leribe	3.9	20	0.99
Berea	3.5	15	0.99
Maseru	3.5	24	0.99
Mafeteng	4.1	15	0.98
Mohale's Hoek	4.2	15	0.98
Quthing	3.9	7	0.99
Qacha's Nek	5.6	8	0.96
Mokhotlong	3.4	5	0.99
Thaba-Tseka	0.9	2	1.03
Literacy			
Illiterate	4.8	14	0.97
Literate	3.5	101	0.99
Educational attainment			
None	7.6	1	0.93
Lower primary	3.7	24	0.99
Higher Primary	2.8	45	1.0
Secondary & post primary training	9.7	18	0.90
High school & post secondary training	2.4	3	1.01
Post high school	7.4	7	0.93

Source: 2001 LDS data

CHAPTER SEVEN

PROXIMATE DETERMINANTS OF FERTILITY

7.1 Impact of Proximate Determinants on Fertility

Table 7.1 presents the estimates of the indices of the five principal proximate determinants of fertility, the total fertility rates and the corresponding total fecundity rates obtained from the 1977 LFS, 1991/92 LDHS and 2002 LDSSE. The complement of each index represents the proportionate reduction in fertility attributable to each fertility determinant. The lower the index, the greater the fertility reducing impact (Bongaarts, 1978). The index C_m represents the proportion by which TFR is smaller than TMFR as a result of the marital pattern. Similarly, the index C_c gives the proportion by which TMFR is smaller than TN, depending on the extent of use and effectiveness of contraception (ibid). While the index C_i indicates how TN is smaller than TF due to the effect of lactational infecundability (ibid).

Table 7.1 shows that all the indices declined between 1977 and 1991/92 except the index of postpartum infecundability (C_i). However, the indices of non-marriage and contraception were the only indices that declined between 1991/92 and 2002, excluding the indices of abortion and postpartum infecundability. The index of sterility actually increased from 0.97 in 1977 to 1.04 in 2002. The index of sterility however is equated to one if its estimate is greater than 1.The TFR declined from 5.8 to 4.8 between 1977 and 1991/92, this is a 17 percent decline. But it fell by 6.3 percent between 1991/92 and 2002.The overall percentage change over the two decades and a half is 22.4 percent.

Table 7.1 also shows that non-marriage alone in 1977 suppressed maximum fertility by 31 percent (C_m = 0.69). In 1991/92 non-marriage suppression on maximum fertility increased to 35 percent (C_m = 0.65). Making non-marriage one of the major fertility inhibiting factors in 1991/92. In addition table 7.1 shows that, the index of marriage made a major decline of 23 percent between 1991/92-2002. This percentage change is greater than all the percentage changes made by other indices in the same period. Thus making non-marriage the greatest fertility- reducing factor in 2002. It suppressed maximum fertility further by 50 percent (C_m = 0.50) in 2002. This shows that the effect of non-marriage became stronger over the 25 years

period (1977-2002). This shows that non-marriage, late entry into marriage, divorce or widowhood are contributing substantially to the suppression of fertility.

Table 7.1 also shows that the index of contraception was 0.93 in 1977 indicating a 7 percent suppression of maximum potential fertility by family planning method, that is TFR would be slightly higher if there were no women using contraception. This confirms Bongaarts (1978) findings that countries with TFR that are greater than 5 have a C_c that ranges between 0.8 and 1.0. (Mturi and Hlabana, 1999). Then Lesotho was a classical high fertility country. With the exception of Botswana, Kenya and Zimbabwe, sub-Saharan are characterised by C_c's that are greater than 0.9 (Jolly and Gribble, 1993). Table 7.1 also shows that in 1991/92 C_c was 0.80 indicating that 20 percent reduction in maximum fertility was due to contraception. Contraception use as well seems to be improving over the years. However, this did not match the decline in observed TFR thus indicating the importance of other factors. In 2002 there was a huge improvement in the CPR it increased from 23.2 percent in 1991/92 to 43.9 percent in 2002. This 89.2 percent increase in CPR resulted in an estimate of 0.65 of the index of contraception that implies a 35 percent reduction of maximum fertility. This makes contraception the second greatest inhibitor of fertility after non-marriage in 2002. The index of contraception made the greatest improvement over the 25 years with a percentage change it increased by 30.1 percent.

Table 7.1 goes on to show that in 1977 and 1991/92 the index of postpartum infecundability accounted for 42 percent (C_i =0.58) inhibition in potential fertility. There was a 12.1 percent increase in the index of postpartum infecundability between 1977 and 1991/92 but it still remained one of the strongest inhibitor of fertility. The estimate of the index of postpartum infecundability 0.65 in 1991/92 indicates that postpartum amenorrhoea and postpartum abstinence suppressed potential maximum fertility by 0.35 percent. The actual estimate for 2002 could not be given due unavailability of data. Therefore this study assumes that C_i did not change during the period 1991/92 and 2002. However, there is no doubt that postpartum infecundability remains an important proximate determinant of fertility in Lesotho, though its effect might drop over time as the country modernises.

Due to lack of data on induced abortion it is difficult to arrive at a convincing estimate of the index of induced abortion. In order to work around this problem assumptions had to be made and with this useful estimates of the index of abortion can rarely be found. Mturi and Hlabana (1993) assumed that the index of abortion was 1 in 1977. This does not reveal anything in relation to abortion as a fertility-inhibiting factor of fertility in Lesotho especially because induced abortion is known to be increasing but there is no empirical back up. There were only 11 cases found in the 2002 LDSSE, as already mentioned this does not help much in explaining variations in fertility.

Therefore, C_a had to be estimated indirectly as Johnson and Hill (1996) recommended ($C_a=TFR/(TF*C_m*C_c*C_i*I_p)$) but this yielded a C_a that is greater than one ($C_a=1.33$). Johnson and Hill (1996) warned that there are three errors that could arise from this indirect estimation: there could be measurement errors in the indices of the fertility- reducing effects of the major determinants, the effects of omission of the other three proximate determinants not included in the model (permanent sterility, spontaneous intrauterine mortality and postpartum fecund ability), and the use of a single value of TF. The accuracy of the estimate and the size of the residual will be affected by any underestimation or overestimation of values of the variables in the model, as it usually happens in residual models. Therefore, C_a was equated to 1 in 2002. However, in 1991/92 the index of induced abortion was estimated as 0.96 after assuming that the estimated TF in 1977 also applied in 1991/92. This implied that induced abortion suppressed potential fertility by 4 percent. This insinuates that there were 0.36 abortions per woman in Lesotho in 1991/92 (Mturi and Hlabana, 1999).

In addition, the estimates given in table 7.1 imply that Lesotho does not have a sterility problem as it is believed of most sub-Saharan African countries (see Bongaarts et al, 1984). In 1977 the index of sterility was 0.97 indicating that sterility suppressed potential fertility by only three percent. This index declined to 0.91 in 1991/92 suggesting that sterility inhibition on potential fertility was 9 percent. However, the index increased to 1.04 in 2002, this is a fall of 14.3 percent. The index of sterility is difficult to interpret in the context of this framework if its greater than one hence why it is equated to 1.

Table 7.1 also shows that, the combined fertility inhibiting effect of all these indices have been increasing over these 25 years, it increased by 38.9 percent. This increase indicates a decline of about 22 percent in fertility. The combined fertility inhibiting effect of all these indices increased by 16.7 between 1977 and 1991/92, and by 26.7 between 1991/92 and 2002. In 1977 all these determinants inhibited potential fertility by 64 percent (Combined effect =0.36). The fertility-inhibiting effects of these determinants increased to 70 percent in 1991/92. A further increase of 78 percent was experienced in 2002.

Table 7.1 further shows that fertility was declining over the years though at a very slow pace. It declined from 5.8 to 4.8 between 1977 and 1991/92; this is a 17.2 percent decline. Between 1991/92 and 2002 it fell to 4.8, indicating a 6.3 percent decline. Thus indicating that fertility fell by a smaller margin between 1991/92 and 2002. It is important to note that a TFR of 4.1 in 1996 was recorded by BOS indicating an increase in fertility of 9.8 percent between 1996 and 2002.

Further more the levels of TF fall within the range 13-17 estimated by Bongaarts. The TF remained constant at 16.3 between 1977 and 1992, this indicated a birth higher than average per woman. The TF however, declined from 16.3 to 15.2 in 2002 indicating a birth lower on average per woman. Jolly and Gribble (1993) warned that these unexplained differences plus some methodological biases inherent in the proximate determinants model indicate danger in taking these estimates too literally. They further mentioned that there are a lot of factors at play that can affect the reliability of the estimates. In this case the first would be errors in the data used in this research. The second would arise due to the unsuitability of the model when dealing with women who use contraceptives to stop births and not to space births (Reinis, 1992). Reinis (1992) indicated that with non-random use of contraception, which is more likely because women tend to use contraception depending on their family building plans, the estimates produced, except for C_i are less accurate. The third factor could be the unaccountability of the incidence of abortion in the model that is assuming C_a equals to 1. The fourth could arise from the assumption made in relation to C_i, which was assumed to constant between 1991/92 and 2002. The failure to include abortion and postpartum infecundability in the model affects the assessment of the relative importance of the fertility-inhibiting variable and the estimation of TF. Therefore caution should be taken when dealing with the indices in

table 7.1. The results are useful in portraying trends in the proximate determinants of fertility and the relative contribution of various factors towards fertility change in Lesotho.

Table 7.1: Estimates of Indices of Proximate Determinants, TF and TFR, 1977-2002

Index	1977	1991/92	2002	% change between 1977 and 1991/92	% change between 1991/92 and 2002	% change between 1977 and 2002
C_m	0.69	0.65	0.50	-5.8	-23.1	-27.5
C_c	0.93	0.80	0.65	-14.0	-18.8	-30.1
C_i	0.58	0.65	0.65	12.1	0	10.8
C_a	1.00	0.96	1.00	-4.0	4.1	0
I_p	0.97	0.91	1.04	-7.2	14.3	7.2
Combined effect ($C_m* C_c* C_i* C_a* I_p$)	0.36	0.30	0.22	-16.7	-26.7	-38.9
TFR	5.8	4.8	4.5	-17.2	-6.25	-22.4
TF	16.3	16.3	15.2	0	-6.7	-6.7

Source: Mturi and Hlabana (1999), and 2002 LDSSE data

Table 7.2 shows the total fertility-inhibiting effect in births for each proximate determinant over the 25 years period. The difference between total fecundity and the estimated TFR is attributed to the result of the combined sum of the logarithm of all indices (Wang et al, 1987). The results indicate that of the 10 births inhibited in 1977 about 4 births (or 36.5 percent) were due to the effect of non-marriage, about 1 births (or 6.7 percent) were due to contraception, over 5 births (or 53.8 percent), were due to postpartum infecundability, and less than 1 births were due (or 2.9 percent) to sterility. In 1991/92, of the 11 births suppressed, non-marriage inhibited about 4 births (or 35.3 percent), about 2 births (or 18.1 percent) were due to the effect of contraception, 4 births (or 53.8 percent) were due to postpartum infecundability, about 0.4 births (or 3.4 percent) were due to induced abortion, and about 1 birth were due (or 7.8 percent) to sterility. In 2002, of the 10.6 births suppressed, non-marriage inhibited about 5 births (or 46.2 percent), about 3 births (or 28.3 percent) were suppressed by contraception, postpartum infecundability supposedly suppressed about 3 births (or 28.3 percent), no births were suppressed by induced abortion and sterility enhance fertility by about 0.3 (2.9 percent).

Non-marriage, contraception and postpartum infecundability seem to be contributing more in reducing fertility than sterility and induced abortion. Though, the percentage of births suppressed by non-marriage and contraception declined in 1991/92. Non-marriage made massive improvement in 2002. The percentage of births contraception averts have been increasing at an increasing rate over these 25 years.

Table 7.2 should be analysed with caution because TF ranges from 13 to 17. Therefore it should be used to give the general picture of the fertility inhibiting effects of proximate determinants as expressed in births.

Table 7.2: Fertility- inhibiting Effects of Proximate Determinants of Fertility (Number of children contributed towards reduction from TF to TFR), 2002

Proximate determinant	Effect presented in terms of births [b]			Percentage		
	1977	1991/92	2002	1977	1991/92	2002
Marriage patterns	3.8	4.1	4.9	36.5	35.3	46.2
Contraception	0.7	2.1	3.0	6.7	18.1	28.3
Lactation	5.6	4.1	3.0	53.8	35.3	28.3
Induced abortion	0.0	0.4	0.0	0.0	3.4	0.0
Permanent sterility	0.3	0.9	-0.3	2.9	7.8	-2.8
Total reduction	10.4	11.6	10.6	100.0	100.0	100.0

Source: 2002 LDSSE

[b]The total fertility-inhibiting effect is prorated by the logarithm of each index for the respective years, e.g., effect of marriage: TF-TRF* $logC_m/(logC_m + logC_c +logC_i + logC_a + logI_p)$

7.2 HIV/ AIDS and Proximate Determinants of Fertility

Though the focus of this study is not on HIV/AIDS and proximate determinants of fertility it is essential to acknowledge its effect on the proximate determinants of fertility especially because Lesotho is one of the countries that are most hard hit by the HIV/AIDS epidemic. The adult prevalence rate was estimated to be 23.6 percent in 1999 (CIA, 2002). HIV/AIDS has been observed to affect fertility in a lot of ways (Guy, 1999). HIV/AIDS can contribute to changes

in the proximate determinants of fertility in the following ways: First, there can be a change in attitude and behaviour in people such that they decide to refrain from premarital sex and multiple sexual partners, and postpone marriage indefinitely. Second, in contrast to most infectious diseases, which take their heaviest toll among the elderly and the very young, this virus takes its greatest toll among young adults such that many women die before completing their reproductive years (ibid). Third, contraceptive use might increase due to the recommendations put forward for the usage of the condom because of its HIV preventive qualities. Fourth, infected mothers might decide to terminate their pregnancies in order to avoid infecting their babies (ibid). All these four mentioned changes have a suppressing effect on fertility. Fifth, mothers in fear of transmitting the virus to their babies might decide not to breastfeed and take short periods of postpartum abstinence so that their partners do not engage in extramarital affairs, thus attracting early pregnancies and as a result enhance fertility (Ntozi, 2002). Lastly, women infected by HIV might have lower fertility because of secondary sterility and fetal loss brought by the disease and its associated infections (Theunissen, 2002). The last two factors increase fertility levels.

It can be speculated that HIV/AIDS will reduce Lesotho's fertility given the death toll it has on the reproductive population, the increase in contraceptive use as well as the possibility that people will change their social behaviour and attitude to avoid HIV/AIDS. In other words, fertility suppressing factors will offset fertility-enhancing factors thus reducing fertility in the long run. However, to draw robust conclusions it is necessary to investigate further the impact of HIV/AIDS on fertility in Lesotho.

CHAPTER EIGHT

SUMMARY, CONCLUSION AND RECOMMENDATIONS

8.1 Summary and Conclusion

This section is going to give a summary of the findings of the study as well as a conclusion pertaining to these findings. The study reveals a moderate decline in fertility between 1977 and 2002. Fertility declined from 5.8 children per woman in 1977 to 4.5 children per woman in 2002. This is a 22.4 percent decline in fertility over a period of 25 years. This fall in fertility between 1977 and 2002 is attributable to a rise in contraceptive prevalence and an increase in non-marriage. However, this decline is slow as compared to the rapid decline observed in the neighbouring countries such as South Africa, Botswana and Zimbabwe. Despite this Lesotho remains one of the countries with low fertility levels in sub-Saharan Africa.

A review of marriage patterns showed that there is a noticeable increase in the proportion never married. The singulate mean at marriage is increasing slowly but steadily; it increased from 25 years in 1976 to 28 years in 2001 among males and 20 years to 24 years among females. In addition the study revealed that the index of marriage underwent changes over the 25 years period. This index declined by 27.5 percent between 1977 and 2002, suppressing 4.9 births. Thus making marriage patterns the most important proximate determinant of fertility in Lesotho. Its effect was greatest in the urban area, lowlands, Berea and Mafeteng districts, and women with secondary education and above, and those not employed. The observation made in relation to residence and education was expected but the one related to employment is way off expectation this could be that the category not employed comprised of student, who are liable to get married at a later age. This confirms the hypothesis that urban and educated women delay their marriages more than rural and uneducated women, thus lowering their fertility. Furthermore, those women who are unpaid family workers recorded a lower fertility inhibition due to non-marriage as compared to those who are in wage employment.

The study went on to reveal that there has been a steady and dramatic increase in contraceptive use between 1977 and 2002; it increased by 30.1 percent. Thus making contraception the second greatest inhibitor of fertility after non-marriage. The index of contraception made the greatest improvement over the 25 years with a percentage decline of 30.1 percent. However this increase in contraception was not matched by a similar fertility decline, fertility declined by 22.4 percent only. Usage of contraception methods as well does not match knowledge of contraception methods. However, these increases in contraceptive use show that there is a deliberate attempt to limit fertility in Lesotho. Fertility inhibition due to contraception was more pronounced in urban areas, the lowlands, the Mafeteng district, women with tertiary education and those not employed. The observation regarding contraception use and education agrees with the pattern in the literature. On the contrary, those women who were not employed recorded lower inhibition of fertility due to contraception than those who were in wage employment and this phenomenon could be caused by the fact that the unemployed comprises of student and those who have just complete some certificate and are job seeking or may be there is a methodology bias. This is not in line with what was observed in the literature. Usage of traditional methods has been observed to be concentrated in the rural areas, mountains, Leribe district, those with no education and those in wage employment. It is evident that educational factors coupled with adequate contraceptive delivery system can contribute to a dramatic increase in contraceptive use.

Furthermore the study showed that currently married women use any method of contraception more than those who have never been married and those who have ever been married. Those who have never been married display the lowest usage of contraceptives. It further reveals that usage of modern methods of contraception generally followed this order: injection, pill, condom, IUCD, female sterilisation, norplant and diaphragm. Women in the never married category use the condom more than other methods. But the usage of condoms is worrisomely low given the fact that it the only effective method of contraception that can protect people against sexually transmitted infections and HIV/AIDS. Contraceptive use seems to be concentrated in women aged 25 to 44 though the peak of usage is reached at age group 25-29. However condom use is greatest in age groups below 20. In the case of traditional methods of contraception usage increases with age and it is highest in those aged 40 and above.

In addition the study shows that in 1977 and 1991/92 the index of postpartum infecundability had the highest fertility-reducing effect of all indices in Lesotho. Though there was a 12.1 percent increase in the index in 1991/92, postpartum infecundability remained one of the strongest inhibitors of fertility. In 1991/92 postpartum amenorrhoea and postpartum abstinence suppressed potential maximum fertility by 35 percent. Unfortunately, the actual estimate for 2002 could not be given due to unavailability of data; the figure used in the analysis is a hypothetical figure. However, prolonged breastfeeding has been one of the determinants that Lesotho enjoyed a constant fertility through without substantial contraceptive use (Makatjane and Toeba, 1999). But, the decrease in the proportion of Basotho men employed in the South African mining industry coupled with the constant visits male labour migrants presently make home, threaten the role breastfeeding plays in reducing Lesotho's fertility (ibid). Modernisation as well might play a part in reducing duration of breastfeeding as is evident that the effect of breastfeeding on reducing fertility is declining over the years.

It could be made out from the study that abortion is highly restricted throughout sub Saharan Africa. Only a few counties permit abortion for reasons other than those directly threatening a women's life (Coetaux, 1990). Because of its illegality and sensitivity its data collection is very difficult if not impossible. Due to the uncertainty of the information on induced abortion it is difficult to estimate useful rates of abortion. However it is evident from hospital records that induced abortion is on the increase (Mturi and Hlabana, 1999).

It was also observed that the incidence of sterility is generally a less important determinant of fertility differentials in Lesotho. It has been seen to have minimal variation across sub-populations. However it has been recognized as one of the main determinants of fertility differentials in sub-Saharan Africa (Bongaarts et al, 1984). Lesotho does not been have a sterility problem as observed in some African countries. The fertility inhibition due to sterility is most evident in urban areas than rural areas. This could be an indication of confounding factors such as deliberate choice not to have children. Thus agreeing with the hypothesis that sterility is more pronounced in urban areas than in rural areas.

This shows that the proximate determinants of fertility in Lesotho follow this order of fertility inhibition: marriage patterns, contraception, postpartum infecundability, induced abortion and sterility. However, it is evident from the study that a further fertility decline in Lesotho will be a result of an increase in contraceptive use and non-marriage.

8.2 Recommendations

To assist in attaining a further fertility decline in Lesotho the government should encourage contraceptive use and late age at marriage by 1) showing a strong commitment both politically and financially, to limiting population growth through family planning 2) expand women's educational and economic opportunities.

In addition, further research should be carried out in order to understand why fertility decline in Lesotho does not match the dramatic improvements in age at first marriage and contraceptive use. Further studies should be done to understand why the percentage using contraceptives remains small although the percentage that know of the methods is increasing. Moreover, to enhance explanation of variations in fertility in Lesotho research relating to induced abortion, breastfeeding and postpartum abstinence should be carried out. The controversial stance of abortion in Lesotho makes qualitative research the best way to collect data relating to it.

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