# DETERMINANTS OF FERTILITY IN ZIMBABWE: AN ASSESSMENT OF THE PERIOD 1999 - 2005

**BY**

**LOVEJOY S. GAMBA**

**R0019397**

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**CENTRE FOR POPULATION STUDIES**
**FACULTY OF SOCIAL STUDIES**
**UNIVERSITY OF ZIMBABWE**
**HARARE**

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# LIST OF ACRONYMS

| | |
|---|---|
| **AAPCPD** | All Africa Parliamentary Conference on Population and Development |
| **ASFR** | Age Specific Fertility Rate |
| **BF** | Breastfeeding Duration |
| **$C_a$** | Index of Abortion |
| **$C_c$** | Index of Contraception |
| **$C_i$** | Index of Postpartum Infecundability |
| **Cm** | Index of Marriage |
| **CPR** | Contraceptive Prevalence Rate |
| **CSO** | Central Statistical Office |
| **DHS** | Demographic and Health Survey |
| **EA** | Enumeration Area |
| **EPI** | Expanded Programme for Immunisation |
| **ESAP** | Economic Structural Adjustment Programme |
| **FG** | Focus Group |
| **FPA** | Family Planning Association |
| **FGD** | Focus Group Discussion |
| **GPS** | Global Position System |
| **ICDHS** | Inter-Censal Demographic Health Survey |
| **IEC** | Information, Education and Communication |
| **IMR** | Infant Mortality Rate |
| **LAM** | Lactational Amenorrhoea Method |
| **LSCFA** | Large Scale Commercial Farming Areas |
| **PMTCT** | Prevention From Mother To Child Transmission |
| **PPS** | Probability Proportional to Size |
| **PPTCT** | Prevention from Parent to Child Transmission |
| **RLF** | Replacement Level Fertility |
| **SSCFA** | Small Scale Farming Areas |
| **TF** | Total Fecundity |
| **TFR** | Total Fertility Rate |
| **TM** | Marital Fertility Rate |
| **TN** | Natural Fertility Rate |
| **ZDHS** | Zimbabwe Demographic and Health Survey |
| **ZMSO2** | Zimbabwe Master Sample 2002 |
| **ZNFPC** | Zimbabwe National Family Planning Council |
| **ZPG** | Zero Population Growth |
| **ZRHS** | Zimbabwe Reproductive Health Survey |

# DEFINITION OF TERMS

**Fertility** is a measure of child bearing and is based on the number of live births, that is, a measure of reproductive performance of women.

**Natural fertility** is the maximum level of reproduction that exists in the absence of deliberate birth control (Henry, 1961). According to Easterlin (1975) natural fertility refers to the number of births a couple would have if they took no action aimed at limiting fertility behaviour. The aforementioned definitions will be used in this research.

**Controlled fertility** is fertility which involves a deliberate use of birth control measures.

**Infertility** is defined classically as the inability to conceive after one (1) year of unprotected intercourse. This definition is based on the cumulative probability of pregnancy.

**Sterility is** the inability to give live birth.

**Fecundity is** a woman's physical capacity to conceive and bear children, given that a woman is having sexual intercourse. For most women, at least fecundity tends to increase from menarche (usually teens), peaks in the 20s, and then declines to menopause (Henry, 1961).

**Age Specific Fertility Rate (ASFR)** is the average number of live births in the last twelve (12) months per women in the five (5) year age groups in the reproductive range, 15 – 49 years. It is obtained by dividing the number of births to women in a particular age group by the total number of women in the same age group. It provides the pattern of fertility for the women in their childbearing ages. ASFRs are difficult to comprehend as they have to be presented in a set of seven, that is, for each age group, from 15 – 19 to 45 – 49 years.

**Total Fertility Rate (TFR)** is the average number of children a woman would have by the end of her reproductive years if she had children according to a set of age specific fertility rates pertaining to a particular period. The rate is totally free of age and sex biases and therefore of great use in comparative analysis. It is a "synthetic" cohort approach. The limitation comes in that it assumes that women of different age groups undergo similar fertility experiences throughout their reproductive periods.

**More developed regions** comprise all regions in Europe plus Northern America, Australia/New Zealand and Japan.

**Less developed regions** comprise all regions of Africa, Asia (excluding Japan), Latin America and the Caribbean plus Melanesia, Micronesia and Polynesia.

**Least developed countries** is the group of least developed countries, as defined by the United Nations General Assembly in its resolutions (59/209, 59/210 and 60/33) in 2007, comprises 49 countries, of which 33 are in Africa, 10 in Asia, 1 in Latin America and the Caribbean, and 5 in Oceania. The group includes 49 countries - Afghanistan, Angola, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Central African Republic, Chad, Comoros, Democratic Republic of the Congo, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Haiti, Kiribati, Lao People's Democratic Republic, Lesotho, Liberia, Madagascar, Malawi, Maldives, Mali, Mauritania, Mozambique, Myanmar, Nepal, Niger, Rwanda, Samoa, São Tomé and Príncipe, Senegal, Sierra Leone, Solomon Islands, Somalia, Sudan, Timor-Leste, Togo, Tuvalu, Uganda, United Republic of Tanzania, Vanuatu, Yemen and Zambia. These countries are also included in the less developed regions.

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# CHAPTER 1

# INTRODUCTION

## 1.1. Introduction

Zimbabwe's Total Fertility Rate (TFR) of 5.5 in 1988 (Central Statistical Office, 1988) has declined to a current level of 3.3 (Central Statistical Office, 2008). The decline has taken place in both less and more developed regions of the country and socio-economic groups, and has occurred with a rapidity many did not anticipate. The explanations so far advanced for this phenomenon are neither clear nor conclusive. Among the salient unaccounted for features of the fertility decline are the marked regional differentials and the large declines in some regions with low contraceptive use. Previous studies were limited to the use of data collected, and did not seek for clues which might explain the regional fertility levels, trends and patterns.

Estimating fertility levels for the period before 1960 in Sub-Saharan Africa has proved difficult since demographic data for that period are lacking. Even in countries where censuses were undertaken, the data are unreliable and of limited content as the motives for their collection were far removed from demographic analysis. However, with the conduct of more censuses and surveys, and advances in methods of demographic estimation, a reasonable picture of fertility trends subsequent to 1960 can be constructed. In 2005, according to the UN World Population Prospects (2008 Revision), the World TFR was 2.7. In the same year, TFR for Asia and Latin America and the Caribbean was both at 2.5, 1.5 for Europe, 4.9 for Africa, 5.5 for Sub-Saharan Africa and 3.6 for Zimbabwe (UN World Population Prospects – 2008 Revision).

Little fertility change occurred in the period before 1980 in Africa. United Nations World Population Prospects (2008 Revision)estimates suggest that the total fertility rate in Africa declined by only 1 percent between 1970 - 75 and 1975 - 80, and by about 2 percent between 1965 - 70 and 1970 - 75. These changes are insignificant and could be attributable to errors in these estimates.

However, significant changes have been recorded in some African countries in the period 1985 - 90, with Algeria recording a decline from 6.5 (1980 – 85) to 5.3 (1985 – 90), Libya from 7.2 (1980 – 85) to 5.7 (1985 – 90) and South Africa from 4.6 (1980 – 85) to 3.9 (1985 – 90). (UN World Population Prospects - 2008 Revision)

From a theoretical perspective, reproduction among human populations is usually at a level below their fecundity or biological capacity. The actual reproductive performance is influenced by social, economic, cultural, political, and environmental factors. The effect of these factors on fertility varies within, and between populations and is assumed to be mediated by factors which have a direct impact on fertility. This study focuses on the role of the direct determinants of fertility in explaining fertility levels, patterns, and trends in Zimbabwe. Bongaarts (1978, 1982) proximate determinants model is used in this study to guide the analysis.

## 1.2. Background to the Study

Studies which have examined fertility decline in Zimbabwe have come up with contradictory conclusions. For example, Thomas and Muvandi (1994a, 1994b) suggest that data from the 1984 Zimbabwe Reproductive and Health Survey (ZRHS) and the 1988 ZDHS are not comparable since the two surveys employed different sample designs. In the 1988 ZDHS, more educated women were interviewed than in the earlier survey. Thus, the differences in the educational characteristics of the samples could have exaggerated the extent of fertility decline. This view has been contested by Blanc and Rutstein (1994), who point out that the difference in educational levels between the two surveys is not statistically significant, which is an accurate assessment of sample designs for the two surveys. However, another study of the 1988 data (Udjo, 1996) has concluded that fertility decline has been modest in Zimbabwe.

In the early 2000, it was unclear whether fertility was declining in Zimbabwe or not. Most of the articles which were produced relied on one data set. In particular, most of the studies which have attempted to document fertility change in Zimbabwe are based on the 1988 ZDHS (van de Walle and Foster, 1990; Mhloyi, 1991; Freedman and Blanc, 1992; Foote et al., 1993; Blanc and Rutstein, 1994; Muhwava and Muvandi, 1994; Thomas and Muvandi, 1994). While the first report of the 2005 ZDHS supports the view that fertility has been declining in Zimbabwe, more detailed analysis for all the data available is needed to ascertain the magnitude of the decline.

The initiation of fertility transition in Zimbabwe, and other Sub-Saharan African countries, for example Kenya and Botswana, has raised the question of what factors have contributed to fertility decline in these countries. Caldwell et al. (1992) note that these three countries share three common characteristics: infant mortality levels are below 80 per thousand live births, literacy levels of above 70%, especially among girls, with almost all girls of primary school age attending school and 20 - 40 percent of girls are in secondary school; and above 80% of knowledge of contraceptive methods. These factors play an important role in affecting motivation to restrict family sizes to these and other countries.

In this study, an attempt is made to give an accurate assessment of the trends and levels in the proximate determinants of fertility and explain these trends and levels over the period 1999 - 2005. The research uses the 1999 and 2005 ZDHS data to build a picture of the fertility levels and trends and try to account for the fertility changes.

## 1.3. Study Objectives

The broad objective of the study was to find out the factors influencing fertility change in Zimbabwe. Specifically, the objectives of the study are to:

1. Establish the levels and trends of fertility over the period 1999 – 2005 in Zimbabwe;
2. Identify the major proximate variables explaining fertility decline over the period 1999 – 2005;
3. Investigate the role of the selected socio-economic variables in influencing proximate variables over the period 1999 – 2005; and
4. Recommend possible policy interventions for fertility regulation in Zimbabwe.

## 1.4. Statement of the Problem

Fertility in Zimbabwe, like the rest of Africa, remained high with TFRs of above 7 until the 1980s. However, a number of recent studies have shown that fertility has been on the decline since the early 80's in Zimbabwe (van de Walle and Foster 1990; Mhloyi 1991; Freedman and Blanc 1992; Foote et. al. 1993). The initiation of fertility transition in Zimbabwe and other Sub-Saharan African countries has raised the question of the factors that have contributed to fertility decline in these countries.

Total Fertility Rate for Zimbabwe was 6.5 in 1984, 5.5 in 1988, 4.4 in 1994, 4 in 1999, 3.8 in 2005 and 3.3 in 2008 (CSO, 1984; CSO, 1988; CSO, 1994; CSO, 2005 and CSO, 2008, respectively). This clearly indicates that fertility decline is already underway. The design and implementation of policies to enhance the transition would benefit from a detailed study of the socio-economic, cultural, biological and environmental factors determining fertility change. This study assesses the main avenues (proximate factors) through which the socio-economic and cultural (background factors) variables have impacted on fertility.

Most of the evidence of a fertility decline in Zimbabwe is based on the 1999 ZDHS as no further detailed analysis of the 2005 ZDHS has been published to date. Uncertainties remain as to the extent to which the changing fertility pattern and levels in Zimbabwe reflect changes in the proximate determinants. This study seeks to answer the question on the contribution of marriage patterns, use of contraception and postpartum infecundability to the declining levels of fertility in Zimbabwe.

## 1.5. Justification of the Research

Hundreds of researchers have studied the fertility transition in different parts of the world, and a strong theoretical base has long been established for this demographic phenomenon. In Zimbabwe, several studies about fertility have been carried out, and among these studies are Mbizvo and Adamchak (1991), Guilkey and Cochrane (1992, 1997), Mhloyi (1992, 1994, 1998), Macro International (1994), Thomas and Maluccio (1995) and Gregson et al. (1997).

Virtually all studies on fertility in Zimbabwe confirmed that Zimbabwe is among the leading countries in sub-Saharan Africa on their way through the fertility transition. The country has experienced socio-economic and cultural transformation leading to a decline in fertility. These include improvements in education, increased urbanisation, improvement in health delivery system, a shift in policies and legislation and; a general improvement in the status of women. However, the country faced economic meltdown during the period 1997 to 2008. Negative growth rates resultant of hyperinflation; shortage of foreign currency, low investor confidence and successive droughts negatively affected the standard of life of the women and children in Zimbabwe (UNFPA, 2010).The combination of these background factors led to a particular sequence of proximate factors which have affected the fertility levels of the country.

Against this backdrop, the questions arising are: What are the actual levels, trends and differentials of fertility in Zimbabwe? What are the major driving forces to fertility decline in Zimbabwe? How have socio-economic changes and development in the country impacted on fertility? Answers to these questions should provide a greater and better insight into associated social, cultural, economic and other factors that influence fertility dynamics in Zimbabwe; hence the need to study the contribution of each of these factors to fertility decline.

## 1.6. Research Methodology

Secondary data from 1999 and 2005 ZDHSs are used to analyse the important determinants explaining fertility change between 1999 and 2005 in Zimbabwe. Qualitative data from Focus Group Discussions (FGDs) conducted in Manicaland Province, Nyanga District, Nyanga Township; a semi-urban town, are used to compliment the quantitative secondary data. The theoretical and analytical frameworks are borrowed from Bongaarts Model (1978, 1982). The Analytical framework examines the change in the Marriage index ($C_m$), the Contraception index ($C_c$), Postpartum infecundability index ($C_i$).

## 1.7. Organisation of the Study

The study is organised into five chapters:

- Chapter one is an introduction to the study;
- Chapter two unveils and synthesises literature written pertaining to fertility trends and levels globally, regionally and in Zimbabwe;
- Chapter three focuses on the methodology of the study;
- Chapter four presents the study findings; and
- Chapter five wraps up the study by summarising and discussing the results of the study as well as suggesting recommendations to regulation of future fertility.

## 1.8. Conclusion

The study explores the underlying factors to fertility decline, using data from 1999 and 2005 ZDHSs. Bongaarts' model for proximate determinant framework which views marriage, contraception and postpartum infecundability as determinants of fertility is used for the analysis.

# CHAPTER 2

# LITERATURE REVIEW

## 2.1. Introduction

The objective of this chapter is to synthesise and summarise existing knowledge on levels and trends of fertility in Zimbabwe. The chapter also reviews evidence from studies conducted in different regions; developed and developing countries, in relation to the proximate determinants. Finally, the chapter considers the impact of the HIV and AIDS epidemic on fertility, a new important variable in fertility especially in Africa.

## 2.2. Background

The world has been frantically making efforts to address the rapid rise in population growth. The First World Population Conference organised by the United Nations was held in Rome in 1954 to exchange scientific information on population variables, their determinants and their consequences. This eminently academic conference resolved basically to generate fuller information on the demographic situation of the developing countries and to promote the creation of regional training centres which would help to address population issues and to prepare specialists in demographic analysis (UN, ECLAC 2000).

The Second World Population Conference was organised in 1965 by the International Union for the Scientific Study of Population (IUSSP) and the United Nations; most of the participants were experts in the field of demography. The focus at this international meeting was on the analysis of fertility as part of a policy for development planning (UN, ECLAC 2000). This Conference was held at a time when expert studies on the population aspects of development coincided with the start-up of population programmes subsidised by the United States Agency for International Development (USAID)(UN, ECLAC 2000).

The Third World Population Conference was organised by the United Nations and was held in Bucharest, Romania, in August 1974(UN, ECLAC 2000). This conference, the first of an inter-governmental nature, focused on the relationship between population issues and development. The outcome of the conference; the World Population Plan of Action, states,

among other principles, that the essential aim is the social, economic and cultural development of countries; that population variables and development are inter-dependent and that population policies and objectives are an integral part of socio-economic development policies (UN, ECLAC 2000). Emphasis in the aforementioned conferences was on fertility reduction in order to foster development (UN, ECLAC 2000).

The Fourth International Conference on Population, held in Mexico City in August 1984, reviewed and endorsed most aspects of the agreements of the 1974 Bucharest Conference and expanded the World Population Plan of Action in order to incorporate the results of latest research and data provided by governments (UN, ECLAC 2000). The human rights of individuals and families, conditions of health and well-being, employment and education were some of the issues highlighted in the Declaration signed at the conference. Other significant issues were the intensification of international cooperation and the pursuit of greater efficiency in adopting policy decisions relating to population (UN, ECLAC 2000).

The Fifth International Conference on Population and Development was held in Egypt, Cairo, in September 1994 under the auspices of the United Nations (UN, ECLAC 2000). A new Programme of Action was adopted as a guide for national and international action in the area of population and development for the next 20 years. This new Programme of Action places emphasis on the indissoluble relationship between population, and development and; focuses on meeting the needs of individuals within the framework of universally recognised human rights standards, instead of merely meeting demographic goals (UN, ECLAC 2000). The adoption of this programme marks a new phase of commitment and determination to effectively integrate population issues into socio-economic development proposals and to achieve a better quality of life for all individuals, including those of future generations (UN, ECLAC 2000).

The special session of the United Nations' 21st General Assembly, held in New York, in June 1999 was convened five years after the International Conference on Population and Development (ICPD) (Cairo, Egypt, 1994) to review and appraise the implementation of the Programme of Action adopted at the 1994 Conference (UNFPA, 2000).The programme of action and benchmarks added at the ICPD+5 review went on to inform the eight Millennium Development Goals (MDGs). It is against this background that fertility has been viewed as critical component in socio-economic development of any country (UNFPA, 2000).

## 2.3. Fertility Levels and Trends

The world TFR has been generally on the decline. TFR declined from 4.9 in 1965 to 2.7 in 2005 (UN World Population Prospects, 2008 Revision). Fertility has also declined in other regions, for example, in Asia from 5.6 in 1965 to 2.5 in 2005; in Europe, from 2.6 in 1965 to 1.4 in 2005; in Latin America, from 6 in 1965 to 2.5 in 2005 (UN World Population Prospects, 2008 Revision). The level of fertility in sub-Saharan Africa, as measured by the total fertility rate, was approximately 5.4 births per woman in 2005; a decline from 6.8 in 1965 (UN World Population Prospects, 2008 Revision). This figure masks considerable variation between regions and between individual countries. The lowest recorded TFR in the world history is for Xiangyang District of Jiamusi city (Heilongjiang, China), which registered a record of 0.41. Outside China, the lowest TFR ever recorded was 0.80 for Eastern Germany in 1994 (Office of Graduate Studies of Texas, 2005). Table 2.1 shows the fertility trends for the world regions from 1950 to 2005.

**Table 2.1: Regional TFR Trends**

| Year | World | Major Regions | | | Geographical Regions | | |
|---|---|---|---|---|---|---|---|
| | | Developed | Less Developed | Least Developed | Africa | Asia | Latin America & Caribbean |
| **1950-1955** | 4.99 | 2.95 | 6.16 | 6.54 | 6.58 | 5.91 | 5.89 |
| **1955-1960** | 4.92 | 2.96 | 5.99 | 6.54 | 6.68 | 5.63 | 5.94 |
| **1960-1965** | 4.95 | 2.84 | 6.01 | 6.59 | 6.78 | 5.62 | 5.97 |
| **1965-1970** | 4.91 | 2.52 | 6.01 | 6.67 | 6.75 | 5.69 | 5.55 |
| **1970-1975** | 4.48 | 2.30 | 5.43 | 6.71 | 6.60 | 5.09 | 5.03 |
| **1975-1980** | 3.92 | 2.08 | 4.65 | 6.60 | 6.52 | 4.22 | 4.49 |
| **1980-1985** | 3.58 | 2.01 | 4.15 | 6.50 | 6.37 | 3.70 | 3.86 |
| **1985-1990** | 3.34 | 1.98 | 3.79 | 6.30 | 5.97 | 3.39 | 3.35 |
| **1990-1995** | 2.93 | 1.85 | 3.27 | 5.37 | 5.47 | 2.85 | 2.97 |
| **1995-2000** | 2.71 | 1.66 | 3.00 | 5.05 | 5.06 | 2.60 | 2.70 |
| **2000-2005** | 2.67 | 1.58 | 2.89 | 4.78 | 4.91 | 2.50 | 2.50 |

*Source: United Nations World Population Prospects, 2008 Revision*

Nations in the regions of Europe and North America, and in most of the industrialised world, have TFR below 2.1 (actually, considerably below that for most of these countries) (UN World Population Prospects, 2008 Revision).Because these rates are at (or below) Replacement Level Fertility (RLF), populations in these nations have either stopped growing (in the case of many of the European nations) or will soon; after passing through the lag introduced by their age structures (Lutz 2003, Science). By 2001, 65 countries and territories had TFR's that were less than RLF, including 40 of the 42 countries and territories in Europe. As of the year 2006, approximately 40 percent of the world's population lives in nations where TFR is less than RLF. In fact, over 20 countries (in 2001) had TFR's that were lower than 1.5 (Science, 2006).

In 2005, the United States of America (USA) had the highest TFR in the developed world; 2.1 births per woman, compared to an average of 1.7 births per woman across all developed nations (that average includes the USA, which probably raises it) (The World Factbook, 2006). There are several factors at play here, one of which involves the fact that patterns of TFR differ with ethnicity and race. Foreign-born women tend to have higher TFR's than do USA born women (foreign-born Hispanic women (2.1) compared with US born Hispanic women (1.2)), and the largest USA minority groups also tend to have higher fertility than the majority white non-Hispanic group (National Health Statistics Report, 2006). This can be seen in the fact that, in 2001, racial and ethnic minorities in the USA contributed 42 percent of all births, but only 31 percent of the population (Population Reference Bureau, 2002). This is partly because a larger proportion of minority women are in their child bearing years, and partly because they tend to have higher fertility rates, on average, than do white non-Hispanic women in the USA. For example, in 2005, TFR's by ethnicity in the USA (Time Magazine, 2006) were as follows:

- Non-Hispanic white - 1.85
- Asian American - 1.9
- Black - 2.02
- American Indian - 1.73
- Hispanic - 2.82

It is important to note, however, that the TFR for white, non-Hispanic women in the USA is high (1.85) in itself compared to TFRs for other developed nations. Further, it has increased slightly in recent years; it was 1.8 children per woman for most of the 1990's, and had increased to 1.9 in 2000, and 1.85 in 2006 (Population Reference Bureau, 2005).

Thus, there is higher fertility in the USA, in part, because the population is diverse racially and ethnically, but for some other reasons too. These include the fact that women in the USA tend to have children in their younger ages than is the case of most developed countries, and that there are higher rates of unplanned pregnancies than in other developed countries (Population Reference Bureau, 2005).

The average total fertility rate in Europe has been estimated to be 1.4 children per woman in a 2008 (UN World Population Prospects, 2008 Revision). According to the systematic review of European fertility rates, the rates do not seem to be decreasing significantly by availability of contraception. The review pointed out significant factors for low fertility rates to include instability of modern partnerships, and value changes. It also stated that government support of Assisted Reproductive Technology (ART) is beneficial to families, but its effect on total fertility rate is extremely small, and government policies that transfer cash to families for pregnancy and child support also only have small effects on total fertility rate (Population Reference Bureau, 2005).

The primary force driving these low fertility rates seems to be economic; economic systems often provide more "rewards" for women not having children than the reverse(Muir, 2011). Shrinking populations, and large numbers of old people relative to fewer young persons, are of increasing concern to the governments of many of these nations, including the Zero Population Growth (ZPG) nations of the world (Muir, 2011). Who will comprise the work force? Who will take care of the elderly? A declining population rapidly acquires an age structure that establishes momentum for further population decline, which would (obviously) become unsustainable if it continued; and the longer it continues, the harder it is to reverse it (Muir, 2011).

Developed countries usually have much lower fertility rates due to greater wealth, education, and urbanisation (Muir, 2011). Mortality rates are low, birth control is understood and easily accessible, and costs of maintaining children are often deemed very high because of education, clothing, feeding, and social amenities. With wealth, contraception becomes affordable. However, in countries like Iran, where contraception was made artificially affordable before the economy accelerated, fertility also rapidly declined (Muir, 2011). Further, longer periods of time spent getting higher education often mean women have children later in life. The result is the demographic-economic paradox.

Female labour participation rate also has substantial impact on fertility. However, this effect is neutralised among liberalist countries (Muir, 2011).

In developing countries, families desire more children for their labour to agricultural production, and as caregivers and security for parents in old age (Muir, 2011). Fertility rates are also high due to the lack of access to contraceptives; though knowledge of contraception is very high; generally levels of female education and rates of female employment in industry are lower (Muir, 2011).

Some developing nations have TFRs that have dropped rapidly in the last two to three decades. TFRs in these nations are not necessarily all down to RLF yet, but have been decreasing rapidly. Examples of rapid decreases are Singapore and Taiwan. These nations experienced over 70 percent decreases in TFRs between 1960 and 1987; from mid 6's to upper 1's (By 2009, to lower 1's in many cases) (UN World Population Prospects, 2008 Revision). Decreases were mainly due to very aggressive governmentally-supported family planning programs. Programs were so successful that in 1994, Singapore launched a program encouraging couples to have at least two children. A concern, apparently, was that there would be too few young people to support a bulge in the older, post-retirement age classes.

Mexico and Indonesia have also had very aggressive and successful programs in family planning, as have some nations in Africa. Notable are programs in some sub-Saharan nations, whose governments have traditionally been very pro-natalist (encouraging of high birth rates). For example, in Kenya, TFR decreased by 20 percent in 12 years (from 7.9 to 6.3 children per woman; now in 2009, it is down to 4.9 children per woman) (World Population Factsheet, 2009). Marked decreases have also taken place in Botswana (from 6.7 in 1970 to 3.2 in 2005) and Zimbabwe (from 7.4 in 1970 to 3.6 in 2005) (United Nations World Population Prospects, 2008 Revision). It is important to realise that, while these TFR's still sound very high, they are decreasing, which is crucial if stabilisation is to be achieved. By convention, among demographers, any change in TFR greater than 10 percent is considered to be the onset of an "irreversible" transition.

Programs in nations with declining TFR have included not only access to contraception, but also education on the connection between large numbers of children and lack of resources. While it may seem odd at first, soap operas have been very successful in spreading messages about contraception, and the connection between continued (and worsening) low

resource availability, and having large numbers of children. Such programs reach huge numbers of people. (According to the UN (2009), there is approximately one TV per 12 people world-wide). These soap operas portray people having all kinds of difficulties as a result of having too many children. Many of the "soaps" are government sponsored, but some are private. Soap operas with family planning themes have been run in nations as diverse as Mexico, Turkey, Brazil, Kenya, Zimbabwe and Nigeria (UN, 2009). In Nigeria, the government-run network sponsored such a "soap", and visits to family planning clinics increased by 47 percent during the 2 years that it aired. Two thirds of visitors to the clinics reported that the TV show gave them the idea (Science, 2008).

Thailand provides an example of the apparent connection between educational levels, particularly of women, and fertility rates. Over the last 30 years or so, female literacy increased to 90 percent, and nearly half of the work force in 2009 is now female. While TFR for Thailand in the 1960's was 6, it declined to 1.8, or lower than replacement level in 2008 (World Population Prospects, 2008 Revision).

Iran provides another recent example of dramatic decreases in TFR. In 1989, TFR in Iran was 5.2, while in 2009, it is down to 2.0 (World Population Factsheet, 2009). The Iranian government has been aggressive in advocating that women have no more than three children. This has been pushed, in part, through a system of disincentives for having more than three children, including the termination of family allowances, health benefits, and maternity leave.

India reached 1 billion people in the year 2000 (United Nations, 2002). The Indian government in 2008 started offering incentives for women to stop childbearing at two children, and to delay marriage (and hence delay childbearing) (Muir, 2011). The goal (as of 2001) was achievement of population stabilisation by 2045. The Indian government was strongly criticised for earlier family planning programmes, which were strongly coercive, and hence planned a different strategy (Muir, 2011). It intends to emphasise "promotional and motivational measures" such as improved access to reproductive and child health care services, and supplies, keeping girls in school for longer, increasing the legal marriage age, improving childhood vaccination percentages to help decrease child mortality, and changing the method by which seats are allocated to parliament, so that a region does not lose seats if its population stabilises while others increase (Muir, 2011).

China is particularly interesting in terms of changes in fertility rates. The interest arises in part because she is so huge that changes in her population trends make a huge difference globally. In addition, TFR patterns have been of interest because the changes have been dramatic; TFR dropped from 5.5 in 1960 to 1.6 in 2007 (a 71 percent drop) (World Population Prospects, 2008 Revision).

By the early 1970's, the government of China realised that they had population problems, and they began to urge couples to limit themselves to two children. They used the motto: "**later, longer, fewer**". In 1979, the Chinese government launched the one child per couple policy, which "encouraged" each couple to have no more than one child. Couples were required to apply for official approval before conceiving a child. The policy was enforced by a system of incentives (Some say that coercion was also involved, including human rights abuses, such as forced sterilisations and abortions and; large financial fines, Science, 2008).

In 2008, the Chinese government announced that it planned to keep the one-child policy for at least another 10 years. The rationale behind this decision was that, there was still a large population base, with nearly 200 million people expected to come into childbearing years over the next decade (starting in 2008) (Corvallis Gazette-Times,2008), so the fear was that, if they relaxed the childbearing rule now, there could be a huge population surge. China now adds fewer people to her population yearly than does India, despite China's much larger population.

Traditionally, governments and families have believed that, the way to get their nation powerful and to foster economic growth is to increase their population, under the notion that larger is better, and more powerful. Increasingly, it is being realised that more people now means less of everything else now, and for generations to come and; that more people simply cause additional strain on already-strained resources.

Even sub-Saharan Africa, which has traditionally been very pronatalist, is changing. Almost 40 percent of these nations now have explicit population policies aimed at slowing growth, and there is improved access to and information about contraception. Three fourths of Africans live in countries whose government perceives the population growth rate as being too high (UN, 2005).

These nations have realised, as have others such as Mexico, that money spent on family planning is rapidly repaid. With effective family planning, less money must be routed into maternal and infant care. This money can instead be spent elsewhere, as on housing, education, and economic development. The realisation has come that, in fact, decreasing fertility is an important part of an economic development strategy, whereas the traditional assumption was that increasing fertility was important for fostering economic development.

Table 2.2 shows the fertility trends and confirms that fertility has been declining for selected countries in sub-Saharan Africa from 2003 to 2008.

**Table 2.2: TFR Levels and Trends for Selected Countries in Sub-Saharan Africa**

| **Southern Africa** | **2003** | **2004** | **2005** | **2006** | **2007** | **2008** |
|---|---|---|---|---|---|---|
| Zimbabwe | 3.66 | 3.60 | 3.54 | 3.13 | 3.08 | 3.72 |
| Botswana | 3.32 | 3.17 | 2.85 | 2.79 | 2.73 | 2.66 |
| Swaziland | 3.92 | 3.81 | 3.70 | 3.53 | 3.43 | 3.34 |
| Lesotho | 3.52 | 3.44 | 3.35 | 3.28 | 3.21 | 3.13 |
| Namibia | 4.71 | 4.65 | 3.18 | 3.06 | 2.94 | 2.81 |
| Zambia | 5.25 | 5.14 | 5.47 | 5.39 | 5.31 | 5.23 |
| **East Africa** | **2003** | **2004** | **2005** | **2006** | **2007** | **2008** |
| Kenya | 3.47 | 3.31 | 4.96 | 4.91 | 4.82 | 4.70 |
| Rwanda | 5.60 | 5.55 | 5.49 | 5.43 | 5.37 | 4.31 |
| Malawi | 6.10 | 6.04 | 5.98 | 5.92 | 5.74 | 5.67 |
| **West Africa** | **2003** | **2004** | **2005** | **2006** | **2007** | **2008** |
| Ghana | 3.32 | 3.17 | 3.02 | 3.99 | 3.89 | 3.78 |
| Cote D`lvoire | 5.51 | 5.42 | 4.58 | 4.50 | 4.43 | 4.23 |
| **Central Africa** | **2003** | **2004** | **2005** | **2006** | **2007** | **2008** |
| Cent. Africa Republic | 4.68 | 4.59 | 4.47 | 4.41 | 4.32 | 4.23 |
| Chad | 6.44 | 6.38 | 6.32 | 6.25 | 5.66 | 5.43 |
| Equatorial Guinea | 4.75 | 4.68 | 4.62 | 4.55 | 4.48 | 5.16 |
| Gabon | 4.83 | 4.80 | 4.77 | 4.74 | 4.71 | 4.68 |
| Cameroon | 4.63 | 4.55 | 4.47 | 4.39 | 4.49 | 4.41 |

*Source: CIA World Factbook, 2009*

Despite the confirmation of dramatic and long-awaiting fertility transitions in selected countries in sub-Saharan Africa, Table 2.2 shows that the bulk of the continent retains very high levels of fertility (above 4), such that questions about the prospects for fertility decline remain relevant. Fertility rates remain higher in sub-Saharan Africa than in any other major region of the world, and considerable controversy surrounds the likelihood of these rates declining at a faster pace in the near future. On a continent where, barely four decades ago, transition was considered unlikely because the socio-economic context was deemed to support, if not promote, high fertility (Bongaarts et al., 1984; Caldwell and Caldwell, 1987, 1990), it stands to reason that the success stories, spotted as they may be, may provide considerable insight into facilitating transition elsewhere on the continent.

In Africa, TFR ranges from 1.7 (Tunisia) to 7.3 (Mali) in 2008, whilst in developed regions; TFR is as low as 1 (Hong Kong), 1.1 (Singapore) and 1.2 (Japan) in 2008 (World Population Prospects, 2008 Revision). Mortality and fertility rates fell substantially in Latin America and Asia between 1965 and 1985, and only mortality declined in Africa; fertility remained relatively stable, well above a level required to replace the population as supported by the demographic transition theory. Consequently, the region experienced extremely rapid population growth, with rates for some populations considerably above 3 percent per annum (United Nations, 1991; Freedman and Blanc, 1992). A few countries, most notably Kenya, Botswana, Namibia and Zimbabwe, have begun the transition toward lower fertility, but smaller declines in fertility have been observed recently in many other countries. Nevertheless, fertility rates generally remain above four children per woman, and the question of whether Africa is more resistant to fertility change than other regions of the world is a topic of considerable debate (Boserup, 1985; World Bank, 1986; Caldwell and Caldwell, 1987, 1988, 1990; Lesthaeghe, 1989; van de Walle and Foster, 1990; Caldwell et al., 1992).

In the period 1990 – 1995, fertility transition was clearly under way in southern Africa, with South Africa having a TFR of 4.0; Zimbabwe with a TFR of 4.3; Botswana 4.8; Swaziland, 4.9; Lesotho, 5.2; and Namibia, 5.3. This region, formerly British South Africa, might also be said to include Zambia, but its TFR of 6.1 indicated, at best, only the beginning of the fertility transition (UNDP, 2006). The transition seems to have established a foothold in two other areas. In East Africa, Kenya has experienced a rapid fertility decline. Not many years ago, the TFR in Kenya was more than 8.0 children, among the highest in the world.

The TRF for Kenya dropped from 4.82 in 2007 to 4.7 in 2008 (Table 2.2) which shows a sign of decline. In neighbouring Rwanda, the 1992 DHS revealed a large decrease in fertility, although the TFR remained above 6.0. It further declined to 5.92 in 2009 (World Population Factsheet, 2010).

The reductions in fertility rates in the period 1990 - 1995 were less dramatic for the gulf area in West Africa, which includes Ghana (5.5), Cote d'Ivoire (5.7), and the two Southern and Coastal regions of Nigeria (5.5 and 5.6, respectively) (Cohen, 1993; Cleland et al., 1994). These may be compared with TFRs greater than 6.0 in neighbouring areas of West Africa. Income levels and extent of development are somewhat higher in the countries mentioned above than in most neighbouring and inland countries (UNDP 1996). An area which had deceptively lower fertility in 1995 is Central Africa; where the effects of pathological sterility cut fertility rates in five nations - Cameroon, Central African Republic, Chad, Equatorial Guinea, and Gabon (Frank, 1983).

There are also developing nations with high and relatively unchanging TFRs. Such a situation prevails in much of sub-Saharan Africa and the Mid-east, but is also found in areas of Indonesia and Latin America as well (World Population Factsheet, 2009). For example, the TFR for Africa as a whole is 4.8 in mid-2009. These nations also have markedly triangular age structures (for Africa overall 41 percent is younger than 15 and 3 percent are over 65 years old) (World Population Factsheet, 2009). With such age structures, a continuation of high fertility will result in continued explosive growth. (Note that in some regions, low life expectancy contributes to the unbalanced age structure. For example, in Africa, the average life expectancy is only 55 years. This, of course, contributes to explaining why such a small percentage of the population is over 65 years) (World Population Factsheet, 2009). Such age structures contrast with those found in nations whose populations are stable (such as Europe as a whole where the percentages less than 15 versus over 65 years of age are 15 percent and 16 percent, respectively). Many of the nations with high and relatively unchanging TFR's have several features in common which include the following:

- They are still largely agricultural;
- There is much social inequity and poverty; and
- Women are held in very low status and poorly educated. For example, in sub-Saharan Africa, 49 percent of women between the ages of 20 and 24 years are

illiterate (for women older than 25 year, the illiteracy rate is 75 percent). As of 2004, more than 50 percent of girls in sub-Saharan Africa weren't finishing the primary grades (Muir, 2011).

Extreme heterogeneity in fertility levels and trends, between and within regions and countries cannot be ignored. Sub-Saharan Africa is the world region with the highest overall levels of fertility, with little evidence of sustained fertility declines in Kenya, Botswana and Zimbabwe. In some developing countries, substantial fertility decline has not yet been recorded. For example, TRFs in Yemen remained virtually unchanged at 7.6 children per woman from 1950s to the mid-1990s. In contrast, rapid and marked fertility declines have occurred elsewhere, particularly in Asia. For example, between 1970 and 1995 the TFR in Bangladesh fell from 7.02 to 3.40 children per woman (World Population Prospects, 2008 Revision).

Generally, fertility rates in East and West Africa are greater than those in Central Africa, in part because of the historically high prevalence of sexually transmitted diseases (STDs) in certain areas of Central Africa (Frank, 1983; Tambashe, 1992). The prevalence of STDs is associated with unusually high rates of infecundability in the region especially prior to the 1970s. Fertility was probably higher in East Africa than in West Africa during the 1970s and 1980s, although the difference appears to have lessened in the more recent past. Reported fertility rates rose in certain parts of Africa in the late 1960s and 1970s; however, the proportion of the increase due to improvements in data accuracy it is not clear.

In addition to the regional and national variation in fertility rates, there is often considerable variation in fertility within countries. Repeatedly, fertility surveys have recorded substantial differences in rates among ethnic, geographic, and socioeconomic groups. For example, fertility rates are consistently lower among women who live in urban areas, women who have more than primary school education and; women who work in the formal labour market. In Africa, the number of women in each of these socio-economic groups has, at least until recently, been small, and the groups overlap considerably. Consequently, lower fertility among these women has a minimal effect on overall national TFRs.

All countries in Southern Africa show a fertility decline, especially rapid in Kenya and Zimbabwe, confirming the progress of the fertility transition. Decrease appears to be substantial also in Ghana from 3.89 in 2007 to 3.78 in 2008 (CIA World Factbook, 2009).

The average annual rate of change suggests an acceleration of the fertility decline, especially important in Kenya and Zimbabwe (Kirk, 1996a).

The decline in Botswana (from 3.3 in 2003 to 2.7 in 2008) and Namibia (4.7 in 2003 to 2.8 in 2008) is explained by their levels of contraceptive use (Table 2.2). Though some controversies rose over the rate of fertility decline in Botswana, the increase in use of modern contraceptives seems sufficient to account for the reduction in fertility levels (van de Walle and Foster, 1990). A marked reduction in fertility has occurred, even at low-order parities (Cohen, 1993). In Rwanda, a considerable fertility decline occurred, mostly in the years just before the 1992 survey. Convincing arguments can be made to justify an important reduction: increasing use of modern contraceptives (mostly injectables), later ages at first marriage and first birth, and; an increasing proportion of women not in union (single, but also separated) (Macro International, 1994). The ideal family size of about four children is lower in Rwanda than in most countries of sub-Saharan Africa. No obvious flaw was found, such as birth displacement, abnormal sex ratio at birth, or incomplete birth dates. Thus, a large fertility decline has undoubtedly taken place, though its magnitude in the most recent period seems exaggerated.

There has been a general increase in age at first marriage for Madagascar (from 18.6 in 1997 to 20.6 in 2003), Tanzania (from 18.1 in 1999 to 20.5 in 2002), and Zambia (from 17.6 in 1996 to 21.1 in 2002), although contraceptive prevalence rates remained modest (Macro International, 2003). Madagascar and Kenya showed the highest proportion of women in sub-Saharan Africa, who wanted no more children (Bankole and Westoff, 1995). In addition, during the same period the rural-urban fertility differential amounts to 2.9 live births, as a result of the high contraceptive prevalence rate in urban areas (40 percent, of which 16 percent corresponds to use of modern methods) (Macro International, 1994). For Tanzania and Zambia, evidence of fertility decline has been demonstrated by cohort analyses of parity progressions (Dzekedzeke and Nyangu, 1994; Komba and Aboud, 1994). In Zambia, a limited but noteworthy resort to female sterilisation was apparent among women 35 years old and older in 1995. The preliminary results of the 1996 DHS showed a continuing trend of declining fertility in both countries, with a slight acceleration in Tanzania, together with an increase in contraceptive use, in particular modern methods (Macro International, 1997).

In Malawi, the smooth decrease in the TFR (from 7.6 in 1975 to 7.1 in 1990) among women aged 15-34 since the late 1970s, contrasts with previous and fairly reliable estimates; indicating relatively constant fertility levels (Cohen, 1993). The use of contraceptives was similar to that in Tanzania; in particular, small proportions of women aged 25 and older were undergoing sterilisation. Thus, some fertility decline must be expected and what remains questionable is its pace (National Statistical Office of Malawi, 1994).

In Uganda, TFR remained fairly constant from the early 1970's (7.2) to the late 1980's (7.06) (Uganda Statistics Department and Macro International, 1996). In 1988, little evidence existed for any fertility decline, aside from a modest level of contraceptive use in the capital, and an increasing age at first marriage (17 in 1988 to 17.6 in 2006) (Uganda Statistics Department, 2008). The results of the 1995 Uganda DHS indicated a reduction in TFR from 7.4 to 6.9, in line with trends associated with a rise in the contraceptive prevalence rate (Macro International, 1997).

Cohen (1993) and the Working Group on Kenya (1993) conducted further in-depth analyses of a number of sub-Saharan countries, based on calculation of the censored parity-progression ratios for successive cohorts. These ratios have the advantage of being less affected by the misreporting of the birth date. Changes in parity patterns of fertility among different cohorts have proved useful in providing evidence of small changes in fertility, in the initial years of fertility decline (Brass and Juarez, 1983). The observed changes in censored parity-progression ratios provided no support for a significant reduction in fertility in Burundi, Liberia, and Mali. In Togo, strong signs of a decrease appear in parity progressions over cohorts, although they are uneven (Brass and Juarez, 1983).

While the onset of fertility transition in the rest of Africa is acknowledged with caution, fertility decline in Zimbabwe is however evident and attributed to increased family planning (Mhloyi, 1991). Fertility has declined in Zimbabwe within diverse, socio-economic and developmental contexts. Desire for smaller family sizes can be explained partly by development and lack of it. Zimbabwe's fertility is declining among urbanised and educated women, while at the same time it is declining among the rural and uneducated women. However, the urbanised women are further ahead in fertility transition since their fertility is much lower than that of their less modernised counterparts (Mhloyi, 1991) in the rural.

A combination of high costs of living, declining incomes, civil unrest and persistence droughts in Zimbabwe has forced couples, regardless of their levels of modernisation, to adopt their fertility downwards – a crisis driven fertility transition (Mhloyi, 1993).

In the early 80's, there was tremendous importance attached to large families as a security system in Zimbabwe (Mazur and Mhloyi, 1988). Clark, (1972) asserts that as economic conditions in the labour reserves deteriorated from the mid-1950's onward, the average rural household was encouraged to protect itself, on the basis of maximising security and minimising risk, by maintaining or increasing its size. Clark maintains that, the existence of additional children increased aggregate family income, and the expectation that at least one of the children (as a migrant labourer) will be fortunate in securing a high earning job (an application of the probability theory); it also increased the expectation and continuity of cash remittances. Children were thus perceived as a security system against all survival risks and shocks by parents. Logically, the acquisition of status through high fertility by women was enhanced. One then wonders if the security conferred by large families has diminished; if so, then why? If large families are no longer as important as before, it then follows that the determinants of status of women have also changed.

In traditional societies, subsistence agriculture is the mode of production; it is labour intensive hence the high value placed on children and the consequent high fertility. The wealth flow favours parents not only as a source of labour as cited by Caldwell (1982) but also for old age security, and insurance against random, short term risks and shocks; droughts in an environment lacking institutionalised insurance (Cain, 1981). The benefits accrued from children overweigh the costs associated with these children; the extended family system and the consequent child fostering act as 'safety valve', hence child bearing and rearing is compatible with the mode of production and the socio-economic and cultural environment (Isiugo, 1983).

Explanations for the decline in fertility in developing countries cannot rely on single variable explanations. According to Bongaarts and Potter (1984) increased contraceptive prevalence is generally agreed to be the main cause of fertility decline. The proportion of couples using modern contraception increased dramatically from approximately 1 in every 10 couples in the 1960s to 1 in 2 couples by 1999 (Black, 1999). Other contributory proximate determinants include age at marriage for women, and increased rates of induced abortion.

Broader socio-economic changes such as rising levels of female education and; employment and increased urbanisation have contributed to the fertility decline in developing countries.

Although the data are often sketchy, several important conclusions may still be drawn about fertility in Africa. Few countries in Africa have TFRs less than 4.0, a rate well above that required for replacement level. Africans generally have a strong preference for large families. Children are prized not only as the means of preserving family lines, but as positive economic assets that provide labour, wealth, risk insurance, and old-age security to their parents.

In the past, high fertility in Africa resulted from early and near universal marriage, and extremely low rates of efficient contraception. Fertility has been controlled (outside geographic areas of pathological sterility) by social pressures against premarital sex, the practice of postpartum sexual abstinence, and long breastfeeding periods that lead to lengthy lactational amenorrhea (Caldwell and Caldwell, 1977, 1987; Page and Lesthaeghe, 1981). Bongaarts et al. (1990) estimated that, fertility in Africa would increase by 72 percent if the fertility-inhibiting effects of breastfeeding and; postpartum abstinence were removed. These fertility-reducing practices have probably evolved principally to ensure exceptionally long birth intervals in an effort to combat high rates of infant mortality. However, there have been signs that some of these cornerstones of African fertility may be weakening (Schoenmaeckers et al., 1981; Caldwell et al., 1992; Westoff, 1992).

Some countries in the sub-Saharan Africa, the Mid-east, Indonesia and Latin America, show signs of the pressures to have large numbers of children still exist. In addition, people in such nations often do not understand that, more children in their families and societies are actually an impediment to progress; feeling instead that many children constitute an advantage. Finally, some of these regions still have a large unmet demand for contraception, and relatively high rates of infant and child mortality.

The relationship between fertility and socio-economic development is a subject of debate in social sciences. The main issue of the debate is whether there exists a trade-off relationship between fertility and development. There is a demographic-economic paradox in the inverse correlation found between wealth and fertility within and between nations. As portrayed in the discussion above, nations experiencing decreases in TFR are nations that

are very different from each other racially, religiously, and politically, implying that the drive to reduce fertility and stabilise populations is a sweeping movement.

## 2.4. Marriage Patterns

Marriage is almost universal in most African countries hence it is a difficult concept in these societies. It is a process rather than a discrete event, and involves rituals, negotiations and transactions that can stretch over years, making it difficult to say at what point a couple becomes married (Arnaldo 2002: 148). The definition of marriage tends to differ from one society to the next, and it changes over time (Udjo 2001). This situation makes it difficult to compare the impact of marriage in different societies.

In most societies marriage is a legitimate and socially sanctioned union tasked with procreation. It is universal, and there is a stigma attached to celibacy and delaying marriage (Mhloyi 1987: 16). However, in sub-Saharan Africa marriage patterns are not universal and tend to vary in different countries. In addition, there are disparities observed amongst societies within a country (Lesthaeghe 1989). In Zimbabwe, there are two main types of marital unions: civil and customary. A cohabiting union is also classified as a marital union (CSO, 2000). As a result cohabiting is now another form of marital union in Zimbabwe. In Mozambique there are four main types of marital unions: customary or traditional marriage, religious marriage, civil marriage and; mutual consent union or cohabitation (Arnaldo 2001: 146).

Marriage is generally considered the best indicator of exposure to the risk of childbearing (Bledsoe and Cohen 1993:43). There is a direct relationship between fertility and marriage in most populations (South Africa Population Report, 2000). Palamuleni et al. (1998) observed that marriage patterns and sexual initiation are procedures that increase a woman's exposure to conception. Riddfuss and Parnell (1989) noted that marriage is a precondition for fertility even when there is no biological connection between the two. In Tanzania, studies have shown that there is a positive correlation between marriage and childbearing (CSO Tanzania, 2005). In Zimbabwe, fertility is indeed highly prized and children are seen as social, cultural and often economic assets (Madziba 2008:6) hence; marriage is positively correlated to childbearing. In Swaziland, it is a tradition for childbearing to precede marriage, conception is very early and yet marriage is often delayed (UN, 2004:5). In the case of South Africa, studies have shown that marriage is late and tends to follow after childbearing (Palamuleni et al. 1998).

This shows that in some societies there is no direct relationship between marriage and fertility while in some societies there is a positive association.

Bongaarts et al. (1984) identified different ways in which marriage exposes women to childbearing during the reproductive period. The factors include; age at first marriage, age at first birth, proportion of ever married women, level of polygamy, level of spousal separation and remarriage rates (Bongaarts et al. 1984: 15). Mhloyi (1988) and Bledoe (1990) observed that although separation, divorce and widowhood are common in the sub-Saharan region most women tend to remarry after a short period of time. However it can be observed that in some societies marriage is still an important determinant of fertility.

Fertility is low in societies where women spend most of their childbearing years outside marriage. Studies have shown that married women tend to have more children than unmarried women (South Africa Population Report' 2000). It has been documented that amongst married woman contraception is most responsible for fertility reduction. In a traditional society, studies have shown that contraception information and use is absent. As a result, married woman tend to have many children. In developed countries, conjugal fertility is low as a result of a high level of contraception knowledge and use (Bongaarts et al. 1984). As knowledge and use of contraception increases, married women tend to have fewer children (Bongaarts 1978).

Mhloyi (1984) observed that in Zimbabwe, a man should be economically secure, possibly acquire some key assets before marriage, yet a woman should demonstrate maturity and ability to manage domestic affairs. However, high (above 18 years) median age at first marriage is a necessary, but not a sufficient condition to lower fertility. The fertility level in a socio-economic and cultural context will be the ultimate outcome of the balance between the combination, magnitude and direction (positive or negative) of the inhibiting effects of the various proximate determinants in operation.

### 2.4.1. Age at First Marriage

In Zimbabwe, reproduction and production decisions are spread over the entire kinship. These traditional societies are predominantly patriarchal and patri-local. Land is the major economic base, and it is controlled by men. The status of women, both the position and the condition is generally low. The man is culturally endorsed head of the household, certified by the payment of lobola (Mhloyi, 1987). In this context, fertility levels are a result of the

cultural setting as it impacts on the proximate factors (all the proximate factors except family planning and induced abortion).

The mean age at marriage as a proxy for risk of conception, is determined by the societal expectations on the roles and obligations of the aspiring bride and groom, and is only relevant if premarital sex and child bearing out of wedlock is irrelevant (Mhloyi, 1987). In some parts of Matabeleland Province, it is traditional for child bearing to precede marriage; conception is very early and yet marriage is delayed. However in most societies marriage is the legitimate and socially sanctioned union tasked with procreation. It is universal, and there is a stigma attached to celibacy or delaying marriage (Mhloyi, 1987). Archarya (1987) noted that while mean age at marriage is a relevant proxy for risk of conception in most African societies, it impacts on natural fertility by determining the potential time spent in a marital union. *'The potential time wasted by postponement of marriage in a natural fertility regime can never be recovered'*. The articulation in delaying marriage is not to limit/space fertility (Mhloyi, 1987).

Bloom and Reedy (1987) argue that high fertility rates and population growth are observed in societies where marriage is universal and where age at first union is low. Coale (1992), observed that the fertility transition usually starts when women delay entry into marriage. Knodel (1982) echoed that postponement of marriage contributed significantly to low fertility levels during the pre-transitional period in Thailand. Coale (1992) observed that the delay in marriage is rooted in the Thai culture, in which a man is expected to prove that he can support a family, and the woman has to assume primary responsibility for household duties; Zimbabwe is not spared either.

Guilkey and Jayne (1997) argue that, the delay in marriage is one of the main factors that have contributed to the fertility transition in Zimbabwe. It was observed that, some women in Zimbabwe are delaying marriage as a result of education advancement (CSO - Zimbabwe, 2007). The delay in marriage reduces the reproductive years of a woman. In addition it contributes to fertility reduction since few women are exposed to regular intercourse (Guilkey and Jayne 1997). According to the ZDHS, in 1984 about 43 percent of women aged 15-19 years were married while in 1988 the percentage decreased to 18 percent. In addition, about 86 percent of women aged 20-24 years were married compared to 61 percent in 1988 (Guilkey and Jayne 1997). In 1988 and 2005, 63 and 56 percent of women aged 15-49 years were in a union, respectively (Macro International, 1988; 2005).

This suggests that women in Zimbabwe started to delay marriage around the 1980s and have continued to delay marriage up to 2005. Delay in entry into marriage has also contributed to fertility decline in Navarre between 1986 and 1991 (Sanchez 1998). In Eritrea premarital fertility is uncommon and as a result the delay in marriage has contributed significantly to fertility reduction (CSO-Eritrea, 2001).

The decline in fertility has been associated with an increase in age at first marriage and the use of contraceptives (Blanc and Rutenberg 1990; Mhloyi 1992; Guilkey and Jayne 1997). The age at first marriage is an important determinant of fertility since at this stage; a woman is exposed to regular intercourse and childbearing. A rise in the age at first union tends to reduce the reproductive period of a woman (Bledsoe 1990; Jolly and Gribble 1993; Hinde and Mturi 2000). Studies have shown that an early mean age at marriage is a necessary but not sufficient condition to lower fertility in sub-Saharan Africa. For example in 1983 TFR was 11.1 births per woman in Rwanda and the mean age at fertility was 21.3 years. However, despite the high mean age at marriage in Rwanda, fertility also remained high due to a short duration of breastfeeding and poor family planning programmes (Locoh and Hertrich 1994).

In Tanzania, the age at first marriage is an important determinant of fertility since there is a close relationship between marriage and fertility (CSO - Tanzania 2005). In societies were contraception prevalence is low, the age at first intercourse is close to the age at first birth. In societies where contraceptive use is low, an early age at first marriage can lead to woman having many children (Letamo and Letamo 2001). The age at first marriage is an important determinant of fertility in some societies, while it has less impact on fertility in other societies.

In sub-Saharan Africa, most marriages are early and common (Lesthaeghe, 1989; Jolly and Gribble, 1993). This situation has contributed to high fertility levels in the region (Gould and Brown 1996). In the 1980s, age at first marriage in the region was between 16 to 18 years (Jolly and Gribble 1993). Studies have shown that in Mali and Nigeria, most women in the 1980s tended to get married between the age of 16 and 20 years (Jolly and Gribble, 1993). In sub-Saharan Africa, the age at first union has increased in most countries in the past few years (van de Walle and van de Walle, 1988). In Zimbabwe, in the 1980s, women were exposed to marriage at an earlier age (16 -20), and this situation exposed women to regular intercourse at an early age and; for many years before the end of the reproductive period. In 1988 women aged 20 to 24 years were in union by the age of 19.7 years while

women aged 25 to 29 years were in union by age 18.8 years (CSO, 1988). However, in 2005, the age at first marriage decreased to 19.5 years for age group 20 to 24 years and increased for women aged 25 to 29 years to 19.6 years (CSO, 2005). In the case of South Africa, a study conducted in 1996 has shown that the country had the highest mean age at first marriage in the world of 32.5 years (Udjo, 2001).

In the case of Kenya, around the 1980s fertility reduction took place as a result of the increase in the age at first marriage (Frank and McNicoll, 1987). A study conducted in Zambia, Zimbabwe and Botswana showed that, the age at first union is no longer an important determinant of fertility in these countries since it has been observed that more young women are no longer getting married and are mostly using contraception (Letamo and Letamo, 2002). However, age at first marriage is still an important determinant of fertility since it marks the beginning of exposure to childbearing (Ergocmen and Eryurt, 2003).

### 2.4.2. Proportion of Ever Married Women

In Africa, marriage used to be common and nearly universal in almost all societies (South Africa Population Report, 2000). Jolly and Gribble (1993) observe that in some countries in sub-Saharan Africa, more births are now occurring outside marriage. A study conducted in the 1980s, amongst 12 countries in sub-Saharan Africa, showed that more births are occurring within marriage in Mali and Sudan while in Botswana more women gave birth outside marriage (Jolly and Gribble, 1993). In Zimbabwe marriage is almost universal (CSO, ZDHS, 2005). A study conducted in Zambia, Zimbabwe and Botswana showed that more births are occurring outside marriage in these countries (Lemato and Letamo, 2002). Mturi and Moerane (2001) observed that, premarital fertility is low in Lesotho while in the case of Botswana; studies have shown that it is very high. A study conducted in 12 countries in Africa in the 1980s found that, in Senegal and Sudan, marriage patterns were responsible for fertility reduction (Jolly and Gribble, 1993) hence; in some societies, marriage is a significant determinant of fertility.

In the case of South Africa, marriage is no longer a direct determinant of fertility. Studies conducted have shown that there is a small difference between the total fertility rate of married and unmarried women in South Africa. It was also observed that teenage pregnancies have contributed to more births outside marriage. Studies have shown that the rate of teenage pregnancies increased from 2.4 percent in 1995 to 35 percent in 1998 (South

Africa Population Report, 2000; Chimere-Dan, 1999). In this situation, marriage can be viewed as no longer an important determinant of fertility.

### 2.4.3. Polygamy

Some countries still practice polygamy in the sub-Saharan region. In the case of Zimbabwe, studies have shown that polygamy is not universal. In 1988 one in every six women was in a polygamous union (ZDHS, 1988). In 2005, approximately 11 percent of the women were in a polygamous union (ZDHS, 2005). Some studies suggest that, polygamy reduces a woman's exposure to regular intercourse, hence reduces fertility (Bongaarts et al., 1984). In addition it has been observed that polygamy leads to long periods of postpartum abstinence which is an important proximate determinant of fertility in Africa (Bongaarts et al., 1984). Divorce is common in Africa, but so is remarriage, particularly if the woman is still in her reproductive years; so the total time lost to exposure to the risk of childbearing may be small (Smith et al., 1984). Several institutions, including polygamy and the levirate, a practice whereby a widow automatically remarries a close relative of the deceased (often his brother), facilitate quick remarriage following widowhood (Bongaarts, 1978). However, these norms are under erosion due to urbanisation and westernisation in most African countries.

## 2.5. Contraception

In nearly all regions in the world, contraception has been documented to have played a significant role in fertility decline (Bongaarts, 1978). Studies have shown that there is a strong link between fertility decline and contraceptive use world-wide (Mhloyi, 1992; van de Walle and Foster, 1990). Contraception is seen as a deliberate practice undertaken to reduce childbearing (Bongaarts et al., 1984). Some studies suggest that the fertility decline observed in Kenya, Zimbabwe, Botswana and South Africa were influenced by high contraception use (56% for Botswana in 1998, 28.4% for Kenya in 2003, 50.2% for South Africa in 2003 and 40.1% for Zimbabwe in 2005) (van de Walle and Foster, 1990; South Africa Population Report, 2000;).

In most developing countries such as Zimbabwe, contraception use has been increasing (from 37.7% in 1999 to 40.1% in 2005) (Ross et al., 1999). However, contraception use is still low in some countries in Africa, such as Zaire, where studies have shown that, in 1991, contraception use was only 8 percent (Ross et al., 1999) whilst in countries such as Morocco, Jordan and Egypt contraception use has been increasing gradually over the years.

Studies have also shown that, more than 50 percent of couples in Algeria, Tunisia, Turkey and Iran, are using modern methods of contraception (Ross et al. 1999). In the case of Zimbabwe, modern methods of contraception played a significant role in the fertility decline to date (Mhloyi 1992); increasing from 35.6% in 1999 to 39.8% in 2005 for all women age 15-49 years (CSO, ZDHS 1999, ZDHS 2005). In traditional developing societies, where contraception use is absent, natural fertility exists (Henry, 1961). In these societies, marriage patterns and postpartum infecundability are principal determinants of fertility and; married women tend to have many children. However, in developed countries, married women tend to have fewer births due to contraception use (Henry, 1961). In this context, contraception is hence, an important determinant of fertility in most countries.

It has been documented that, knowledge of contraception is not related to usage of contraception (Bongaarts et al., 1984) and; studies have also shown that, attitudes to contraceptive use vary across and within regions. In Asia, the use of contraception is mainly to prevent married women with a certain number of children from having more children (Caldwell and Caldwell, 2001). However, in sub-Saharan Africa, contraception is used mainly for child spacing purposes, and as prevention against STIs/STDs and HIV infections (Caldwell and Caldwell, 2001). As a result, contraception is seen to replace postpartum infecundability in sub-Saharan Africa (Caldwell and Caldwell, 2001). The use of traditional methods (periodic abstinence and withdrawal) is also common in most of the sub-Saharan countries but is gradually declining over time. However, these methods are not reliable in preventing pregnancy as compared to modern methods (Letamo and Letamo, 2002).

Modern methods of contraception contributed significantly to rapid fertility decline in Bangladesh in the 80s (Islam and Islam, 1993). In Netherlands, around the 1980s, the successful use of contraception contributed significantly to the fertility decline (Evert 1983). Studies also have shown that marriage and contraceptive use played a leading role in fertility decline in South Africa (South Africa Population Report, 2000). The TFR in South Africa in 1988 was 4.5 births per woman (World Bank, 1988) and in 1998; TFR had dropped to 2.0 births per woman (Palamuleni et al., 1998).

In sub-Saharan Africa, and in many countries in the world, studies have documented that; fertility decline is influenced mainly by an increase in use of contraception (from 27% in 1989 to 39% in 2003 for Kenya, from 13% in 1992 to 31% in 2000 for Malawi, from 6% in 1997 to 26% in 2003 for Mozambique and from 5% in 1988 to 23% in 2000 for

Uganda)(Frank and Bongaarts, 1992; Caldwell et al., 2001; Khan, Demographic and Health Research Division, Macro International, 2007). However, this is not the case with Eritrea, where fertility has declined while contraceptive use is extremely low. According to the Eritrea DHS report of 1999, it has been observed that, the contraception amongst married women has remained constant at 8 percent. The percentage using contraception is low, and cannot be responsible for the recent fertility decline observed in the country (CSO-Eritrea, 2001). In Ethiopia, studies conducted have shown that fertility declined from 6.4 in 1990 to 5.9 in 2000. In Addis Ababa, the TFR declined from 3.1 births to 1.9 births per woman during the same period. It was observed that, fertility declined during this period in the absence of a well-planned and successful family planning programme. A decrease in the proportion of married women contributed significantly to the observed fertility rates (Sibanda et al., 2003). Hence, in some societies, other determinants of fertility are more influential in reducing fertility levels than contraception (Tabutin and Schoumaker, 2001).

Zimbabwe was colonised by Britain and became independent in 1980. The settlers placed legislation that discriminated against the native and majority of the black population in almost all spheres of socio-economic development (Mhloyi, 1988). The health sector was not spared either. The majority of the black population lived in the Tribal Trust Lands, as they were termed by the regime. These rural areas were poorly serviced at all by health and educational facilities. Although family planning was introduced in Zimbabwe (the then Southern Rhodesia) in 1953, it was not available to the African population. Since provision of family planning was largely through individual efforts, such efforts were coordinated under the Family Planning Association (FPA). In 1966, a token hospital based provision of family planning to the African population was approved by government; however, less than 50 percent of government health outlets had contraceptives (Marangwanda and Nyakauru, 2001).

The Zimbabwe Government took control of the Family Planning Association after independence in 1981, and subsequently changed its name to “Child Spacing and Fertility Association”, and then to “Zimbabwe National Family Planning Council” (Marangwanda and Nyakauru, 2001). Since child spacing is deeply rooted in the Zimbabwean culture, the changing of the name made a previously perceived foreign imposed colonial genocidal tool more acceptable; and with rapid socio-economic changes of the post-independence honeymoon period, family planning was slowly perceived as one of those inevitable changes of modernisation which became gradually attractive with the erosion of traditional

practices (Mhloyi, 1988). Contraceptive prevalence increased from less than 10 percent prior to 1980 to 60.2 percent in 2005 (CSO - Zimbabwe, 2005). However, traditional child spacing was not uncommon amid the native population before modern fertility control methods. Breastfeeding and postpartum taboos prolonged birth intervals by postponing ovulation. This was articulated for the health of the mother and the child, echoed by the Zimbabwean Government; hence acceptability of the family planning programme to the natives. Modern contraception was also accepted because it was the brain child of a local authority '*without a perceived negative hidden agenda*' (Mhloyi, 1988). The modern methods of fertility control may then be viewed as having met a latent demand for more efficient methods of contraception that already existed among the locals (Mhloyi, 1988).

In general, fertility is a response to a mosaic of socio-economic and cultural factors, which are interrelated and have a definitive impact on the proximate variables yielding a particular fertility level. While all the proximate factors less family planning and induced abortion are dominant in a natural fertility regime, the deliberate control factors gain importance as a society shifts towards a controlling regime (Mhloyi, 1988). Within a depressed economic situation, there has been an increase in contraception prevalence from 10 percent prior to independence in 1980, to approximately 60.2 in 2005 (CSO - Zimbabwe, 2005). TFR has declined from approximately 7.8 children in 1969 (Mzite, 1981) to 3.3 in 2008 (CSO - Zimbabwe, 2008). The rate of population growth has also declined from over 3 percent between 1982 and 1992 (CSO - Zimbabwe, 1992) to 1.1 percent between 1992 and 2002 (CSO - Zimbabwe, 2002). However, the decline in rate of population growth is a reflection not only of observed fertility decline, but also the increasing mortality due to direct and indirect effects of HIV and AIDS. This combination of increasing mortality and declining fertility is deviant from the standard demographic transition, which is often from high levels of both fertility and mortality, to low levels.

## 2.6. Postpartum Infecundability

Postpartum amenorrhoea refers to the interval between childbirth and the return of menstruation (CSO – Zimbabwe, 2007:94). A woman who is not at risk of conception is infecund. Therefore, infecundability occurs when a woman is either amenorrhoeic or abstaining from sexual activities (CSO - Zimbabwe, 2007). Studies have shown that, in developed Western countries, lactation duration is shorter as compared to developing countries in Africa, Latin America, and Asia (Bongaarts, 1978). In sub-Saharan Africa, women tend to abstain from sex and breastfeed for longer periods (Jolly and Gribble, 1993;

Bledsoe, 1990). Studies conducted in most African societies have shown that, breastfeeding goes along with sexual abstinence for traditional beliefs and cultural practices (Goldman et al., 1987). These practices however, are seen as conserving the health of the mother and the new-born baby (Bledsoe, 1990; van de Walle and van de Walle, 1988).

Goldman et al. (1987) noted that, there are many ways in which a woman can postpone a birth. A woman is exposed to pregnancy only after experiencing a normal pattern of ovulation. Ntozi (2002:5) observed that the suckling by a baby stimulate receptors in the breast nipple resulting in the pituitary gland increasing the production of hormone prolactin. Prolactin inhibits ovulation by reducing hormones needed for ovulation. It has been observed that, when the intensity of prolactin decreases beneath a critical level, then ovulation will start again (Bongaarts and Potter, 1983). The length of lactational amenorrhea is determined primarily by the duration, intensity and pattern of breastfeeding (Jolly and Gribble, 1993:73). It has also been observed that, the longer a woman breastfeeds her child, the longer the period of lactational amenorrhea. However, in some societies, a woman may avoid pregnancy by not abstaining from sexual activities (Jolly and Gribble, 1993).

In sub-Saharan Africa, there are disparities in the duration of breastfeeding, and the length of postpartum abstinence (van de Walle and Omideyi, 1988). In most countries in the region, the length of breastfeeding is longer than the period of postpartum abstinence (Macro International, 2000). In Liberia the average length of breastfeeding was 17.5 months, while in Burundi it was 23.9 months in the 1980s. The length of abstinence ranges from 2.4 to 22.7 months in Africa (Jolly and Gribble, 1993). In Lesotho, women experience long periods of postpartum abstinence which can be more than 15 months (Goldman et al., 1987). It has been documented that, in 1992, postpartum abstinence was 13 months in Botswana, 4 months in Zambia, 6.5 months in Tanzania, 4 months in Uganda, and 7 months in Mali (Central Statistics Office-Botswana, 1993). Although this variable has contributed to the fertility decline in most West African countries, its impact is low in countries such as Uganda and Zimbabwe. In the case of Kenya, postpartum infecundability led to fertility decline in 1988 and 1989 (Jolly and Gribble 1993). However, breastfeeding and postpartum abstinence have contributed significantly to fertility decline in sub-Saharan Africa, even when this determinant is not universal (Jolly and Gribble, 1993).

In Zimbabwe, studies have shown that breastfeeding is almost universal (CSO, 1988). In 1988, the average duration of amenorrhea was 12.6 months, while postpartum abstinence was 4.3 months (CSO 1988; 2005). Postpartum infecundability is another proximate determinant contributing to fertility decline in Zimbabwe since it determines the time frame in which a woman is not at risk of another pregnancy. Mturi and Hlabana (1999) observed that, breastfeeding was responsible for most of the fertility decline observed in Lesotho. To show that the practice is significant in some societies, a man is heavily fined if found having sexual intercourse with another man's wife, while she is in the breastfeeding period in Lesotho (Makatjane and Toeba, 1999). Breastfeeding and abstinence contribute approximately 37 percent to 44 percent to the fertility decline in Kenya, Ghana, Senegal and Sudan hence; breastfeeding and abstinence are important to fertility decline in some societies (Vimard et al., 2001; Jolly and Gribble, 1996).

In societies were contraception use is low, cultural practices such as breastfeeding and postpartum abstinence tend to influence fertility levels (Frank and McNicoll, 1987). Although studies have documented that breastfeeding and postpartum abstinence are responsible for the fertility decline, these practices are usually used for child spacing in most African countries (Bongaarts et al., 1984). Bongaarts (1978) observed that, breastfeeding delays the next pregnancy and lengthens birth spacing. Anrudh and Bongaarts (1981) observed that, normally one month of breastfeeding increases the birth interval by 0.4 months. It has also been observed that, a woman who is breastfeeding is one quarter to two thirds at risk of conception than a woman who is not breastfeeding (Guz and Hobcraft, 1991). The impact of breastfeeding on fertility was observed to be more successful in Lesotho, Ivory Coast, Sudan, Haiti and Ecuador (Guz and Hobcraft, 1991).

## 2.7. Impact of HIV and AIDS on Fertility

Globally, someone dies from AIDS every 11 seconds, and the total death toll up through 2005 was about 25 million deaths (PRB, 2005). Deaths due to HIV and AIDS exceed the 20 million Europeans who died during the plague epidemic of 1347-1351 (World Watch, Sept/Oct. 04). In 2006, the UN announced updated population projections (World Watch, July/Aug 07). Population estimates for 2050 range from 7.3 to 12.8 billion with a mid-line estimate of 9.2. These projections are lower than the UN's 1995 projections, largely because:

- TFR's have decreased more rapidly than expected in some developing nations; and
- The AIDS epidemic is expected to be devastating in some regions, particularly in Africa, a region also characterised by high TFR's and rapid growth rates.

The HIV and AIDS epidemic was common in East and Central Africa during the 1980s and 1990s and in the late 1990s, the epidemic was higher in southern African countries (Ntozi, 2002). In Zimbabwe, the epidemic was first observed in 1984 (United Nations, 2000). In 2010 there were an estimated 22.9 million people living with HIV in Sub-Saharan Africa (UNAIDS World AIDS Day Report 2011). This has increased since 2009, when an estimated 22.5 million people were living with HIV, including 2.3 million children (UNAIDS Report on the Global AIDS Epidemic, 2010). The increase in people living with HIV could be partly due to a decrease in AIDS-related deaths in the region. The number of people living with HIV, in Zimbabwe in 2009 was 1.2 million; 0.6 were women and 0.2 were children.

The proportion of women living with HIV has remained stable at 50% globally, although women are more affected in sub-Saharan Africa (59% of all people living with HIV) and the Caribbean (53%).Sub-Saharan Africa remains the region most heavily affected by HIV. In 2010, about 68% of all people living with HIV resided in sub-Saharan Africa, a region with only 12% of the global population. Sub-Saharan Africa also accounted for 70% of new HIV infections in 2010, although there was a notable decline in the regional rate of new infections. The epidemic continues to be most severe in southern Africa, with South Africa having more people living with HIV (an estimated 5.6 million) than any other country in the world. In 2009, adult (15-49 years) prevalence rate has been high in Southern Africa (25.9 for Swaziland, 24.8 for Botswana, 23.6 for Lesotho, 17.8 for South Africa, 14.3% for Zimbabwe and 13.5 for Zambia) (UNAIDS Report on the Global AIDS Epidemic, 2010). The effect of HIV on fertility is significant since more women than men are infected (Ntozi, 2002).

Swaziland is one of the countries with the highest HIV prevalence rates (25.9%) in the world (World Population Factsheet, 2009). Life expectancy has decreased to 46 years, while for Southern Africa overall, life expectancy is 52 years as of 2008 (World Population Factsheet, 2009). Fertility rates in areas with high infection rates are likely to decline as well, as many infected women do not live for their full reproductive life span, and often conceive less than non-infected women (Ntozi, 2002).

HIV can either increase or decrease fertility (Ntozi, 2002). As a result of the epidemic, HIV negative women are having more children as an insurance against increased HIV and AIDS related infant deaths (Lewis et al. 2004). Studies have also shown that there is a relationship between HIV and fertility reduction in sub-Saharan Africa (Sewankambo et al., 1994). There is a close association between HIV and infertility In South-West Uganda (Sewankambo et al., 1994; Gray et al., 1998) and in other African countries (Glynn et al., 2000). Zaba and Gregson (1998) reviewed six studies conducted in sub-Saharan Africa, which showed that HIV lowers the fertility rates of HIV positive women by 25 to 40 percent. Gregson et al. (1997) argued that, there is also evidence to prove that HIV and AIDS has contributed to fertility decline in Zimbabwe. In rural Zimbabwe, HIV is responsible for at least one quarter of the fertility reduction in the past years (Terceira et al., 2003).

In Zimbabwe, a few women have been exposed to HIV testing and as a result, most women are not aware of their HIV status (Terceira et al., 2003). A study conducted by Gregson et al. (1998) noted that even if few women are aware of their HIV status, they have started to change their behaviour by engaging in sexual intercourse at a later stage, and using condoms for protection. This change in behaviour is mainly for protection against HIV infection and not to limit fertility.

Ntozi (2002) observed that, HIV has an impact on the proximate determinants of fertility. The epidemic has influenced women to postpone the onset of sexual activity and marriage. Studies conducted by Asiimwe-Okiror et al. (1997) and Kamali et al. (2000) in Uganda observed that women are also delaying marriage as a result of the epidemic. Some women, who are already in unions, have decided to divorce their unfaithful partners as a result of the epidemic. In Uganda, women have delayed entry into marriage due to fear of contracting HIV (Mukiza-Gapere and Ntozi, 1995). In urban areas such as Harare, young women are also delaying marriage as a result of fear to contract HIV and AIDS (Gregson et al., 1997). These women have seen relatives and people in the community dying from HIV and AIDS (Gregson et al., 1997).

Widowed and separated women are finding it difficult to commit themselves to another partner since they are afraid of exposing themselves to the epidemic (Ntozi, 2002). In Nigeria, the Yoruba woman are divorcing their husbands, refusing to engage in sexual activities, and insisting on using protection when their husband are HIV positive (Orubuloye et al., 1992). These behaviours however reduce a woman's risk to conception

and as a result impact on fertility (Ntozi, 2002). The studies presented above suggest that HIV has an impact on marriage and; age at first marriage and intercourse which have a direct impact on fertility.

HIV and AIDS has an increasing or decreasing impact on contraceptive use. Ntozi (2002) noted that HIV positive woman may decide to use contraceptives to avoid a pregnancy, and this situation has led to lower fertility rates. In addition, some woman may use protection to avoid re-infection from HIV and STDs/STIs. Further, HIV negative women may use condoms to protect themselves from the epidemic (Ntozi 2002). These situations tend to reduce fertility levels. The proportion of HIV positive women using modern contraceptives was 34.5 percent compared to 17.5 percent among HIV negative women in Yaounde, Cameroon (Ntozi, 2002:3). A study conducted in Kinshasa, Democratic Republic of Congo by Ryder et al. (1991) observed that, 26.4 percent of 238 positive women were using modern contraception, compared to 16.3 percent of 315 negative women hence the epidemic has contributed significantly to the use of modern methods of family planning. In Zimbabwe, 21 percent of the women were using condoms for protection against HIV (Gregson et al. 1997). In the case of Kinshasa, the use of condoms was 17 percent among HIV positive women and 3.2 percent among HIV negative women (Ryder et al. 1991). This shows that HIV influenced women to use contraception which has contributed to fertility reduction.

The HIV and AIDS epidemic has influenced breastfeeding and postpartum abstinence patterns in some communities. This situation has led to an increase in fertility levels due to the shortening of the breastfeeding duration. In some societies women have avoided breastfeeding since they are aware of the mother-to-child transmission of the virus (Ntozi, 2002). As a result, some women have resorted to reducing the duration of postpartum abstinence, in order to avoid extra marital affairs. Ntozi (2002) noted that short periods of breastfeeding and abstinence can lead to higher fertility levels due to increased exposure to risk of conception. Gregson et al. (1997) observed that, 67 percent of women were aware that mother-to-child transmission can lead to HIV infection to the unborn child. It was also noted that, of those women who were aware of mother-to-child transmission, they did not breastfeed their infants. This situation however limits the duration of infecundability amenorrhea and increases fertility rates.

In Italy and France, HIV tends to increase unplanned abortions (Ntozi, 2002). In Australia, it has been observed that some women may decide to have an abortion in order to protect the unborn baby from HIV infection, (Ntozi, 2002). In Yaounde, Cameroon and Zambia, there were more unplanned abortions amongst HIV positive women than amongst HIV negative women (Glynn et al. 2000). In Rakai, Uganda, 18.5 percent of 130 pregnancies in HIV infected women ended in abortion compared to a lower proportion of 12.2 percent of 861 pregnancies among HIV negative women (Ntozi, 2002:8). This shows that HIV has an impact on abortion and hence, fertility levels. However, in Zimbabwe, there is limited information available on sterility and induced abortion and its impact on fertility is difficult to assess.

## 2.8. Conclusion

This chapter has presented a comprehensive discussion on the levels, patterns and trends of fertility, the main proximate determinants of fertility and; the impact of HIV and AIDS on fertility. Studies conducted in different countries in relation to these determinants of fertility have also been presented.

# CHAPTER 3

# RESEARCH METHODOLOGY

## 3.1. Introduction

This chapter covers the research methodology adopted for this study, and presents a model developed by Bongaarts (1987; 1982) for calculating the inhibitive effect of proximate determinants on fertility. The framework presented borrows from the model first developed by Davis and Blake (1956) and later modified by Bongaarts (1987; 1982).

## 3.2. Theoretical Framework

Traditionally, a common approach to identifying the linkages between modernisation and fertility has been to regress fertility on measures that reflect different aspects of modernisation (Richards, 1983). Sometimes other determinants of fertility, such as cultural values and norms, are included in regression. The development of proximate determinants analysis by Davis and Blake (1956) led to the insertion of a new stage in the sequence, so that fertility is now viewed as determined by a set of proximate determinants, with the background factors in turn operating indirectly on fertility through these proximate determinants. According to these pioneers, the proximate determinants include the extent of exposure to intercourse, fecundability (including coital frequency), duration of postpartum infecundability, spontaneous intrauterine mortality, sterility and the use of deliberate fertility control (contraception and induced abortion).

The analytical framework presented by Davis and Blake (1956: 211-35) nearly 50 years ago listed eleven intermediate variables. Although Davis and Blake's framework was an important foundation in the analysis of proximate determinants, it had several setbacks. It was difficult to quantify or measure the proximate determinants as defined in the framework. The age at entry into marriage was a proxy for risk of conceiving. In many societies marriage is a series of rituals and is not an event. Also conception could precede marriage as is the case with Swaziland. This made it difficult to determine the exact point at which risk to conception began. Data on coital frequency is very scarce and, if available at all, is very inaccurate. Due to the above mentioned problems and a lot more, researchers have come up with their own frameworks to suit their situations, and which have quantifiable proximate determinants.

Bongaarts (1982: 179-89) in early 1980s listed nine proximate determinants, or the biological or behavioural factors of fertility through which all the socio-cultural, environmental and economic processes have to interact with fertility. However, the available evidence suggests little variation between populations in the proximate determinants of natural fertility, such as the risk of spontaneous intrauterine mortality or in the incidence of permanent sterility or in natural fecundability. Bongaarts (1982) demonstrated that, 96 per cent of the variance in the fertility levels among societies is explained by four proximate determinants: the proportion of females married, the prevalence of contraceptive use, the incidence of induced abortion and; the fertility-inhibiting effect of breastfeeding. Bongaarts (1982) discovered that individuals or couples differed with regard to all the nine proximate variables, but only with respect to proportion of reproductive period spent in marriage, contraception, induced abortion and postpartum non-susceptibility at population level. The remainder does not make a substantial contribution to fertility differences in a population (Bongaarts, 1978).

This four variable breakthrough provided a parsimonious framework with measurable and quantifiable variables. It was easy to operationalise hence found extensive application in research of proximate determinants. This research adopted the theoretical framework proposed by Bongaarts in studying the proximate determinants of fertility. The Bongaarts and Potter (1983) model was adapted from the African contexts leading to the effects of following proximate variables on fertility;

**A. Marriage** (polygamy, age into marriage, girl pledging, levirate e.t.c.)

1. Proportion of women married or in sexual unions. This variable measures the degree to which women of reproductive age are exposed to the risk of conceiving. The higher the proportion, the higher the fertility.

2. Frequency of intercourse. This determinant directly affects the probability of conceiving among ovulating women. Frequent or prolonged spousal separation has therefore a substantial fertility-reducing effect.

**B. Contraception**

3. Postpartum abstinence. Prolonged abstinence from sexual relations while a new-born baby is breastfeeding is common in a number of societies, many of them in Africa.

4. Postpartum amenorrhea. Following a pregnancy, a woman remains unable to conceive until the normal pattern of ovulation and menstruation is restored. When breastfeeding takes place, the duration of lactational amenorrhea is primarily determined by the duration, intensity, and pattern of breastfeeding.

5. Contraception. Any practice undertaken deliberately to reduce the risk of conception is considered contraception, if its aim is to limit family size. Breastfeeding and postpartum abstinence, while they affect fertility by increasing child spacing, are not included as contraception because their aim is primarily the protection of maternal health and child development, rather than regulation of the number of children born.

**C. Abortions**

6. Induced abortion. This includes any practice that deliberately interrupts the normal course of gestation.

7. Spontaneous intrauterine mortality. A proportion of all conceptions fail to end in a live birth because some pregnancies spontaneously terminate prematurely in a miscarriage or stillbirth.

**D. Fecundity**

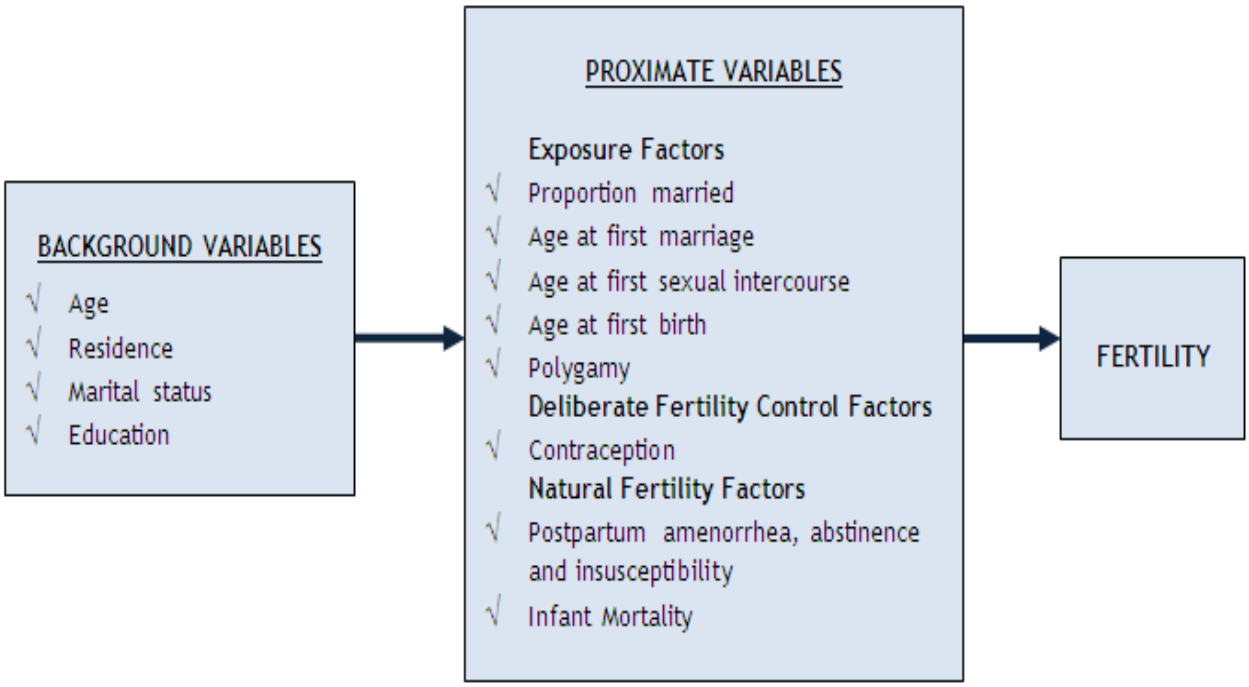
8. Natural sterility. Only a small proportion of women are sterile at the beginning of the reproductive years, but this proportion increases with age and reaches 100 percent by age 50.

9. Pathological sterility. A number of diseases, especially gonorrhea, can cause primary or secondary sterility. Primary sterility results in childlessness because a sterilising disease is contracted before a first birth. Secondary sterility results in an inability to bear additional children, sometimes very early in the childbearing years, and is due to the onset of disease among women who already have borne offspring.

In Africa, postpartum abstinence and prolonged breastfeeding have been strong influences on fertility decline and birth spacing. Contraception prevalence has been low, with exception of Botswana, Kenya and Zimbabwe. However, the Bongaarts and Potter (1983) model, Easterlin and Crimmins (1982) model, and Davis and Blake (1956) model describe the same variables and basically differ in coverage. The framework below borrows from the

framework for analysing the determinants of fertility proposed by Bongaarts (1987). Schematically, this can be presented as shown in Figure 3.1.

**Figure 3.1: Conceptual Framework**



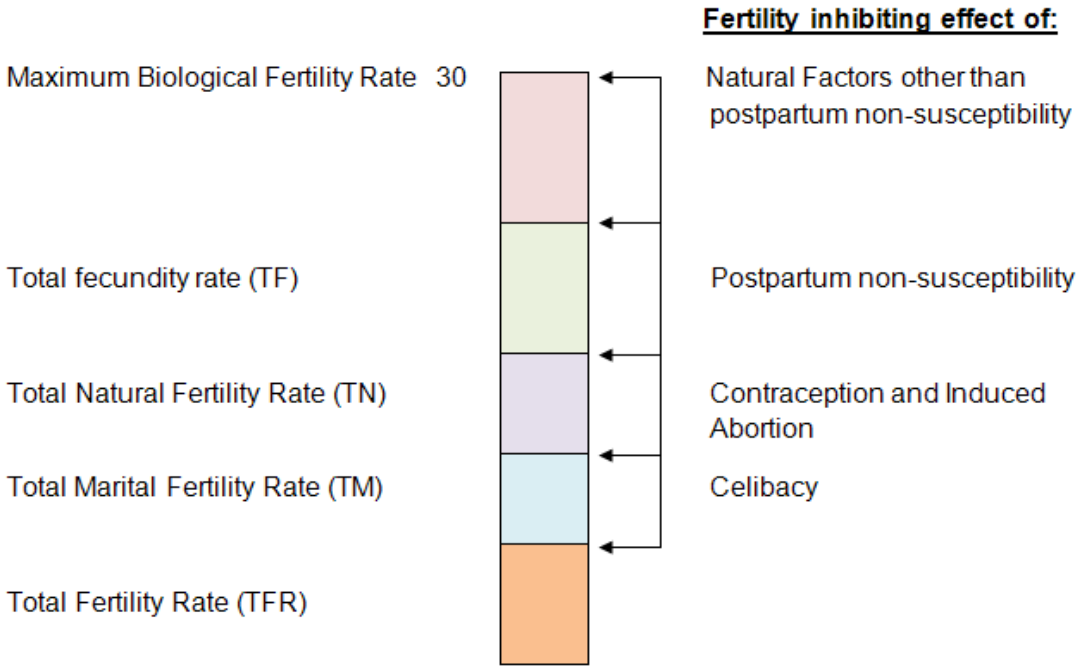

## 3.3. Analytical Framework

Bongaarts (1982) noted that, the most convenient way to analyse the fertility impact of proximate determinants is to consider each variable as an inhibitor of fertility. If all the inhibiting effects are absent, then a woman would give birth to a child every ten months, and approximately, thirty-six children in the thirty year reproductive span. However, observed fertility levels are far below the thirty-six theoretical level world-wide. Bongaarts (1982) argued that, it is the proportion of reproductive period spent in a marital union, contraception, induced abortion and postpartum infecundability that explain much of the differences between observed fertility levels, and the theoretical maximum.

The fertility level of a population, if all inhibiting variables are present, is measured by TFR. If the inhibiting effect of celibacy were removed, then fertility would rise to Total Marital Fertility Rate (TM). If the practice of contraception and induced abortion were removed, fertility would further rise to Total Natural Fertility (TN). Further, removal of the practice of breastfeeding and postpartum infecundability would increase the fertility level to Total Fecundity (TF).

The difference between Total Fecundity Rate and the theoretical maximum is due to the incidence of sterility, intra-uterine mortality and viable period of ova and sperm. Bongaarts (1978) noted that, whilst total fertility rates, total marital fertility rates, and total natural fertility rates vary in different populations, total fecundity rates are virtually constant in all populations. He came up with an estimate of 15.3 for total fecundability rate with a standard deviation of 5 percent from his study of forty-one populations. The inhibiting effects of the proximate determinants are illustrated in Figure 3.2. (*Note: This diagram is not drawn is not to scale).*

**Figure 3.2: Inhibiting Effects of Proximate Determinants**




*Adopted from Bongaarts (1982)*

The inhibiting effects of proportion of reproductive period spent within a marital union, contraception, induced abortion and postpartum infecundability are measured by Cm, Cc, Ca and Ci respectively. These indices take values between zero (0) and one (1) inclusive. If there is no inhibiting effect by the proximate variable then the corresponding index takes a value of one (1), and if inhibiting effect is complete, the index takes a value of zero (0).

$C_m$ = Marriage index. This index takes a value of one (1) if all women in the reproductive age group are married and is zero (0) in the absence of marriage.

$C_c$= Contraception index. This index takes the value one (1) in the absence of contraception and is zero (0) if all fecund women use 100 percent effective contraception.

$C_a$ = Induced abortion index. This index takes a value of one (1) in the absence of induced abortion and zero (0) if all pregnancies are aborted.

$C_i$ = Postpartum infecundability index. This index takes a value one (1) in the absence of breastfeeding and sexual abstinence and is zero (0) if the duration of non-fecundability is infinite.

The indices can be written in equation form as:

$$\mathbf{Cm} = \frac{\mathbf{TFR}}{\mathbf{TM}}$$

$$\mathbf{Cc\ x\ Ca} = \frac{\mathbf{TM}}{\mathbf{TN}}$$

$$\mathbf{Ci} = \frac{\mathbf{TN}}{\mathbf{TF}}$$

Hence;

$$\mathbf{TFR} = \mathbf{Cm\ x\ TM}$$

$$\mathbf{TM} = \mathbf{Cc\ x\ Ca\ x\ TN}$$

$$\mathbf{TN} = \mathbf{Ci\ x\ TF} \quad \text{(Bongaarts, 1985)}$$

TFR can thus be calculated in terms of $C_a$, $C_c$, $C_i$, $C_m$ and TF.

$$\mathbf{TFR} = \mathbf{Cm\ x\ Cc\ x\ Ci\ x\ Ca\ x\ TF} \quad \text{(Bongaarts, 1985)}$$

If year1 and year2 are the end points for which the decomposition of the indices $C_m$, $C_a$, $C_i$ and $C_c$ is desired, then it follows that;

$$\frac{\mathbf{TFR2}}{\mathbf{TFR1}} = \frac{\mathbf{Cm2}}{\mathbf{Cm1}}\ \mathbf{x}\ \frac{\mathbf{Ca2}}{\mathbf{Ca1}}\ \mathbf{x}\ \frac{\mathbf{Ci2}}{\mathbf{Ci1}}\ \mathbf{x}\ \frac{\mathbf{Cc2}}{\mathbf{Cc1}}\ \mathbf{x}\ \frac{\mathbf{TF2}}{\mathbf{TF1}} \quad \text{(Bongaarts, 1985)}$$

Further, if:

Pf = Proportional change in TFR between year1 and year2

Pm = Proportional change in Marriage index between year1 and year2

Pa = Proportional change in induced abortion index between year1 and year2

Pc = Proportional change in contraception index between yaer1 and year2

Pi = proportional change in postpartum infecundability index between year1 and year2

Pr = Proportional reduction in the remaining proximate variables combined.

These proportional changes in the indices can be summarised in equation form as:

$$\mathbf{Pf} = \frac{\mathbf{TFR2}}{\mathbf{TFR1}} - \mathbf{1}$$

$$\mathbf{Pm} = \frac{\mathbf{Cm2}}{\mathbf{Cm1}} - \mathbf{1}$$

$$\mathbf{Pa} = \frac{\mathbf{Ca2}}{\mathbf{Ca1}} - \mathbf{1}$$

$$\mathbf{Pi} = \frac{\mathbf{Ci2}}{\mathbf{Ci1}} - \mathbf{1}$$

$$\mathbf{Pc} = \frac{\mathbf{Cc2}}{\mathbf{Cc1}} - \mathbf{1}$$

$$\mathbf{Pr} = \frac{\mathbf{TF2}}{\mathbf{TF1}} - \mathbf{1} \quad \text{(Bongaarts, 1985)}$$

The proportional change in TFR between year1 and year2 can be written in terms of the proportional reductions in the indices and interaction factor (I).

Consequently;

$$\mathbf{Pf} = \mathbf{Pm} + \mathbf{Pa} + \mathbf{Pc} + \mathbf{Pi} + \mathbf{Pr} + \mathbf{I} \quad \text{(Bongaarts, 1985)}$$

### 3.3.1. Estimation of marriage index ($C_m$)

The marriage index is determined by the proportion of reproductive period spent in marital union. This time span is a function of two aspects, the proportion of women who are currently married, and their age distribution. This implies that, $C_m$ is a weighted average of the proportion of females currently married, by the age specific marital fertility rates.

Hence, if;

m(a) = Age specific proportion of females currently married

g(a) = Age specific marital fertility rates

Then;

$$\mathbf{Cm} = \frac{\sum_{\mathbf{15}}^{\mathbf{45}}[\mathbf{m(a)x\ g(a)}]}{\sum_{\mathbf{15}}^{\mathbf{45}}\mathbf{g(a)}} \text{(Bongaarts, 1985)}$$

### 3.3.2. Estimation of Contraception Index ($C_c$)

This index depends on contraception prevalence and effectiveness. There is an inverse relationship between the index Cc and contraception prevalence and effectiveness.

$$\mathbf{Cc = 1 - (1.08 \times u \times e)} \quad \text{(Bongaarts, 1985)}$$

Where;

u = Proportion of currently married women using contraception

e = Average use-effectiveness of contraception

$e = \sum u(m)e(m)$ for all methods of contraception

u(m) = Proportion of currently married women using contraceptive method m

Nortman (1980) added an adjustment factor of 1.08 to cater for the women who will not use contraception, if aware or believe that they are sterile. Whilst data on contraception prevalence is available in most countries, this is not the case with data on use – effectiveness of contraception. Two countries in the world have reliable data on contraception use – effectiveness, the USA and the Philippines. The use – effective data for USA is used to represent developed countries and that for the Philippines to represent the developing countries in most research work. This is so because, use-effective data has been found to vary little between countries and in time. So the Philippines data on contraception use-effectiveness is used in this research.

### 3.3.3. Estimation of abortion index ($C_a$)

The index of abortion is calculated based on past research findings Porter (1972). This is because data on induced abortion is very scarce and in Zimbabwe, induced abortion is illegal, except in special circumstances such as rape. However, the prevalence of induced abortion is high and is done illegally using both traditional and modern methods in Zimbabwe.

Porter (1972) noted that, on average an induced abortion averts less than one live birth. An induced abortion could be unnecessary because spontaneous intra-uterine mortality or still birth would have prevented a live birth. It is also true that a woman resumes ovulation sooner than is normally the case if she had carried the pregnancy to successful parturition. Porter also discovered further that, the number of births averted per induced abortion is largely independent on age of the woman, but is rather strongly related to the practice of contraception, following an induced abortion. In the absence of contraception, induced

abortion averts 0.4 live births while 0.8 live births are averted, when moderately effective contraception is used after an induced abortion. In general, the number of births averted is given by;

$$\mathbf{b = 0.4(1 + u)} \quad \text{(Bongaarts, 1985)}$$

Where;

b = births averted

u = contraception prevalence among the married women

A more convenient measure of the impact of induced abortion on fertility is to consider the Total Abortion Rate (TAR), instead of the number of induced abortions per women at the end of the reproductive period, if assumed that the current abortion rates persist till the end of the reproductive period. Consequently, the TFR in a population is (b x TAR) births less than it would be without induced abortion. So the index of abortion $C_a$ is given by;

$$\mathbf{Ca} = \frac{\mathbf{TFR}}{\mathbf{TFR} + (\mathbf{b\ x\ TAR})}$$

$$= \frac{\mathbf{TFR}}{\mathbf{TFR} + (\mathbf{0.4\ x\ (1+u)})} \quad \text{(Bongaarts, 1985)}$$

It is important to note that, abortion is illegal in Zimbabwe except under special prescribed circumstances. However, the practice is very prevalent and is usually conducted by traditional healers and medical practitioners for a fee, in clandestine ways. The documented data on abortion is inaccurate and not reliable; and for this reason, this research will not include the abortion index in the model.

### 3.3.4. Estimation of Infecundability Index ($C_i$)

The infecundability index is a ratio of natural fertility in the presence and absence of postpartum non-fecundability. Postpartum non-fecundability is a function of breastfeeding and postpartum sexual abstinence. It is a hence, clear that postpartum non-fecundability affects fertility by modifying birth intervals. The index of postpartum non-fecundability can thus be defined as a ratio of average birth interval, in the absence of postpartum abstinence and lactation, to average birth interval including the effect of lactation and postpartum abstinence. According to Bongaarts (1978) the index of postpartum non-fecundability is approximated by:

$$\mathbf{Ci} = \frac{\mathbf{20}}{\mathbf{18.5+i}}$$ (Bongaarts, 1985)

Where;

i = the duration (in months) of the postpartum infecundity. If I = 1.5 months, then there is no reduction to the maximum natural fertility regime. When a direct estimate of i is not available, it can be approximated from the mean months of breastfeeding using the following formula (Bongaarts 1982; 1988);

$$i = 1.753 * e^{(0.1396*\overline{BF} - 0.001872*\overline{BF}^2)}$$ (Bongaarts, 1985)

Stover (1998) reviews the performance of Bongaarts' model, in more than a hundred applications and suggests some modifications of the indices. Perhaps the most significant modification is the use of sexual activity rather than marriage, to indicate exposure to pregnancy.

## 3.4. Study Area

Zimbabwe is a landlocked country situated in Southern Africa and lies just north of the Tropic of Capricorn between the Limpopo and Zambezi rivers. The total land area is 390,757 square kilometres. Zimbabwe is bordered by Mozambique on the east, South Africa to the south, Botswana to the west and Zambia to the north and northwest. It is part of a great plateau, which constitutes the major feature of the geology of southern Africa. Almost the entire surface area of Zimbabwe is more than 300 metres above sea level, with nearly 80 percent of the land lying more than 900 metres above sea level and about 5 percent lying more than 1,500 metres above sea level. The country is divided into 10 administrative provinces. The capital city is Harare and the other main towns of the country are Bulawayo, Gweru, Kadoma, Kwekwe, Masvingo and Mutare (World Bank, 1990).

The population of Zimbabwe is estimated at 11.6 million (Census 2002) with over 49% of this being children between 0-17 years .The national population growth is estimated at 1.4%. Zimbabwe is a multiracial country. The major ethnic groups are the Shona, the Karanga and Ndebele.

Zimbabwe's economy has started to recover from a decade-long crisis that saw economic output decline every single year during the period 1999 to 2008, for a cumulative decline of more than 45 percent. Supported by a strong recovery of domestic demand and government consumption, real GDP grew by 20.1 percent between 2009 and 2011 (World Bank, 2011).

GDP was led by strong growth in mining (107 percent), agriculture (35 percent) and services (51 percent). Recovery in manufacturing sector (22 percent) has been markedly less vigorous. Strong external demand for primary commodities (platinum, gold, cotton and tobacco) has supported higher production levels, which have recovered pre-2000 levels in terms of values. Value of mineral exports increased by 230 percent over the 2009 - 2011 period, while value of agricultural exports increased by 101 percent over the same period. As production levels of tobacco, cotton and gold have not yet recovered to year 2000 levels, Zimbabwe has been unable to fully exploit the benefits of high international prices to boost exports further (World Bank, 2011).

In 2011, real GDP was estimated to have grown by 9.3 percent following a 9 percent growth in 2009. Growth in 2011 was led by strong growth in mining (50.5 percent), agriculture (17.1 percent) and services (16.3 percent). Growth in manufacturing sector (5.3 percent) performed below expectations. Services remain the biggest GDP contributor (46.1 percent), with Mining (22 per cent) now surpassing Agriculture (15.6 percent). Transport and Communication (13.8 percent) grew ahead of manufacturing (11.9 percent). Nominal GDP as of end 2011 is estimated at US$9.9 billion, with GDP per capita at US$698. Annual average inflation remained moderated at 4.9 percent (y-o-y) in 2011 (World Bank, 2011).

The study covered the whole country and due to variability in factors determining fertility for each province, sampling was done in all the provinces. Figure 3.3 shows the map of the study area.

**Figure 3.3 : Map of Study Area**


*Adopted from CSO, ZIMDAT 2008*

## 3.5. Target population

All women age 15-49 and all men age 15-54 who were either permanent residents of the households in both the 1999 and 2005 ZDHS sample or visitors present in the household on the night before the survey were eligible to be interviewed.

## 3.6. Study design

The study is based on comparative analysis of secondary survey data (ZDHS 1999 and ZDHS 2005). The study was based on triangulation of both quantitative and qualitative research methods. FGDs were used to collect qualitative data and these were conducted in Nyanga District, Manicaland. Quantitative data were collected using the survey method. A total of 6,208 women were sampled for 1999 ZDHS and 9,870 women for 2005 ZDHS. The qualitative data was collected from three FGDs of 12 members each; one consisting of equal representation of women and men, the second with men only, and the third with women only.

### 3.6.1. Data Collection Methods and Tools

#### 3.6.1.1. The Survey

The method for data collection is a survey and face-to –face interviews were conducted using questionnaires. Four types of questionnaires were used for the 1999 ZDHS: the Household Questionnaire, the Women's Questionnaire, the Men's Questionnaire, and the Cluster Location form. The contents of these questionnaires were based on the DHS Model "A" Questionnaire, which is designed for use in countries with moderate to high levels of contraception use. Three questionnaires were used for the 2005 ZDHS: a Household Questionnaire, a Women's Questionnaire, and a Men's Questionnaire. These questionnaires were adapted to reflect the population and health issues relevant to Zimbabwe at a series of meetings with various stakeholders from government ministries and agencies, nongovernmental organisations, and international donors. Three language versions of the questionnaires were produced: Shona, Ndebele, and English. The Household Questionnaire was used to list all the usual members and visitors of selected households. Some basic information was collected on the characteristics of each person listed, including his or her age, sex, education, and relationship to the head of the household. The Household Questionnaire was also used to identify women and men who were eligible for the individual interview. Additionally, the Household Questionnaire collected information on characteristics of the household's dwelling unit, such as the source of water, type of toilet facilities, materials used for the floor of the house, ownership of various durable goods, and ownership and use of mosquito nets.

As in the 1999 ZDHS, a "calendar" was used in the 2005-06 ZDHS to collect information on the respondent's reproductive history, since January 2000 concerning contraceptive method use, sources of contraception, reasons for contraceptive discontinuation, and marital unions.

#### 3.6.1.1.1. The Sample

Sample size is determined through consideration of the key estimates desired, target population, number of households that must be sampled to reach the requisite target populations, precision and confidence level wanted, estimation domains, whether measuring level or change, clustering effect, allowance for non-response and available budget. The basic design involves the selection of area units in the first stage with Probability Proportional to Size (PPS), the size being the population counts or the number of households in each area unit (ORC Macro, 1996 Sampling Manual).

For ZDHS, sampling is based on PPS, the size being the number of households enumerated in the previous census. The selection of the Enumeration Areas (EAs) is a systematic, one-stage operation carried out independently for each of the strata. Probability sampling in the context of a household survey refers to the means by which the elements of the target population - geographic units, households and persons are selected for inclusion in the survey. The requirements for probability sampling are (1) that each element must have a known mathematical chance of being selected, (2) that chance must be greater than zero and (3) it must be numerically calculable. It is important to note that the chance of each element being selected need not be equal but can vary in accordance with the objectives of the survey (ORC Macro, 1996 Sampling Manual).

The sampling frame used for the 1999 ZDHS was the 1992 Zimbabwe Master Sample (ZMS92) developed by the CSO after the 1992 Population Census. The sampling frame used for the 2005 ZDHS was the 2002 Zimbabwe Master Sample (ZMS02), developed by CSO after the 2002 population census. A total of 6,208 women were sampled for 1999 ZDHS from 7,010 households and 9,870 women for 2005 ZDHS from 10,752 households. The summary of the samples for both surveys is shown in Table 3.1.

**Table 3.1: Number of Households, Number of Interviews, and Response Rates, According to Residence, Zimbabwe 1999 and 2005**

| | 1999 | | | 2005 | | |
|---|---|---|---|---|---|---|
| | Residence | | Total | Residence | | Total |
| | Urban | Rural | | Urban | Rural | |
| **Household Interviews** | | | | | | |
| Households Sampled | 2,058 | 4,952 | 7,010 | 3,455 | 7,297 | 10,752 |
| Households Occupied | 1,988 | 4,524 | 6,512 | 3,248 | 6,530 | 9,778 |
| Households Interviewed | 1,923 | 4,446 | 6,369 | 3,056 | 6,229 | 9,285 |
| Household Response Rate | 96.7 | 98.3 | 97.8 | 94.1 | 95.4 | 95.0 |
| | | | | | | |
| **Interviews with Women** | | | | | | |
| Number of Eligible Women | 1,940 | 4,268 | 6,208 | 3,763 | 6,107 | 9,870 |
| Number of Eligible Women Interviewed | 1,809 | 4,098 | 5,907 | 3,203 | 5,704 | 8,907 |
| Eligible Women Response Rate | 93.2 | 96.0 | 95.2 | 85.1 | 93.4 | 90.2 |

#### 3.6.1.1.2. Sampling Design

The sampling frame used for the 1999 ZDHS was the 1992 Zimbabwe Master Sample (ZMS92) developed by the CSO after the 1992 Population Census. The same Enumeration Areas (EAs) of the 1994 ZDHS were used in the 1999 ZDHS. The ZMS92 included 395 enumeration areas, stratified by province and land use sector. For purposes of the ZDHS, 18 sampling strata were identified: urban and rural strata for each of the eight provinces, and Harare (including Chitungwiza) and Bulawayo provinces, which are exclusively urban strata.

A representative probability sample of 7,010 households was selected for the 1999 ZDHS and this sample was selected in two stages. In the first stage, 230 EAs were selected with equal probability. Then, within each of these 230 EAs, a complete household listing and mapping exercise was conducted in May 1999, forming the basis for the second-stage sampling. All private households were listed. The list excluded people living in institutional households (army barracks, hospitals, police camps, etc.).

Households included in the ZDHS were selected from the EA household lists, with the sample being proportional to the total number of households in the EA. All women age 15-49 years in those households were eligible to be interviewed in the ZDHS.

Since the objective of the survey was to produce estimates of specific demographic and health indicators for each of the 10 provinces, the sample design allowed for an oversample of smaller strata. The overall target sample was 6,208 women. The ZDHS sample is not self-weighting at the national level (i.e., weights are required to estimate national-level indicators).

The sample for the 2005-06 ZDHS was designed to provide population and health indicator estimates at the national and provincial levels. The sample design allowed for specific indicators, such as contraceptive use, to be calculated for each of the 10 provinces (Manicaland, Mashonaland Central, Mashonaland East, Mashonaland West, Matabeleland North, Matabeleland South, Midlands, Masvingo, Harare, and Bulawayo). The sampling frame used for the 2005 ZDHS was the 2002 Zimbabwe Master Sample (ZMS02), developed by CSO after the 2002 population census. With the exception of Harare and Bulawayo, each of the other eight provinces was stratified into four strata according to land use: communal lands, Large-Scale Commercial Farming Areas (LSCFA), urban and semi-urban areas, Small-Scale Commercial Farming Areas (SSCFA), and resettlement areas. Only one urban stratum was formed each for Harare and Bulawayo, providing a total of 34 strata.

A representative probability sample of 10,752 households was selected for the 2005 ZDHS. The sample was selected in two stages with Enumeration Areas (EAs) as the first stage and households as the second stage sampling units. In total 1,200 EAs were selected with probability proportional to size (PPS), the size being the number of households enumerated in the 2002 census. The selection of the EAs was a systematic, one-stage operation being carried out independently for each of the 34 strata. The 1,200 ZMS02 EAs were divided into three replicates of 400 EAs each. One of the replicates consisting of 400 EAs was used for the 2005 ZDHS. In the second stage, a complete listing of households and mapping exercise was carried out for each cluster in January 2005. The list of households obtained was used as the frame for the second stage random selection of households. The listing excluded people living in institutional households (army barracks, hospitals, police camps, boarding schools, etc.). CSO provincial supervisors also trained provincial CSO officers to use global positioning system (GPS) receivers to take the coordinates of the 2005 ZDHS sample clusters.

All women age 15-49 who were either permanent residents of the households in the 2005 ZDHS sample or visitors present in the household on the night before the survey, were eligible to be interviewed.

#### 3.6.1.1.3. Response Rates

In 1999, a total of 7,010 households were selected in the sample, of which 6,512 were currently occupied. The shortfall was largely due to some households no longer existing in the sampled clusters at the time of the interview. Of the 6,512 existing households, 6,369 were interviewed, yielding a household response rate of 98 percent. In the interviewed households, 6,208 eligible women were identified and of these, 5,907 were interviewed, yielding a response rate of 95 percent.

In 2005, a total of 10,752 households were selected for the sample; 9,778 were currently occupied. The shortfall was largely due to some households no longer existing in the sampled clusters at the time of the interview. Of the 9,778 existing households, 9,285 were successfully interviewed, yielding a household response rate of 95 percent. In the interviewed households, 9,870 eligible women were identified and, of these, 8,907 were interviewed, yielding a response rate of 90 percent. Of the 8,761 eligible men identified, 7,175 were successfully interviewed (82 percent response rate). The principal reason for non-response among eligible women was the failure to find them at home despite repeated visits to the households.

### 3.6.2. Focus Group Discussions (FDGs)

To gather a homogeneous group of women who would provide credible qualitative data about practices and norms in their community, simple and stratified random sampling was used to recruit participants; ever married men and women aged between 25 and 40 years in Nyanga Town, a semi-urban town in Nyanga District, Manicaland Province for FGDs. The province, district, ward and the EA were randomly selected using the 2002 Zimbabwe Master Sample (ZMS02), developed by CSO after the 2002 Population Census. The household was considered the sampling unit. A sampling frame; a list of all households was obtained from the Nyanga Rural District Council. The households were grouped by three residential types; high density, medium density and low density. The groups formed the strata for the target population.

Three focus groups of 12 members each were conducted; one consisting of equal number of women and men, the second with men only, and the third with women only. Households were selected using simple random sampling in each stratum and picking only one person from each selected household for each focus group. Sampled households were screened for presence of eligible men and women. During screening, all eligible men and women were listed with names, ages and marital status. One woman or man per household was selected. Where there was more than one eligible person, all eligible persons were assigned numbers from which one would be randomly selected. A person represented by the number selected was thus, included in the focus group discussion. The selection process came up a total of 36 participants.

## 3.7. Data Processing and Analysis

All questionnaires for the 1999 ZDHS and 2005 ZDHS were returned to CSO for data processing, which consisted of office editing, coding of open-ended questions, data entry, and editing computer identified errors. Data entry and editing for 1999 were accomplished using the computer programme Integrated System for Survey Analysis (ISSA) and using the software package CSPro for 2005.

ZDHS policy is to enter the data from all questionnaires twice (double entry), compare the results and resolve any discrepancies. Such 100 percent verification greatly reduces the amount of secondary editing needed to resolve inconsistencies and results in a cleaner, more accurate data set. Double data entry is carried out by two different data entry staff, to ensure the best results. During data entry, range, skip and consistency checks are performed on each questionnaire.

A huge number of inter-relationships between the variables measured can be calculated, and statistical packages such as CSPro and SPSS make available all manner of analytical techniques and test statistics. In the analysis of the ZDHS, basic frequencies, basic cross-tabulations, investigations of sub-populations and further calculations and adjustments were carried out. Basic frequencies, in addition to being part of the data screening process, are used to describe the characteristics of the sampled women, and are often sufficient to generate important information on the main indicators sought.

### 3.7.1. Limitations of the Data

The ZDHS considers a proportion of the Zimbabwe population to generalise for the whole population. The data will certainly suffer from sampling error. While secondary data is useful in analysing the importance fertility determinants between 1999 and 2005; and establishing the factors explaining the fertility transition, the qualitative data is important in explaining why fertility actually declined over the six year period.

## 3.8. Ethical considerations

The study observed freedom in participation. Participants volunteered to participate in the FDGs without forcing them and without any deception. Research principles pertaining to privacy and confidentiality in the study were also observed.

## 3.9. Conclusion

This chapter described the general methodology of the study. The research instruments used were discussed, together with the sampling techniques adopted. Details of the population were also given as well as descriptions of the actual data collection procedures.

# CHAPTER 4

# PRESENTATION OF FINDINGS

## 4.1. Introduction

This chapter basically presents the study findings. Descriptive statistics such as frequencies, percentages, cross tabulations and graphs are used in data presentation. Determinants of fertility such as contraception, age at first sexual encounter, age at first marriage, postpartum amenorrhoea, among others, are discussed against different demographic variables such as sex, age, place of residence, marital status, and level of education. Comparative analysis uses 1999 ZDHS data as the baseline and 2005 ZDHS data as the end-line study. The chapter begins with discussing the socio-economic and demographic characteristics of the respondents in both surveys. It then discusses the levels and trends of fertility among the reproductive age group in both surveys and assesses the contribution of each proximate determinant of fertility according to Bongaarts framework. Finally, the chapter discusses the findings of the study based on qualitative data gathered from focus group discussions. Quantitative analysis based on the 1999 and 2005 ZDHS is complimented by qualitative analysis from FGDs. While the quantitative data analysis is important in explaining how fertility declined over the five year period, the qualitative data analysis assists in explaining why fertility declined over the same period.

## 4.2. Characteristics of Respondents

Background variables have a general influence on fertility through proximate variables. The background characteristics of the respondents are shown in the Table 4.1 for 1999 and 2005 ZDHS. In both surveys the proportion of representation in the reproductive age groups declined rapidly with increasing age (from 25 percent among the 15-19 age group to 6 percent among the 45-49 age group in 1999, and from 24 percent among the 15-19 age group to 7 percent among the 45-49 age group in 2005). This rapidly declining proposition suggests high death rates among the reproductive age groups in Zimbabwe, no wonder why Zimbabwe has one of the world's lowest life expectancy of 48 years in 2009 (World Bank, 2009). The overall proportion of currently married women for both surveys remained the same at 56 percent in 1999 and 2005. The proportion of those women who stated that they are “living together “also declined by 4 percentage points from 5 percent to 1 percent

during the same period. There was an increase in the proportion of those divorced/separated from 4 percent to 8 percent in 1999 and 2005 respectively; a 4 percentage point increase.

A proportional representation of respondents according to variables such as sex, place of residence, province and education level is an important factor in any survey. The representation of women in urban and rural areas remained constant at 39 percent and 61 percent respectively, for both surveys. Education is also an important factor in influencing an individual's attitude and outlook on various aspects of life. Generally education attainment in Zimbabwe is high; with 60 percent of women having attended secondary education by 2005. The proportion of women with secondary education increased significantly by 10 percentage points, while the no education and primary education categories posted declines of 2 percentage points and 8 percentage points respectively, between 1999 and 2005. Higher education category remained static at 3 percent for both surveys.

An increase in women's employment rate worldwide is generally believed to be associated with fertility decline. The levels of employment for women in 1999 and 2005 are shown in the Table 4.1. A decline by 5 percentage points in the proportion of women employed, from 49 percent in 1999 to 44 percent in 2005 was recorded. However, this is the norm with any nation going through an economic melt-down. This can also be an indication of the effects of emigration by professionals to other countries in search of greener pastures.

**Table 4.1: Demographic and Socio-economic Characteristics of Respondents**

| | | Percent | | Percentage Points Change |
|---|---|---|---|---|
| | | 1999 | 2005 | |
| **Age** | 15 – 19 | 24.5 | 24.2 | -0.3 |
| | 20 – 24 | 21.9 | 21.9 | 0.0 |
| | 25 – 29 | 17.5 | 16.5 | -1.0 |
| | 30 – 34 | 11.3 | 13.6 | 2.3 |
| | 35 – 39 | 10.8 | 9.4 | -1.4 |
| | 40 – 44 | 7.9 | 7.8 | -0.1 |
| | 45 -49 | 6.1 | 6.6 | 0.5 |
| | **Total** | **100.0** | **100.0** | |
| **Marital Status** | Never Married | 27.7 | 27.0 | -0.7 |
| | Married | 56.3 | 56.4 | 0.1 |
| | Living Together | 4.8 | 1.4 | -3.4 |
| | Divorced/Separated | 3.5 | 7.7 | 4.2 |
| | Widowed | 4.2 | 7.5 | 3.3 |
| | Not Living Together | 3.5 | - | - |
| | **Total** | **100.0** | **100.0** | |
| **Residence** | Urban | 38.6 | 39.3 | 0.7 |
| | Rural | 61.4 | 60.7 | -0.7 |
| | **Total** | **100.0** | **100.0** | |
| **Province** | Manicaland | 14.9 | 11.7 | -3.2 |
| | Mashonaland Central | 8.1 | 9.3 | 1.2 |
| | Mashonaland East | 7.8 | 8.0 | 0.2 |
| | Mashonaland West | 9.5 | 9.3 | -0.2 |
| | Matabeleland North | 5.2 | 6.0 | 0.8 |
| | Matabeleland South | 5.4 | 4.9 | -0.5 |
| | Midlands | 12.5 | 13.4 | 0.9 |
| | Masvingo | 10.7 | 12.8 | 2.1 |
| | Harare | 18.2 | 16.8 | -1.4 |
| | Bulawayo | 7.7 | 7.8 | 0.1 |
| | **Total** | **100.0** | **100.0** | |
| **Education** | No Education | 6.7 | 4.3 | -2.4 |
| | Primary | 40.2 | 32.6 | -7.6 |
| | Secondary | 50.3 | 60.1 | 9.8 |
| | Higher | 2.8 | 3.0 | 0.2 |
| | **Total** | **100.0** | **100.0** | |
| **Employment** | Employed | 49.4 | 43.5 | -5.9 |
| | Not Employed | 50.6 | 56.5 | 5.9 |
| | **Total** | **100.0** | **100.0** | |

$n_{1999}$ = 5,907 and $n_{2005}$ = 8,907

## 4.3. Fertility Levels and Trends

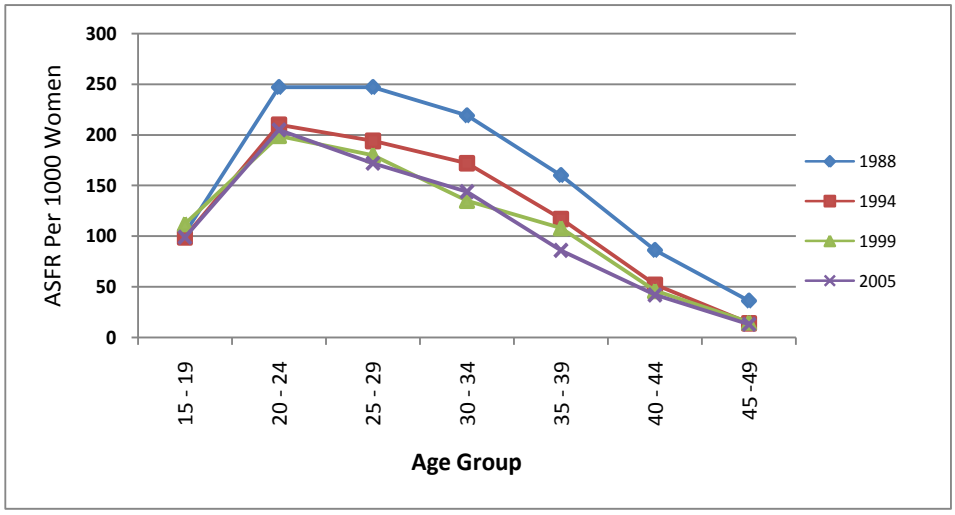
Several studies have confirmed that fertility decline is already underway in Zimbabwe. Table 4.2and Figure 4.1show the trends in current fertility rates based on successive ZDHSs from 1988 to2005. ASFRs are useful in understanding the age patterns of fertility. The plot of the ASFRs in Figure 4.1 shows that the ASFRs were low for the age group 15 to 19 years; reached a peak for the age group 20 to 24 years, and started to decline after age 25 in both surveys. Results in Table 4.2clearly show that, most of the fertility decline was by the 35to39 age cohort. ASFR declined in nearly all the age groups, except for 20to24 and 30 to 34 age groups. The highest decline in ASFR of 20 percent from 108 in 1999 to 86 in 2005was recorded in the 35 to 39 age group in the 1999 and 2005 ZDHSs respectively. Age group 30 to 34 recorded the highest increase in ASFR by 7 percent from 135 to 144 per thousand women. However ASFRs remain high in the 20 to 34 age cohort.

**Table 4.2: Trends in Current ASFRs/1000 Women in Zimbabwe**

| Age Group | ZDHS | | | | Percentage Change |
|---|---|---|---|---|---|
| | 1988 | 1994 | 1999 | 2005 | 1999 - 2005 |
| **15 - 19** | 103 | 99 | 112 | 99 | -11.6 |
| **20 - 24** | 247 | 210 | 199 | 205 | 3.0 |
| **25 - 29** | 247 | 194 | 180 | 172 | -4.4 |
| **30 - 34** | 219 | 172 | 135 | 144 | 6.7 |
| **35 - 39** | 160 | 117 | 108 | 86 | -20.4 |
| **40 - 44** | 86 | 52 | 46 | 42 | -8.7 |
| **45 -49** | 36 | 14 | 15 | 13 | -13.3 |
| **TFR** | **5.5** | **4.3** | **4.0** | **3.8** | **-5.0** |

$n_{1988}$ = 4,201, $n_{1994}$ = 6,128, $n_{1999}$ = 5,907 and $n_{2005}$ = 8,907

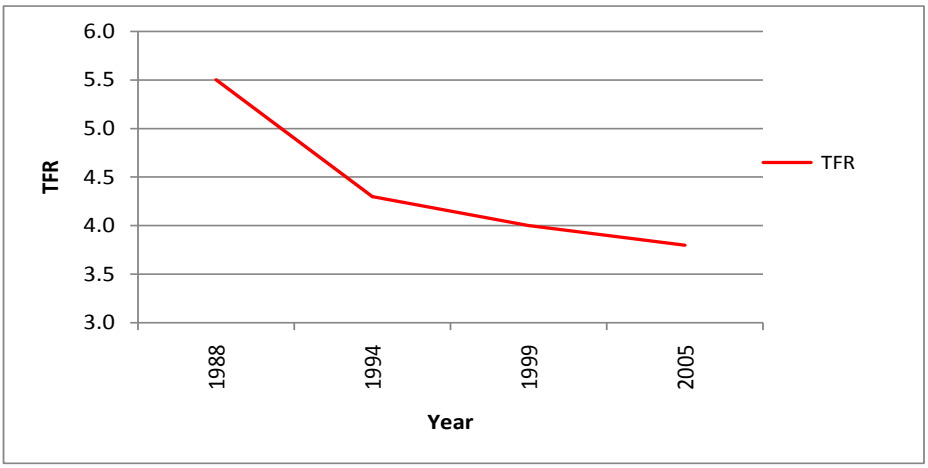
**Figure 4.1: ASFRs by Age Group in Zimbabwe**




$n_{1988}$ = 4,201, $n_{1994}$ = 6,128, $n_{1999}$ = 5,907 and $n_{2005}$ = 8,907

Figure 4.2 shows the trend in current fertility from 1988 to 2005. TFR rapidly declined between 1988 and 1994, from 5.5 to 4.3; and from then it gradually declined to the current 3.8. TFR declined by 5 percent from 4 in 1999, to 3.8 in 2005, which however is a marginal decline.

**Figure 4.2: Current Fertility Trends in Zimbabwe**




$n_{1988}$ = 2,643, $n_{1994}$ = 6,128, $n_{1999}$ = 5,907 and $n_{2005}$ = 8,907

Rural women generally record higher ASFRs than their counterparts in urban areas. Table 4.3 shows ASFRs by rural – urban residence for 1999 and 2005.Urban ASFRs realised the highest declines as compared to the rural ASFRs resulting in the decline of TFR in urban, and an increase of TFR in the rural, between 1999 and 2005. The highest decline in ASFR

of 78 percent in the urban was in the age group 40 – 44 years, while in the rural it was 13 percent in the age group 35 to 39 years, between 1999 and 2005.

Rural women posted the highest increase of 11 percent in ASFR in the age group 20 to 24 years, while the urban recorded the highest increase of 29 percent in the age group 30 to 34 years between 1999 and 2005.

**Table 4.3: ASFRs and TFRs by Rural-Urban Residence in Zimbabwe**

| Age Group | 1999 | | 2005 | | Percentage Change | |
|---|---|---|---|---|---|---|
| | Urban | Rural | Urban | Rural | Urban | Rural |
| **15 - 19** | 93 | 125 | 70 | 120 | -24.7 | -4.0 |
| **20 - 24** | 170 | 224 | 147 | 248 | -13.5 | 10.7 |
| **25 - 29** | 147 | 202 | 130 | 198 | -11.6 | -2.0 |
| **30 - 34** | 87 | 161 | 112 | 164 | 28.7 | 1.9 |
| **35 - 39** | 68 | 128 | 51 | 111 | -25.0 | -13.3 |
| **40 - 44** | (27) | (54) | 6 | 59 | -77.8 | 9.3 |
| **45 -49** | * | * | 0 | 17 | | |
| **TFR** | 2.96 | 4.47 | 2.60 | 4.50 | -12.16 | 0.67 |

$n_{1999}$ = 5,907 and $n_{2005}$ = 8,907

*Rates in parentheses are based on 125-249 women-years of exposure
An asterisk indicates that the rate is based on less than 125 women-years of exposure and has been suppressed

It is important to disaggregate TFR by background variables so as to understand the variations in levels according to these categories. Table 4.4 shows fertility by rural-urban residence, province, and level of education for 1999 and 2005. TFRs were generally higher in rural than urban areas in both surveys. Rural TFR increased slightly by 1 percent from 4.47 in 1999 to 4.5 in 2005. However there was decline in TFR in urban areas by more than 12 percent, from 2.96 in 1999 to 2.6 in 2005.

**Table 4.4: Fertility by Background Characteristics in Zimbabwe**

| | | TFR | | Percentage Change |
|---|---|---|---|---|
| | | 1999 | 2005 | |
| **Residence** | Urban | 2.96 | 2.60 | -12.16 |
| | Rural | 4.57 | 4.60 | 0.66 |
| | Total | 4.00 | 3.80 | -5.00 |
| | | | | |
| **Province** | Manicaland | 4.68 | 4.20 | -10.26 |
| | Mashonaland Central | 4.86 | 4.60 | -5.35 |
| | Mashonaland East | 4.15 | 3.70 | -10.84 |
| | Mashonaland West | 4.10 | 3.70 | -9.76 |
| | Matabeleland North | 4.10 | 4.20 | 2.44 |
| | Matabeleland South | 4.81 | 4.00 | -16.84 |
| | Midlands | 4.05 | 4.20 | 3.70 |
| | Masvingo | 3.94 | 4.90 | 24.37 |
| | Harare | 2.98 | 2.50 | -16.11 |
| | Bulawayo | 2.98 | 2.30 | -22.82 |
| | | | | |
| **Education** | No Education | 5.21 | 5.80 | 11.32 |
| | Primary | 4.48 | 4.50 | 0.45 |
| | Secondary | 3.41 | 3.30 | -3.23 |
| | Higher | 1.87 | 2.70 | 44.39 |

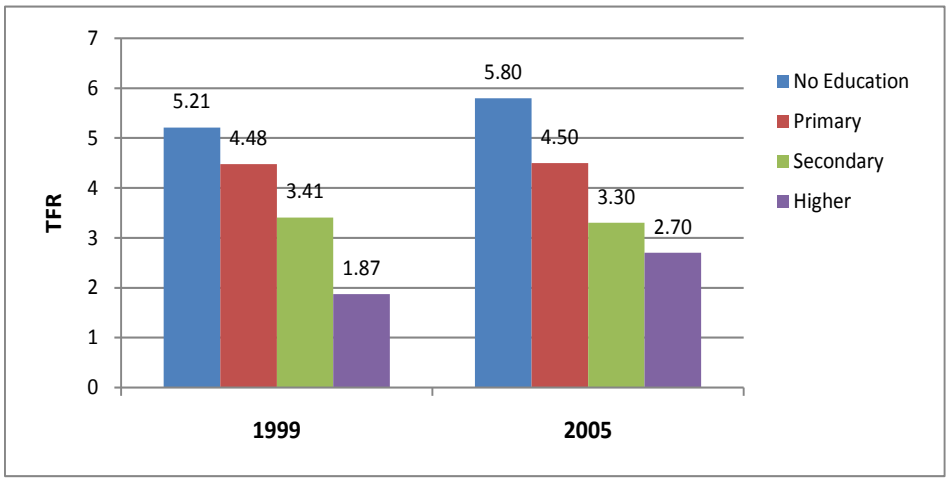
$n_{1999}$ = 5,907 and $n_{2005}$ = 8,907

Masvingo, Midlands and Matabeleland North provinces are the only provinces that recorded increases in TFR during the period under study. Masvingo province recorded the highest TFR of 4.9 in 2005 with an increase of 24 percent from 3.94 in 1999. Mashonaland Central province is second highest, with TFR of 4.6 in 2005 regardless of its decline by 5 percent from 4.86 in 1999. On the other hand, Bulawayo recorded the highest decline in TFR of 23 percent from 2.98 in 1999 to 2.3 in 2005, and the province remains with the lowest TFR in the country. Harare province is placed second lowest with TFR of 2.5 in 2005, a decline by 16 percent from 2.98 in 1999. It is prudent to note that regardless of high TFRs in some provinces, fertility has been generally on the decline in these provinces indicating the shift from the traditional large families to smaller families.

Several studies have documented the inverse relationship between fertility and level of education. Educational attainment is said to be closely linked to a woman's fertility. The higher the education level of a woman, the lower the TFR. Figure 4.3 shows the current fertility levels by education level for Zimbabwe for 1999 and 2005. Respondents without

formal education recorded more than double the TFR for those with higher education; 5.8 against 2.7 in 2005. Although the higher education category recorded the lowest TFR, it realised the highest increase in TFR of 44 percent from 1.87 in 1999 to 2.7 in 2005. Figure 4.3 shows differentials in TFR by education level for 1999 and 2005.

**Figure 4.3: Percentage Distribution of Current Fertility by Education Level in Zimbabwe**




$n_{1999}$ = 5,907 and $n_{2005}$ = 8,907

It would seem as if FGDs are supporting the role of education in fertility decline for the past years. A common response to the question concerning the ideal number of children was the prevailing economic environment in the country, which the respondents described as not conducive for supporting large families. The consensus was that, couples need to have families that they can provide for, under external shocks such as drought and economic recession. A discussant, supported by the group remarked:

> *We should have fewer children these days because the cost of living is very high and getting higher each day we wake up. Couples may even fail to educate their children in future because of the ever sky-rocketing costs of living. Children from poor families may end up wearing tattered clothes and eventually become street kids. Also jobs are difficult to find, that parents may end up being loafers failing to care for even themselves.*

Another discussant with support from the group remarked:

> *Nowadays the Zimbabwe economy has declined and cannot cater for larger families of children even with the introduction of multicurrency economy. Life now has*

*become expensive and a small family is manageable in terms of upbringing children, their education, and accommodation; for us who are lodgers e.t.c.*

Another discussant supported:

*It is no longer easy to work for a large family due to the economic hardships. A small family enables parents to feed, clothe and educate the children.*

Virtually, all participants thought that the economic situation was a determining factor for desired family size and that, it has imposed some limiting influence to their family size preferences. Participants from the FGDs also cited children as security for the parents at old age, and security for the mother against the father's relatives.

*It is a natural thing to have children. So that life will continue on earth since other people will be dying. And for parents to have at least someone to look after them when they are old.*

Still another opinion supported by the group along the same line goes:

*Children secure their mother's place amongst their father's people. Their mother cannot be easily sacked out by their father's people when these children are still alive.*

Another discussant, with the support of the group remarked:

*That number (two) is economically manageable. If it was not for the fear of death nekusurukirwa kwemwana one ari ega (loneliness of a single child in the family), one child would have been enough. Our fathers used to have large families because children provided labour for agricultural production on the land and during that time a large family would be suitable for chieftainship. Who wants to be a chief or sabhuku (headman) nowadays?*

Most respondents frowned at suggestions of having larger families, ever pointing out that the numbers of children their parents had, were no longer practical these days given the difficult economic environment families are now operating under, and the shift from the need for quantity to quality of children. It is interesting to note that, most of the respondents desired to take their children to a better school than the ones they attended themselves.

The concept of a large family revolved around 5 and this was said to be completely out of sync with present day economic reality and modernisation. As the group supported another discussant:

> *It is now impractical to have the same number of children as my parents, who averaged seven children. Imagine; I have a career, a full time husband and other things to take care of. There is no way I could afford to go on maternity leave seven times and still have time to care for everything. Moreover it's so embarrassing in the modern community to have a flock of kids. Times have changed.*

In Zimbabwe's patriarchal society, older family members have the potential to play an important role in decision making on family size. In summary, the respondents' attitudes towards large families was negative and they sounded really geared up to stand for smaller families, never mind the pressures for larger families exerted by their family members or in-laws as another discussant remarked:

> *They (relatives) must get out of this issue because at the end of the day it is the couple alone to look after the kids. Vanhu vakadai havana kana chimwe chavanokuyamura nacho pakurera mhuri yako. (Such people (in-laws who demand large families) will never help you (the couple) to look after your children). As long as my husband and I agree on our family size whoever says whatever about that is wasting time. Ndinoamwa mapiritsi kusvika zvanaka kana kutonoisa implant chaiyo. (I will take the family planning pills to the end or will opt to have an implant instead).*

## 4.4. Proximate Determinants of Fertility

### 4.4.1. Marriage Patterns

Marriage is a primary indication of the exposure of women to the risk of pregnancy and therefore, is important for the understanding of fertility. Table 4.5 shows the current marital status of women by age group for 1999 and 2005. The proportion of married women is lowest in the age group 15 to 19 years and increases to a peak in the age group 30 to 34 years, then slightly declines until the age group 45 to 49 years, for both surveys (Table 4.5). Marriage is thus, nearly universal in Zimbabwe. The proportion of never married women is highest in the age group 15 to19 years and declines to its lowest in the age group 45 to 49 years for both surveys.

Overall, the proportion of the married women remained constant at 56 percent between 1999 and 2005. Increases in proportion of married women were observed in the age groups 15 to 34 years (1 percent), 20 to 24 years (3 percent), and 25 to 29 years (4 percent) between 1999 and 2005. Declines were recorded in the age groups 35 to 39 years (8 percent), 40 to 44 years (9 percent) and 45 to 49 years (5 percent) between 1999 and 2005. Table 4.5 shows that, the percentage of never married women is declining with age, while that of married women is increasing with age. However, the picture described above also shows a delay in marriage, hence increased age at first marriage.

**Table 4.5: Percentage Distribution for Current Marital Status for Women in Zimbabwe**

| Age | 1999 | | | | 2005 | | | | Percentage Point Change | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Never Married | Married | Other | Total | Never Married | Married | Other | Total | Never Married | Married |
| 15 - 19 | 77.3 | 19.2 | 3.5 | 100.0 | 76.2 | 20.2 | 3.6 | 100.0 | -1.1 | 1.0 |
| 20 - 24 | 28.1 | 56.8 | 15.1 | 100.0 | 28.4 | 59.5 | 12.1 | 100.0 | 0.3 | 2.7 |
| 25 - 29 | 9.8 | 71.0 | 19.2 | 100.0 | 9.0 | 74.7 | 16.3 | 100.0 | -0.8 | 3.7 |
| 30 - 34 | 3.9 | 74.9 | 21.2 | 100.0 | 3.5 | 75.3 | 21.3 | 100.0 | -0.4 | 0.4 |
| 35 - 39 | 2.7 | 72.9 | 24.4 | 100.0 | 3.0 | 65.1 | 31.9 | 100.0 | 0.3 | -7.8 |
| 40 - 44 | 1.6 | 76.6 | 21.8 | 100.0 | 0.6 | 68.0 | 31.4 | 100.0 | -1.0 | -8.6 |
| 45 -49 | 0.6 | 70.9 | 28.5 | 100.0 | 0.9 | 66.4 | 32.7 | 100.0 | 0.3 | -4.5 |
| TOTAL | 27.7 | 56.3 | 16.0 | 100.0 | 27.0 | 56.3 | 16.7 | 100.0 | -0.7 | 0.0 |

$n_{1999}$ = 5,907 and $n_{2005}$ = 8,907

From the various opinions expressed regarding marriage and having children in the FDGs, the recurrent theme was the universality of marriage and the almost constant expectation of society and the family; that the newly married should have a child within the shortest possible time. A discussant, supported by the focus group remarked:

> *Marriage should be universal, everyone should have his or her own spouse, and otherwise there would be chaos in society. (Probe: What chaos?) You know, tsvimborume dzinonetsa (senior bachelors are a big problem). They will end up raping our wives, children and mothers. Wherever possible, everyone should marry to keep the order in society.*

Another participant also supported the idea of universal marriage:

*Oh, yes, everyone should marry, otherwise what would you do? Sexually one should have his or her own partner exclusively. You can't hop from one sex partner to another all your life like a bull in the grazing land. It's socially unacceptable.*

Another discussant also echoed:

*Yes, everyone should marry by a certain age. Otherwise unopomba (you commit adultery) and that's not acceptable to any family. Zvinonyadzisa mhuri yako (it embarrasses your family) to be seen flirting around with everyone when you are fully-grown up and should be married to a particular man.*

#### 4.4.1.1. Age at First Marriage

For most African societies, marriage marks the point in women's life when childbearing first becomes socially acceptable. Women who marry early will on average have a longer exposure to pregnancy, and a greater number of lifetime births. Information on age at first marriage was obtained by asking all ever-married respondents the month and year they started living together with their first spouse. Table 4.6 shows the ages at first marriage in years for women age 25 – 49 years by background characteristics for 1999 and 2005.

The age at first marriage in Zimbabwe increased from 18 years in 1988 to 19 years in 2005 as shown in Table 4.6. However, the age at first marriage remained constant at 19 years between 1999 and 2005. This trend suggests that, age at first marriage increased slightly between 1988 and 1999, before it stagnated in 2005.

**Table 4.6: Age at First Marriage (years) in Zimbabwe**

| **Residence** | **1999** | **2005** | **Percentage Change** |
|---|---|---|---|
| Urban | 20.0 | 20.1 | 0.5 |
| Rural | 18.8 | 18.8 | 0.0 |
| **TOTAL** | **19.3** | **19.3** | **0.0** |
| | | | |
| **Education** | **1999** | **2005** | **Percentage Change** |
| No Education | 17.8 | 17.7 | -0.6 |
| Primary | 18.5 | 18.2 | -1.6 |
| Secondary | 20.5 | 20.2 | -1.5 |
| Higher | 23.5 | 22.7 | -3.4 |

$n_{1999}$ = 3,166 and $n_{2005}$ = 4,803

Generally, women in urban areas tend to marry approximately a year later than women in the rural areas. Demographers worldwide have concluded the existence of a positive correlation between education, and the age at first marriage. The mean age at first marriage for women with no formal education remained at18 years between 1999 and 2005; compared to 23 years (2005), a decline from 24 years (1999) for women with higher education (Table 4.6). All educational categories observed declines in the mean age at first marriage, with the highest decline of 3 percent recorded in the higher education category, and the least decline of 1 percent in the no education category. However, with educational categories, generally the mean age at first marriage has remained virtually constant between 1999 and 2005.

Results from the FGDs showed that women are expected to marry younger than men in society. Women may seek to marry at a relatively young age in order to obtain the security associated with marriage and subsequent motherhood. Women are expected to get married once they are able to demonstrate maturity and ability to manage domestic affairs (Mhloyi, 1984). However, both men and women seem to be delaying marriage due to pursuit of educational goals.

The idea of not getting married at all or marrying late was rejected by all respondents. Failure to have a child early in marriage was viewed as embarrassing, especially to the wife's family. Female respondents in particular, tended to sound as though not having a child soon after marriage diminished their value in the eyes of the husband's family and society at large, as the following idea from the participants seems to portray;

> *I think society's expectations are not fair but come to think of it, even if as a couple you may decide to delay a little before your first child, what will your in-laws think about you? Your husband's friends and neighbours may not continue to respect you as someone's wife for ever unless they see you pregnant or carrying a baby on your back. Otherwise some of them will start treating you like a spinster and try to date you. Who wants this to happen to her?*

Discussants also pointed out that age at marriage had increased as compared to ten or more years ago, but women are expected to be married by the age of 22. Marrying has become expensive these days and, this together with the effect of education has resulted in delayed marriage as another discussant supported by the group remarked:

*Men and women are nowadays marrying late by more than five years as compared to ten years ago. Chikoro chakati kuuya ichi ndicho chasakisa kuti vana vanonoke kuroora nekuroorwa (prolonged period in attaining higher education levels has delayed marriage). Also, men are delaying marriage because they have to work under the harsh economic environment so as to raise resources to pay the bride-wealthy and look after the wife and the resulting family.Unomupei kana uri tsuro yemubhuku? (How will you fend for your wife and family if you do not have the adequate resources?).*

Recall bias may influence quality of reporting of age at marriage, particularly among older individuals. In most African societies, marriage is a long process and individuals may be unable to distinguish their age when the actual ceremony took place from that when bride-wealth was paid, and when the relationship begun. The biases identified in reporting of age at marriage may also be partially attributable to the change in the definition of a long-term relationship.

#### 4.4.1.2. Age at First Birth

In many countries, the postponement of first births has a contribution to an overall fertility change. Table 4.7 shows the ages at first birth by background characteristics for 1999 and 2005.

**Table 4.7: Age at First Birth (years) in Zimbabwe**

| | | 1999 | 2005 | Percentage Change |
|---|---|---|---|---|
| **Residence** | Urban | 20.50 | 20.70 | 0.98 |
| | Rural | 19.60 | 19.60 | 0.00 |
| | Total | 19.70 | 20.00 | 1.52 |
| | | | | |
| | | **1999** | **2005** | **Percentage Change** |
| **Education** | No Education | 18.80 | 18.80 | 0.00 |
| | Primary | 19.20 | 19.00 | -1.04 |
| | Secondary | 20.90 | 20.70 | -0.96 |
| | Higher | 24.00 | 23.70 | -1.25 |

$n_{1999}$ = 5,907 and $n_{2005}$ = 8,907

The overall mean age at first birth in Zimbabwe was 19 years in 1988 and 1994 surveys; however, the mean age remained constant at20 years between 1999 and 2005 (Table 4.7).

The age at first birth is generally higher for the rural than the urban women. The age at first birth remained unchanged in both rural and urban areas at 20and 21 years respectively, between 1999 and 2005 (Table 4.7). Although the broad measure has not changed significantly since 1999, more detailed analysis of trends in age at first birth does reveal a decline in early childbearing.

Mean age at first birth increases markedly with increasing level of education for both surveys; ranging from 19 to 24 years (Table 4.7). Those with higher educational levels delay first birth by more than five years as compared to their counterparts without any formal education in both surveys. However, there was a slight decline in mean age at first birth by about 1 percent across all levels of education except for those without formal education between 1999 and 2005.The no education category recorded the same age at first birth for both surveys.

FGDs supported the ZDHS findings as the groups generally agreed that married or non-married woman is expected to have a child of her own, by at most age 25 years because delaying in first birth is perceived to be associated with pregnancy complications. However, FGDs remarked that, age at first birth increased due to the time period spend while women are pursuing education to higher levels than before. The focus group supported the following remark:

> *A woman is expected to be married and have a child before she is 25 years old, otherwise anoshaya anomuroora akapedzisira aita vana vepanze (The woman will fail to get someone to marry her and she will end up having children without a responsible father). That's why they get married even when they are still studying at tertiary colleges for the fear of failing to ever get married. Varume havana pressure nokuti vanogona kungoroora anytime (Man can marry at any age, hence they do not have to worry).*

#### 4.4.1.3. Age at First Sexual Intercourse

Age at first marriage is generally used as a proxy for the beginning of exposure to risk of pregnancy. However, the two events may not occur at the same time. The age at which women initiate sexual intercourse more precisely, marks the beginning of their exposure to reproductive risks, given the fact that some women are sexually active before marriage. Table 4.8 shows the mean ages at first sexual intercourse by background variables for women in years.

Rural women tend to engage into first sexual intercourse early, by about a year than urban women. However, women in the urban maintained the mean age at first intercourse at 19 years between 1999 and 2005, whilst those in rural maintained it at 18 years. Overall, age at first sexual intercourse remained unchanged at 19 years between 1999 and 2005 (Table 4.8).

**Table 4.8: Age at First Sexual Intercourse (years) in Zimbabwe**

| | | 1999 | 2005 | Percentage Change |
|---|---|---|---|---|
| **Residence** | Urban | 19.3 | 19.3 | 0.0 |
| | Rural | 18.4 | 18.1 | -1.6 |
| | **Total** | 18.7 | 18.6 | -0.5 |
| | | | | |
| | | **1999** | **2005** | **Percentage Change** |
| **Education** | No Education | 17.3 | 16.8 | -2.9 |
| | Primary | 18.1 | 17.6 | -2.8 |
| | Secondary | 19.7 | 19.4 | -1.5 |
| | Higher | 21.8 | 21.8 | 0.0 |

$n_{1999}$ = 3,166 and $n_{2005}$ = 4,803

Education level and age at first sexual intercourse generally have a positive linear relationship, ranging from 17 to 22 years (Table 4.8); the higher the education level, the higher the age at first sexual intercourse in both surveys. Women without formal education recorded a much lower mean age at first intercourse (18 in 1999 and 17 years in 2005); than women with higher education (22 years in both 1999 and 2005) (Table 4.8). All educational categories, except for higher education, recorded declines in the mean age at first intercourse. Women without formal education recorded the highest decline of 3 percent; whilst those in the higher education category retained the same level at 22 years between 1999 and 2005.

#### 4.4.1.4. Birth Interval

Information on length of birth intervals provides insight into birth spacing patterns, which affect fertility. Table 4.9shows the median number of months since preceding birth, according to background characteristics for non-first births for 1999 and 2005.

**Table 4.9: Percentage Distribution of Number of Months Preceding Birth in Zimbabwe**

| | | 1999 | 2005 | Percentage Change |
|---|---|---|---|---|
| **Residence** | Urban | 43.4 | 47.1 | 8.53 |
| | Rural | 38.9 | 40.4 | 3.86 |
| | TOTAL | 39.9 | 41.6 | 4.26 |
| | | | | |
| | | **1999** | **2005** | **Percentage Change** |
| **Education** | No Education | 38.9 | 42.5 | 9.25 |
| | Primary | 40.1 | 40.4 | 0.75 |
| | Secondary | 39.5 | 42.7 | 8.10 |
| | Higher | NA | 48.7 | NA |

NA = Not Applicable

$n_{1999}$ = 2,377 and $n_{2005}$ = 3,567

The mean birth interval for Zimbabwe in 2005 was 42 months, a marginal increase by 4 percent from 40 months in 1999 (Table 4.9). Mean birth intervals are generally higher in urban areas than in rural areas, although increases were recorded in both areas between 1999 and 2005. The mean birth interval for the rural increased by 4 percent, from 39 months in 1999 to 40 months in 2005; while the mean birth interval in the urban notably increased by 9 percent, from 43 months in 1999 to 47 months in 2005 (Table 4.9).

By education level, those with primary education and secondary education had the same birth interval of 40 months (Table 4.9). However, the pattern had changed in2005 with those with secondary and without formal education, both scoring the longest median birth interval of 43 months. There was an average increase in birth interval of 9 percent from 39 months in 1999 to 43 months in 2005 for those without formal education. This category was followed by secondary education which recorded an increase of8 percent from 40 months in 1999 to 43 months in 2005.

The general increase in birth intervals is also supported by findings from the FDGs, where participants agreed that birth intervals whereon the increasing, owing to the wide acceptance of contraception. Discussants also agreed that birth intervals were generally longer in urban than in the rural, due to better accessibility of contraceptives in the urban. A discussant, supported by the group remarked:

*Family planning inonyanyowanikwa kutown (more accessible in bigger towns) than in rural areas which makes birth spacing longer in the urban than rural. Vakadzi vakadzidza ndiwo wanowanzofarira kushandisa family planning nokuti havabvunzwe nevarume wavo (more educated women like using family planning more because their husbands do not question them).*

#### 4.4.1.5. Polygyny

Polygyny is the practice of having more than one wife. It has implications on the frequency of exposure to sexual activity, therefore an important variable in fertility analysis. The extent of polygyny in Zimbabwe was measured by asking all currently married female respondents: "Besides yourself, how many other wives does your husband have?" Table 4.10 shows the number of co-wives and wives for married women by background variables.

**Table 4.10: Percentage Distribution of Number of Co-wives in Zimbabwe**

| | 1999 | | | | | 2005 | | | | | Percentage Points Change | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Residence** | **0** | **1** | **2+** | **Missing** | **Total** | **0** | **1** | **2+** | **Missing** | **Total** | **0** | **1** | **2+** |
| Urban | 92.4 | 6.7 | 0.6 | 0.3 | 100.0 | 89.0 | 3.7 | 1.3 | 6.0 | 100.0 | -3.4 | -3.0 | 0.7 |
| Rural | 80.0 | 14.7 | 5.1 | 0.2 | 100.0 | 81.4 | 9.1 | 5.6 | 3.9 | 100.0 | 1.4 | -5.6 | 0.5 |
| Total | 84.5 | 11.9 | 3.5 | 0.1 | 100.0 | 83.9 | 7.2 | 4.2 | 4.7 | 100.0 | -0.6 | -4.7 | 0.7 |
| | | | | | | | | | | | | | |
| | 1999 | | | | | 2005 | | | | | Percentage Points Change | | |
| **Education** | **0** | **1** | **2+** | **Missing** | **Total** | **0** | **1** | **2+** | **Missing** | **Total** | **0** | **1** | **2+** |
| No Education | 69.8 | 20.2 | 9.2 | 0.8 | 100.0 | 67.7 | 19.2 | 9.1 | 4.0 | 100.0 | -2.1 | -1.0 | -0.1 |
| Primary | 81.6 | 14.0 | 4.2 | 0.2 | 100.0 | 81.4 | 8.6 | 6.1 | 3.9 | 100.0 | -0.2 | -5.4 | 1.9 |
| Secondary | 89.8 | 8.4 | 1.7 | 0.1 | 100.0 | 86.9 | 5.5 | 2.7 | 4.9 | 100.0 | -2.9 | -2.9 | 1.0 |
| Higher | 95.1 | 4.9 | 0.0 | 0.0 | 100.0 | 90.2 | 1.5 | 0.0 | 8.3 | 100.0 | -4.9 | -3.4 | 0.0 |

$n_{1999}$= 3,609 and $n_{2005}$= 5,143

For the period under study, the majority of married women were in monogamous unions (84 percent in 2005 and 85 percent in 1999); while 11 percent (2005) and 15 percent (1999) were in polygamous unions (Table 4.10). Between 1999 and 2005, polygyny declined by 4 percentage points, and the proportion of women in monogamous union also declined by 1 percentage point. Rural women are almost three times as likely to be in polygamous union as their urban counterparts (15 percent rural compared to 5 percent urban for 2005, and 7 percent rural compared to 20 percent urban in 1999) (Table 4.10).

For any country on the road to modernisation, there exists an inverse relationship between education and polygyny; and Zimbabwe is no exception. A higher proportion of women without formal education reported being in unions with co-wives, compared to women with higher education. The proportion of women without formal education in polygamous union declined from 29 percent in 1999 to 28 percent in 2005, while the proportion for those with higher education declined from 5 percent in 1999 and 2 percent in 2005 (Table 4.10). However, the proportion of women in polygamous unions declined in all education level categories between 1999 and 2005, with highest decline by 4 percentage points in the primary education category; and least decline by1 percentage point in the no education category.

### 4.4.2. Contraception

A primary concern in developing countries, including Zimbabwe, is the formulation of sound policies that will bring about socio-economic development. Development planning and population planning are closely linked. The All Africa Parliamentary Conference on Population and Development (AAPCPD) in 1986, pointed out that, the high population growth rate is frustrating "the achievement of Africa's economic and social goals in the areas of food and agriculture, environment, health, mortality and fertility, education, employment and migration" (Mhloyi, 1986a). The parliamentarians called for the introduction of development and family planning programmes.

#### 4.4.2.1. Knowledge of Contraceptive Methods

Knowledge of family planning methods is almost universal in Zimbabwe meaning that women in the country have information about birth regulation and planning families. Table 4.11 shows the trends in knowledge of contraceptive methods by background characteristics and method.

**Table 4.11: Percentage Distribution of Knowledge of Contraceptive Methods in Zimbabwe**

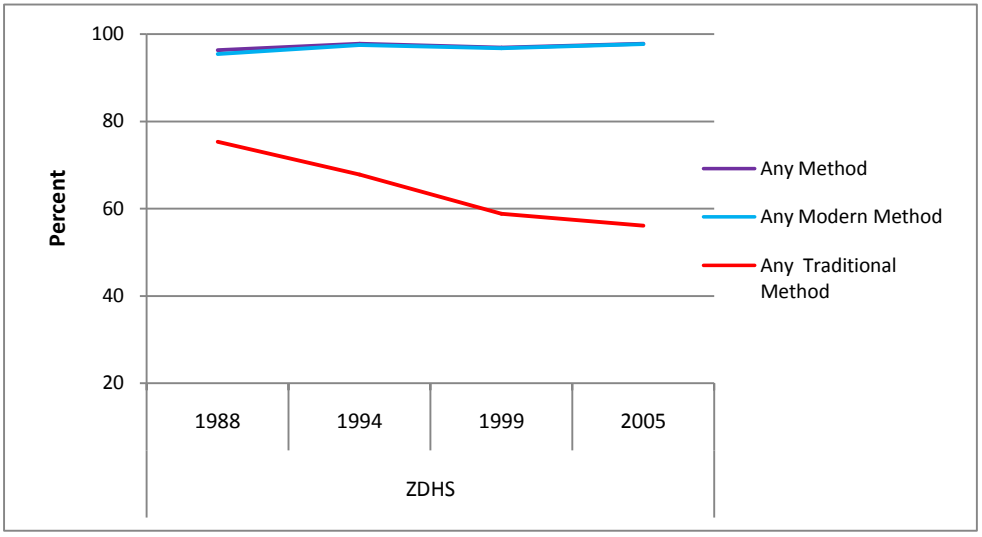
| | | 1999 | 2005 | Percentage Points Change |
|---|---|---|---|---|
| **Method** | Any Method | 96.9 | 97.8 | 0.9 |
| | Any Modern Method | 96.7 | 97.7 | 1.0 |
| | Any Traditional Method | 58.8 | 56.1 | -2.7 |
| | | n=5,907 | n=8,907 | |
| **Knowledge of Method of Contraception by Background Characteristics** | | | | |
| | | | | |
| **Residence** | | **1999** | **2005** | **Percentage Points Change** |
| | Urban | 99.7 | 99.8 | 0.1 |
| | Rural | 98.2 | 99.1 | 0.9 |
| | **Total** | 98.7 | 99.3 | 0.6 |
| | | | | |
| **Education** | | **1999** | **2005** | **Percentage Points Change** |
| | No Education | 95.8 | 98.6 | 2.8 |
| | Primary | 98.7 | 98.9 | 0.2 |
| | Secondary | 99.3 | 99.7 | 0.4 |
| | Higher | 100.0 | 100.0 | 0.0 |
| | $n_{1999}$= 3,609 and $n_{2005}$= 5,143 | | | |

The level of knowledge of at least a method of contraception among all women is almost universal in 2005 at 98 percent, compared to 97 percent in 1999 (Table 4.11). Knowledge of at least one modern method is also high among women, reaching 98 percent in 2005 from 97 percent in 1999. However, it is important to note that the changes in the levels of knowledge of family planning methods are almost all marginal. Overall, few women have knowledge of traditional methods of contraception, declining from 59 percent to 56 percent between 1999 and 2005 (Table 4.11).

The urbanites generally have higher proportions of women who know at least one method of contraception than the rural women. However, the proportion of women who know at least one method of contraception increased by 1 percentage point for the rural from 98 in 1999 to 99 percent in 2005, while that for the urbanites remained constant at almost 100 percent for both surveys. It is also important to note that the overall proportion of women who know at least one method of contraception remained almost constant between 1999 and 2005 at 99 percent.

Education is generally believed to have a positive linear correlation with contraception. Knowledge of at least one method of contraception increases with education level, but the differences across the education categories are not significant. There were no major changes in the levels of knowledge of contraception across education levels between 1999 and 2005, except for the no education category which realised a 3 percentage point increase from 96 percent in 1999 to 99 percent in 2005. Figure 4.4 shows the trends in knowledge of contraception from 1988 to 2005.

**Figure 4.4: Percentage Distribution of Trends in Knowledge of Contraceptive Methods in Zimbabwe**




$n_{1988}$ = 2,643, $n_{1994}$= 6,128, $n_{1999}$= 5,907and $n_{2005}$= 8,907

Women in Zimbabwe, on average know seven family planning methods in both surveys. Oral contraception, injectables and condoms are the family planning methods most widely known by women. Table 4.12 shows knowledge of family planning methods for 1999 and 2005 for all women. The knowledge of female condom among women increased by 12 percentage points, from 57 percent in 1999 to 69 percent in 2005. However, knowledge of implants recorded the highest increase of 19 percentage points, from 25 percent in 1999 to 44 percent in 2005 (Table 4.12). The knowledge of the male condom is high, and increased between 1999 and 2005 from 92 to 94 percent. The male condom is most widely used for its multi-purpose function as contraception and prevention against HIV and STIs.

The least known method of contraception was the Emergency Contraception in both surveys, although the proportion of women who know this method increased from 11 percent in 1999 to 15 percent in 2005. Major declines in knowledge of contraception were observed in the IUD (7 percent), Female sterilisation (12 percent), Male sterilisation (6 percent) and, Lactational Amenorrhoea Method (LAM) (6 percent) (Table 4.12).

**Table 4.12: Percentage Distribution of Knowledge of Contraceptive Method in Zimbabwe**

| METHOD | Percent | | Percentage Point Change |
|---|---|---|---|
| | 1999 | 2005 | |
| Pill | 94.7 | 94.7 | 0.0 |
| IUD | 63.8 | 56.6 | -7.2 |
| Injectables | 86.4 | 89.1 | 2.7 |
| Implants | 24.8 | 43.6 | 18.8 |
| Male Condom | 92.2 | 94.0 | 1.8 |
| Female Condom | 57.4 | 69.4 | 12.0 |
| Diaphragm | 20.2 | NA | NA |
| Foam/Jelly | 11.9 | NA | NA |
| Female Sterilisation | 58.1 | 46.6 | -11.5 |
| Male Sterilisation | 38.8 | 33.3 | -5.5 |
| LAM | 30.4 | 24.5 | -5.9 |
| Emergency Contraception | 11.2 | 15.1 | 3.9 |
| Periodic Abstinence | 27.1 | 26.7 | -0.4 |
| Withdrawal | 51.7 | 50.8 | -0.9 |
| Mean Number of Methods Known | 6.8 | 6.5 | |

NA = Not Applicable

$n_{1999}$ = 5,907 and $n_{2005}$ = 8,907

Surveys have documented a steady increase in the knowledge of family planning methods among all women in Zimbabwe. Since 1984, knowledge of family planning methods has been on increase, and became nearly universal in 1988. The high level of knowledge of contraception has been maintained over the past years. It is also important to note the significant decline in knowledge of traditional methods of family planning between 1988 and 2005.

#### 4.4.2.2. Ever Use of Contraceptive Methods

One usual characteristic of family planning is the gap between use and knowledge of family planning methods, with the later dominating; hence a concern to policy makers. Table 4.13 shows the ever use of contraception for women and men in 1999 and 2005.

Overall, there was an increase by 5 percentage points in ever use of modern method of contraception from 61 percent to 66 percent between 1999 and 2005. However, currently married women recorded an increase of6 percentage points from 79 percent in 1999 to 85 percent in 2005 (Table 4.13). Results show that, more than eight in every ten sexually active unmarried women have used a method of family planning at some time, with virtually all of them using a modern method in 1999 and 2005. It is prudent to note that the proportion of all women who ever used a traditional method of family planning declined by 4 percentage points while that for currently married also declined by 5 percentage points between 1999 and 2005. However the proportion of sexually active unmarried women who ever used a traditional contraceptive method increased by 3 percentage points between 1999 and 2005 (Table 4.13).

**Table 4.13: Percentage Distribution of Ever Use of Contraceptive Methods in Zimbabwe**

| **All Women** | | | |
|---|---|---|---|
| | **Percent** | | **Percentage Point Change** |
| | **1999** | **2005** | |
| Any Method | 63.6 | 67.0 | 3.4 |
| Any Modern Method | 60.8 | 65.6 | 4.8 |
| Any Traditional Method | 16.6 | 12.8 | -3.8 |
| | **n = 5,907** | **n = 8,907** | |
| **Currently Married Women** | | | |
| | **Percent** | | **Percentage Point Change** |
| | **1999** | **2005** | |
| Any Method | 83.0 | 87.2 | 4.2 |
| Any Modern Method | 79.3 | 85.2 | 5.9 |
| Any Traditional Method | 22.3 | 17.1 | -5.2 |
| | **n = 3,609** | **n = 5,143** | |
| **Sexually Active Unmarried Women** | | | |
| | **Percent** | | **Percentage Point Change** |
| | **1999** | **2005** | |
| Any Method | 81.0 | 84.0 | 3.0 |
| Any Modern Method | 79.8 | 82.9 | 3.1 |
| Any Traditional Method | 14.4 | 16.8 | 2.4 |
| | **n = 199** | **n = 191** | |

#### 4.4.2.3. Current Use of Contraceptive Methods

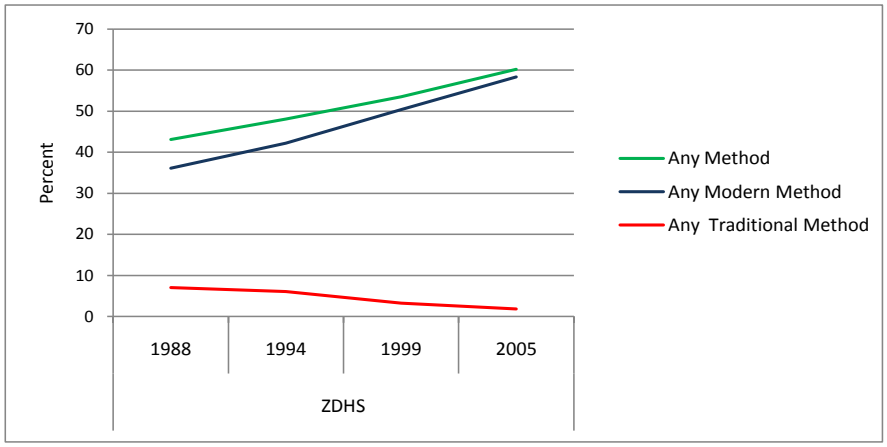
Levels in current use of contraception for women in Zimbabwe have been on the increase since 1988, except for the traditional methods. Table 4.14 shows the levels in current use of contraception for women for 1999 and 2005. The levels for use of modern contraceptive methods increased by 8 percentage points from 50 percent in 1999 to 58 percent in 2005. The current use of modern contraception by sexually, active unmarried women increased by 6 percentage points, from 54 percent to 60 percent between 1999 and 2005 (Table 4.14). However, current use of traditional contraception by all categories declined between 1999 and 2005, indicating the increase in awareness of the perceived dangers associated with use of traditional contraceptive methods.

**Table 4.14: Percentage Distribution of Current Use of Contraceptive Methods in Zimbabwe**

| All Women | | | |
|---|---|---|---|
| | Percent | | |
| | 1999 | 2005 | Percentage Point Change |
| Any Method | 37.7 | 40.1 | 2.4 |
| Any Modern Method | 35.6 | 39.1 | 3.5 |
| Any Traditional Method | 2.1 | 1.1 | -1.0 |
| | **n = 5,907** | **n = 8,907** | |
| **Currently Married Women** | | | |
| | Percent | | |
| | 1999 | 2005 | Percentage Point Change |
| Any Method | 53.5 | 60.2 | 6.7 |
| Any Modern Method | 50.4 | 58.4 | 8.0 |
| Any Traditional Method | 3.2 | 1.8 | -1.4 |
| | **n = 3,609** | **n = 5,143** | |
| **Sexually Active Unmarried Women** | | | |
| | Percent | | |
| | 1999 | 2005 | Percentage Point Change |
| Any Method | 55.3 | 61.2 | 5.9 |
| Any Modern Method | 53.5 | 60.2 | 6.7 |
| Any Traditional Method | 1.7 | 1.0 | -0.7 |
| | **n = 199** | **n = 191** | |

Figure 4.5 shows the trends in current use of contraception from 1988 to 2005. The proportion of women using modern contraception increased from 36 percent in 1988 to 58 percent in 2005. However, the current use of traditional contraception has declined over the years from 7 percent in 1988 to 1.8 percent in 2005. This generally indicates the shift from traditional to modern methods of contraception.

**Figure 4.5: Percentage Distribution of Trends in Current Use of Contraception by Married Women in Zimbabwe**




$n_{1988}$ = 2,643, $n_{1994}$ = 3,788, $n_{1999}$ = 3,609 and $n_{2005}$ = 5,143

#### 4.4.2.4. Current Use of Contraception by Background Characteristics

The current use of contraception provides an insight into one of the principal determinants of fertility, which also serves to assess the success of family planning programmes in any country. Table 4.15 shows the current use of contraception of all women by background characteristics.

Like many countries on the African continent, the use of contraception is generally higher in the urban than rural areas. During the period 1999 to 2005, both urban and rural areas realised increases in levels of current use of modern contraception except for the traditional methods which recorded a decline. Current use of modern contraception increased in the urban by 6 percentage points, from 62 percent in 1999 to 68 percent in 2005, while the rural posted an increase of 9 percentage points, from 44 percent in 1999 to 53 percent in 2005 (Table 4.15). Overall, current modern contraception use increased by 8 percentage points, from 50 percent in 1999 to 58 percent in 2005.

The proportion of women not currently using contraception has been on the decline in both rural and urban areas. The proportion declined in the urban from 37 percent in 1999 to 30 percent in 2005, while in rural the proportion declined from 52 percent to 45 percent in 2005 (Table 4.15).Overall, the proportion declined by 7 percentage points from 47 percent in 1999 to 40 percent in 2005. Studies have documented that education level and current use of modern contraception have a positive linear correlation; the higher the educational level, the higher the level of current use of modern contraception. However, the reverse is true for traditional methods of contraception in Zimbabwe for the period 1999 to 2005. This also explains how levels of understanding of family planning methods vary with respect to education levels.

Current contraception use among married women increases with level of education except for the traditional methods. Increases in current contraception use were recorded in primary, secondary and higher education subgroups between 1999 and 2005; with highest increase of 10 percentage points in the higher education level, from 66 percent in 1999 to 76 percent in 2005 for modern methods of contraception (Table 4.15). The no education category posted a decline of 5 percentage points from 35 percent in 1999 to 30 percent in 2005 in the use of modern contraception method. However, there was a general decline in the use of traditional contraceptive methods between 1999 and 2005.

**Table 4.15: Percentage Distribution of Current Use of Contraception by Married Women in Zimbabwe**

| Residence | 1999 | | | | 2005 | | | | Percentage Points Change | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Not Currently Using | Modern Method | Traditional Method | Total | Not Currently Using | Modern Methods | Traditional Methods | Total | Not Currently Using | Modern Methods | Traditional Methods |
| Urban | 36.9 | 61.8 | 1.3 | 100.0 | 30.2 | 68.3 | 1.5 | 100.0 | -6.7 | 6.5 | 0.2 |
| Rural | 51.8 | 43.9 | 4.3 | 100.0 | 44.6 | 53.4 | 2.0 | 100.0 | -7.2 | 9.5 | -2.3 |
| **Total** | 46.5 | 50.4 | 3.1 | 100.0 | 39.8 | 58.4 | 1.8 | 100.0 | -6.7 | 8.0 | -1.3 |

| Education | 1999 | | | | 2005 | | | | Percentage Points Change | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Not Currently Using | Modern Methods | Traditional Methods | Total | Not Currently Using | Modern Methods | Traditional Methods | Total | Not Currently Using | Modern Methods | Traditional Methods |
| No Education | 59.2 | 35.2 | 5.6 | 100.0 | 65.3 | 30.2 | 4.5 | 100.0 | 6.1 | -5.0 | -1.1 |
| Primary | 51.2 | 44.4 | 4.4 | 100.0 | 46.1 | 52.0 | 1.9 | 100.0 | -5.1 | 7.6 | -2.5 |
| Secondary | 39.8 | 58.9 | 1.3 | 100.0 | 34.0 | 64.6 | 1.4 | 100.0 | -5.8 | 5.7 | 0.1 |
| Higher | 31.0 | 65.6 | 3.4 | 100.0 | 21.6 | 75.6 | 2.8 | 100.0 | -9.4 | 10.0 | -0.6 |

$n_{1999}$= 3,609 and $n_{2005}$= 5,143

#### 4.4.2.5. Current Use of Contraception by Method

Overall, level of use of modern family planning methods is higher for sexually active unmarried women than for currently married women; and the most commonly used family planning methods are the pills and the injectables for both surveys. Table 4.16 shows contraception use by method for 1999 and 2005.The most commonly used family planning method is the pill, and its use increased by 7 percentage points, from 36 percent in 1999 to 43 percent in 2005. Second placed family planning method is the injectable which also realised a slight increase in use by 2 percentage points from 8 percent in 1999 to 10 percent in 2005.

Overall, the use of modern family planning methods is higher for sexually active unmarried women than for currently married women for both surveys. The difference largely lies in the use of the male condom; where 26 percent sexually active unmarried women relied on the male condom in 2005, and only 1 percent currently married women relied on the same method, in the same year. Tradition in Zimbabwe generally does not encourage the use of condoms for married couples, mainly for fear of infidelity. On the other hand, 21 percent sexually active unmarried women used the pill compared to 43 percent for currently married women in 2005. This pattern is similar for 1999, however female condom is virtually unused by women. The reliance on male condom by the sexually active unmarried women increased by 7 percentage points from 19 percent in 1999 to 26 percent in 2005.

According to the FGDs, discussants were familiar with contraception, and most of them commonly understood the general term for contraception to be synonymous with a method adopted once one's desired family size is reached or for child spacing. As one discussant, supported by the group remarked:

> *Contraceptives for married people are welcome and socially acceptable. I am sure a married woman or man can openly order pills or condoms in a pharmacy or supermarket without bothering who is noticing. But an unmarried woman or man will definitely have a hard time trying to be discrete about it. Why? They know that it is wrong and socially unacceptable that they indulge in sex before marriage, and the use of contraceptives is proof that they are into it.*

**Table 4.16: Percentage Distribution of Contraception Use by Method in Zimbabwe**

| | 1999 | | | 2005 | | | Percentage Points Change | | |
|---|---|---|---|---|---|---|---|---|---|
| | All Women | Currently Married | Sexually Active Unmarried | All Women | Currently Married | Sexually Active Unmarried | All Women | Currently Married | Sexually Active Unmarried |
| **Not Currently Using** | **62.3** | **46.5** | **44.7** | **59.9** | **39.8** | **38.8** | **-2.4** | **-6.7** | **-5.9** |
| **Any Method** | **37.7** | **53.5** | **55.3** | **40.1** | **60.2** | **61.2** | **2.4** | **6.7** | **5.9** |
| **Modern Methods** | **35.6** | **50.4** | **53.5** | **39.1** | **58.4** | **60.2** | **3.5** | **8.0** | **6.7** |
| Pill | 23.8 | 35.5 | 21.4 | 26.9 | 43.0 | 21.3 | 3.1 | 7.5 | -0.1 |
| IUD | 0.7 | 0.9 | 2.0 | 0.2 | 0.3 | 0.0 | -0.5 | -0.6 | -2.0 |
| Injectables | 5.9 | 8.6 | 7.7 | 7.2 | 9.9 | 11.1 | 1.3 | 1.3 | 3.4 |
| Implants | 0.4 | 0.5 | 0.0 | 0.8 | 1.2 | 0.0 | 0.4 | 0.7 | 0.0 |
| Male Condom | 2.3 | 1.8 | 19.3 | 2.0 | 1.4 | 26.3 | -0.3 | -0.4 | 7.0 |
| Female Condom | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Foam/Jelly | 0.0 | 0.0 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Female Sterilisation | 1.9 | 2.1 | 2.7 | 1.5 | 2.0 | 1.5 | 1.4 | -0.1 | -1.2 |
| Male Sterilisation | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | -0.1 | 0.0 | 0.0 |
| LAM | 0.6 | 0.9 | 0.0 | 0.4 | 0.5 | 0.0 | -0.2 | -0.4 | 0.0 |
| **Traditional Methods** | **2.1** | **3.1** | **1.8** | **1.0** | **1.8** | **1.0** | **-1.1** | **-1.3** | **-0.8** |
| Periodic Abstinence | 0.1 | 0.1 | 0.6 | 0.1 | 0.2 | 0.0 | 0.0 | 0.1 | -0.6 |
| Withdrawal | 1.6 | 2.6 | 0.0 | 0.7 | 1.2 | 0.5 | -0.9 | -1.4 | 0.5 |
| Folk Method | 0.0 | 0.0 | 0.0 | 0.2 | 0.4 | 0.5 | 0.2 | 0.4 | 0.5 |
| Other | 0.4 | 0.4 | 1.2 | 0.0 | 0.0 | 0.0 | -0.4 | -0.4 | -1.2 |
| **Total** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | | | |

$n_{1999}$= 3,609 and $n_{2005}$= 5,143

The use of female and male sterilisation is generally low in Sub-Sahara Africa (Caldwell and Caldwell 2002).According to ZDHS studies, male sterilisation will never play a significant role in Zimbabwe and female sterilisation only a limited one.The use of female sterilisation declined from 1.9 percent in 1999 to 1.5 percent in 2005 (Table 4.16). The method has for a long time been adopted at very low levels. The method is better accepted for women than for men in the community. Sterilisation was generally described as a method adopted once one's desired family size is reached, involving an operation that permanently stops further births. A discussant, with the support from the group remarked:

> *Sterilisation is done after we have our desired number of children.*

Another focus group discussant supported by the group remarked:

> *About sterilisation, I only know this much that by getting the operation (sterilisation) done, conception stops and children are not born afterwards.*

During the FGDs, men cited social (stigma) and cultural reasons for adopting female sterilisation instead of male sterilisation. Another discussant supported by the group remarked:

> *If I get it done (male sterilisation), people will laugh at me and say, 'Why are you doing the women's thing?*

Most men did not consider male sterilisation to be a feasible option. During the FGDs, when the moderator would try to begin a dialogue on male sterilisation, men would often steer the discussion toward female sterilisation.

> *Male sterilisation is...very unpopular. Due to inadequate information, people talk of various side effects of the method, like men become weak, men cannot do any heavy work, limbs become weak and painful, and men get cold and fever.*

Another supported response by discussants stated:

> *We are willing to get operated. But someone will have to give us complete information about the method, convince us that there will be no problems with it; that a man does not start lacking in anything [become impotent] after the operation.*

Men went on to state that male sterilisation is almost never discussed, either with women or men. *Why talk about male sterilisation when women are ready to get sterilised?* was a common response among discussants. This partly reflects the fact that, male sterilisation is not often brought up as an option by the local health workers.

Men's reasons for opting for female sterilisation were based mainly on social norms that assign the burden of family planning to women. Men claimed to be influenced by social, cultural and economic factors, as well as by peer pressure, to get their wives sterilised. One of these factors, according to men, is that women do not do labour-intensive work and mostly stay at home. In addition, men were apprehensive about male sterilisation, believing that it would lead to weakness, and worrying that something might go wrong during the procedure. Men feel that the sterilisation operation is easier to perform on women than on men, although vasectomy is in fact a safer and less invasive procedure than tubal sterilisation. Furthermore, men say that the predominance of female sterilisation results from lack of sufficient information about the options available.

During the FGDs, men indicated that women had better and more direct access to information through the clinic and hospital nurses. As a result, men sometimes viewed their wives as important sources of information on family planning, and they know how to regulate their fertilities. The pills, injectables, and implants were the most cited and favoured contraceptive methods during the discussions as confirmed by the surveys.

> *The nurses give information on family planning to the women only. Our wives sometimes discuss with us about what they learn from the nurses and together we agree on the use of the family planning method.*

Peer groups were also said to be another important sources of family planning information.

> *We get some information from our friends in the town. The one who knows, tells….Other people hear of it and then come and tell us, and we then tell some others, and so on.*

Furthermore, men in the focus groups cited television as important source of information, but also addressed their urgent need for more direct and personal contact with someone knowledgeable:

*Like you people have come, if people keep coming like this, give us information, we will get information and become aware….And if we have any problems or questions, we could ask them and you clarify everything.*

The current use of contraception among married women has increased steadily since 1988. Overall, CPR has increased by 17 percentage points from 43 percent in 1988 to 60 percent in 2005 as shown in Table 4.17. For the period 1999 to2005, CPR increased by 6 percentage points from 54 percent to 60 percent. The current use of modern contraception among married women also increased by 22 percentage points from 36 percent in 1988 to 58 percent in 2005. It is interesting to note the decline in current use of traditional methods of contraception from 7 percent in 1988 to 2 percent in 2005.

**Table 4.17: Percentage Distribution of Trends in Current Use of Contraception by Married Women in Zimbabwe**

| | ZDHS | | | |
|---|---|---|---|---|
| | **1988** | **1994** | **1999** | **2005** |
| **Not Currently Using** | **56.9** | **51.8** | **46.5** | **39.8** |
| **Any Method** | **43.1** | **48.1** | **53.5** | **60.2** |
| **Modern Method** | **36.1** | **42.2** | **50.4** | **58.4** |
| Pill | 31.0 | 33.1 | 35.5 | 43.0 |
| Injectables | 0.3 | 3.2 | 8.6 | 9.9 |
| Female Sterilisation | 2.3 | 2.2 | 2.1 | 2.0 |
| Male Condom | 1.2 | 2.3 | 1.8 | 1.4 |
| Implants | NA | 0.2 | 0.5 | 1.2 |
| IUD | 1.1 | 1.0 | 0.9 | 0.3 |
| Male Sterilisation | 0.2 | 0.2 | 0.1 | 0.1 |
| LAM | NA | NA | 0.9 | 0.5 |
| **Traditional Method** | **7.0** | **6.0** | **3.1** | **1.8** |
| Periodic Abstinence | NA | NA | 0.2 | 0.2 |
| Withdrawal | 5.1 | 4.2 | 2.6 | 1.2 |
| Folk Method/Other | 1.9 | 1.8 | 0.4 | 0.4 |
| **Total** | **100.0** | **100.0** | **100.0** | **100.0** |

NA = Not Applicable

$n_{1988}$= 2,643, $n_{1994}$= 3,788, $n_{1999}$ = 3,609 and $n_{2005}$= 5,143

### 4.4.3. Postpartum Amenorrhoea, Abstinence and Insusceptibility

Postpartum amenorrhoea refers to the interval between childbirth and the return to menstruation. During this period, the risk of pregnancy is greatly reduced. The duration of this protection from conception until after childbirth depends on the duration and intensity of breastfeeding and the length of time before the resumption of sexual intercourse. Women are

considered insusceptible if they are not exposed to the risk of pregnancy, either because they are amenorrhoeic or are still abstaining from sex after birth. In the absence of contraception, variations in postpartum amenorrhoea and abstinence are the most important determinants of the interval between births and ultimately the completion of fertility. Table 4.18 shows the duration of postpartum amenorrhoea, abstinence and insusceptibility for 1999 and 2005.

In Zimbabwe, the duration of postpartum amenorrhoea increased from 12.4 months in 1999 to 14.3 months in 2005; a 15 percent increase. The duration of insusceptibility remained constant at 15.6 months for both 1999 and 2005 surveys while that for abstinence declined from 3.2 months in 1999 to 2.3 months in 2005 (Table 4.18). The period of postpartum amenorrhoea is considerably longer than that of postpartum abstinence.

Women in the rural generally have longer periods of amenorrhoea, sexual abstinence and insusceptibility than women in the urban. Between 1999 and 2005, there was an increase in the duration of insusceptibility for both rural and urban areas, although rural posted a higher increase. The duration for amenorrhoea remained constant at 11 months between 1999 and 2005 in the urban; whilst in the rural, it increased by17 percent, from 13 months in 1999 to 15 months in 2005. Overall, the duration of abstinence recorded a decline from 3 months in 1999 to 2 months between 1999 and 2005. The duration declined from4 months in 1999 to 3 months in 2005 in the rural; and remained constant at 2 months in the urban during the same period (Table 4.18).

Findings generally show an inverse relationship between education level and; duration of amenorrhoea, abstinence and insusceptibility. Higher education category generally has the lowest duration of amenorrhoea, abstinence and insusceptibility for both surveys. The same education category posted the highest decline in duration of amenorrhoea; from 8 months in 1999 to 3 months in 2005; and insusceptibility, from 9 months in 1999 to 3 months in 2005. However, duration of abstinence for the higher education category remained the same between 1999 and 2005 while the rest of the categories posted declines.

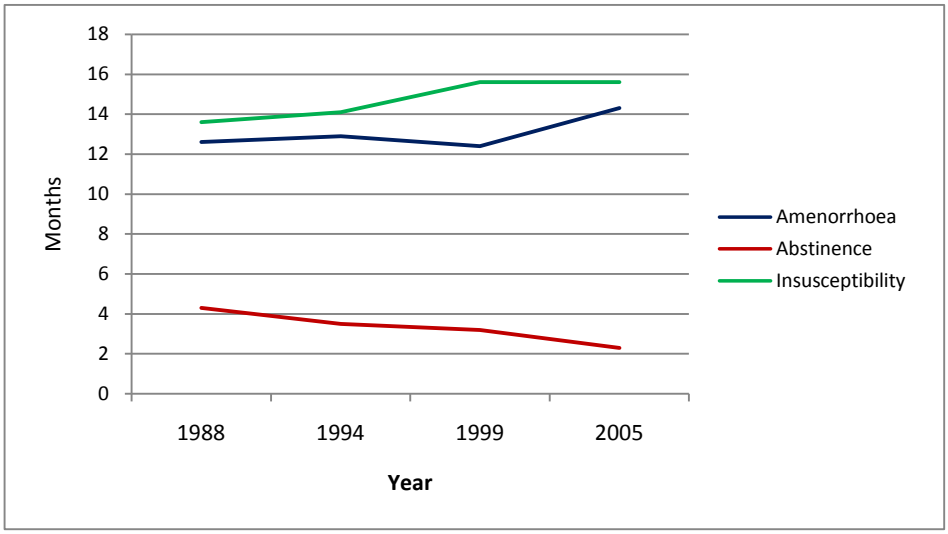
**Table 4.18: Median Duration (months) of Postpartum Amenorrhoea, Abstinence and Insusceptibility in Zimbabwe**

| Residence | 1999 | | | 2005 | | | Percentage Change | | |
|---|---|---|---|---|---|---|---|---|---|
| | Amenorrhoea | Abstinence | Insusceptibility | Amenorrhoea | Abstinence | Insusceptibility | Amenorrhoea | Abstinence | Insusceptibility |
| Urban | 10.6 | 2.3 | 11.6 | 11.1 | 1.7 | 12.3 | 4.7 | -26.1 | 6.0 |
| Rural | 13.2 | 3.7 | 15.5 | 15.4 | 2.5 | 16.6 | 16.7 | -32.4 | 7.1 |
| Total | 12.4 | 3.2 | 15.6 | 14.3 | 2.3 | 15.6 | 15.3 | -28.1 | 0.0 |
| | | | | | | | | | |
| **Education** | **1999** | | | **2005** | | | **Percentage Change** | | |
| | Amenorrhoea | Abstinence | Insusceptibility | Amenorrhoea | Abstinence | Insusceptibility | Amenorrhoea | Abstinence | Insusceptibility |
| No Education | 11.0 | 5.4 | 17.4 | 17.3 | 2.8 | 17.9 | 57.3 | -48.1 | 2.9 |
| Primary | 14.7 | 4.0 | 15.6 | 15.2 | 2.4 | 16.1 | 3.4 | -40.0 | 3.2 |
| Secondary | 11.6 | 2.4 | 15.5 | 13.4 | 2.3 | 15.1 | 15.5 | -4.2 | -2.6 |
| Higher | 8.2 | 0.4 | 8.5 | 3.4 | 0.5 | 3.4 | -58.5 | 25.0 | -60.0 |

$n_{1999}$= 2,159 and $n_{2005}$= 3,174

Figure 4.6 shows the trends in duration of amenorrhoea, abstinence and insusceptibilityin Zimbabwe from 1988 to 2005. The period of postpartum amenorrhoea is longer than the period of postpartum abstinence in all four surveys. Figure 4.6 shows that from 1988 to 2005, the period of amenorrhoea has been increasing though there was a slight decline in 1999. It was 13 months in 1988 and increased to 14 months in 2005. On the other hand, the period of abstinence has been decreasing over the years. The period of abstinence declined from 4 months in 1988 to 2 months in 2005. Results also show that the period of insusceptibility or infecundability to pregnancy has increased over the years. The period of insusceptibility increased from 14 months in 1988 to almost 16 months in 1999 and maintained that level to 2005.

**Figure 4.6: Trends in Duration of Amenorrhoea, Abstinence and Insusceptibility**




$n_{1988}$= 2,002, $n_{1994}$= 2,331, $n_{1999}$= 2,159 and $n_{2005}$= 3,174

### 4.4.4. Breastfeeding Duration

Like the rest of the sub-Saharan Africa, the practice of breastfeeding in Zimbabwe is generally long and universal. However, unlike most societies, breastfeeding in Zimbabwe is not articulated as fertility limiting mechanism but for its nutritional and immunological qualities. Biologically, breastfeeding also suppresses the mother's return to the fertile status, and hence has an effect on the length of the birth interval. Table 4.19 shows the duration of breastfeeding for Zimbabwe in months.

**Table 4.19: Duration (months) of Breastfeeding in Zimbabwe**

| Residence | 1999 | 2005 | Percentage Change |
|---|---|---|---|
| Urban | 19.1 | 16.9 | -11.5 |
| Rural | 20.2 | 19.4 | -4.0 |
| Total | 19.6 | 18.8 | -4.1 |
| | | | |
| **Education** | **1999** | **2005** | **Percentage Change** |
| No Education | 20.4 | 20.3 | -0.5 |
| Primary | 20.8 | 19.4 | -6.7 |
| Secondary | 18.7 | 18.4 | -1.6 |
| Higher | 14.3 | 12.5 | -12.6 |

$n_{1999}$= 351and $n_{2005}$= 496

Breastfeeding duration decreased from 20 months in 1999 to 19months in 2005 reflecting a decline by 4 percent. Rural women tend to breastfeed their infants longer than their counterparts in the urban (Table 4.19). Rural recorded duration of breastfeeding of 20 months in 1999 in compared to 19 months in urban. In 2005, the duration for breastfeeding for rural was 19 months in the rural compared to 17 months in urban. Therefore, in 2005, rural women breastfed their infants three months longer than their counterparts in the urban area. Urban areas realised the highest decline of 11 percent in duration of breastfeeding between 1999 and 2005 compared to rural at 4 percent (Table 4.19).

Breastfeeding durations are substantially shorter for mothers with higher education (14 months in 1999 and 13 months in 2005) compared to mothers with no education (20 months in both 1999 and 2005). The highest decline of 13 percent in breastfeeding duration between 1999 and 2005 was observed in the higher education category, while women without formal education. A higher proportion of women with higher education resides in the urban areas, hence the short duration of breastfeeding. The breastfeeding duration for women without formal education remained static at 20 years between 1999 and 2005.

FGDs also supported the general decline in breastfeeding duration. Women were more concerned about their economic production and social time. The coming of the "maids' era" has seen many women employing maids to baby–sit and this has reduced the period of breastfeeding. The group supported one of the discussant:

*Women in towns have reduced their breastfeeding durations because they have to go to work. Those in the rural can breastfeed for long because vanoswera nevana wavo (they spend the whole day with their children) and they have nothing to do. They are also monitored by the husband's relatives because the decision to stop breastfeeding comes from the husband's family. Also, many women in towns are only breastfeeding for the first year and they switch to porridge and other solid foods. Vana wave kukurumidza kurumurwa mazuvaano (children are being breastfed for short durations these days) than what used to happen to our mothers.*

However, some of men generally believed that mothers are becoming lazy:

*Women are becoming lazy that they don't like moving around carrying their children these days. They like leaving them with maids and they go for parties and visiting. So the children are eventually taken off breastfeeding and they begin eating whatever is available.*

Another discussant mostly supported by women remarked:

*We (women) need time to go to work, socialise and do house chores. So once a child is able to eat nutritious porridge usually by end of one year, then I can stop feeding the child from breast milk. Vana vanonetsa kufamba navo especially munhamo nemumichato umu (children are a problem especially at funerals and wedding ceremonies). Our parents did not have access to nutritious food and immunisation and so they breastfed us for longer periods. Breast milk can be substituted by nutritious food meant specifically for children.*

### 4.4.5. Infant Mortality

The relationship between fertility and infant mortality is inter-dependent. Reduction in infant mortality affects the reduction of fertility in two ways. The biological mechanism operates largely through lactation and the length of postpartum amenorrhea. Infant death abbreviates lactation and hastens the resumption of ovulation. The behavioural mechanism operates largely through experience with and fear of infant mortality, which motivates parents to replace lost children or to have many children as insurance against expected death. Both of these effects are dependent on prevailing social norms about ideal family size. Another behavioural explanation is that parents' sexual activity is different when an infant survives than when an infant dies (Talwalkar, 1981). Infant mortality has been on the decrease since the late 80s in Zimbabwe. Table 4.20 shows the IMR by background variables.

**Table 4.20: Infant Mortality Rate in Zimbabwe**

| | | 1999 | 2005 | Percentage Change |
|---|---|---|---|---|
| **Residence** | Urban | 47.2 | 47.0 | -0.4 |
| | Rural | 65.3 | 51.0 | -21.9 |
| | Total | 59.7 | 60.0 | 0.5 |
| | | | | |
| **Education** | No Education | 81.1 | 40.0 | -50.7 |
| | Primary | 60.6 | 52.0 | -14.2 |
| | Secondary | 55.6 | 49.0 | -11.9 |

$n_{1999}$= 3,609 and $n_{2005}$= 5,143

Infant mortality declined in both rural and urban between 1999 and 2005; with the rural posting a convincing decline from 65 in 1999 to 51 in 2005; almost 22 percent decline (Table 4.20). Urban IMR remained nearly constant between 1999 and 2005. IMR declined for all educational categories, with highest decline for those without formal education, followed by those with primary education. Mothers without formal education posted a convincing decline in IMR by more than half from 81 in 1999 to 40 in 2005; a sign of the impact of the Expanded Programme of Immunisation (EPI) adopted in 1982.

FGDs supported the role of reduced IMR to the decline of fertility. The introduction of the EPI and the PPTCT has gone some miles in reducing IMR in the country. The following discussants, supported by the group remarked:

> *Infant mortality has declined since the inception of immunisation in 1980 after independence. Children have been immunised and are still being immunised and they are surviving to old age now. It is different from the period before independence when children would die easily due to the six killer diseases and our parents would have many of us to ensure that some would survive and look after them when they grow old. Now it is not necessary to have many children because they all have high chances of surviving to old age.*

> *The construction of clinics, district hospitals, provincial hospitals and referral hospitals has helped children to survive from many diseases. Only whites were benefiting from the immunisation programme before independence and now it's accessible to everyone at no cost. The introduction of the PMTCT has also stopped the increase in infant mortality. Children are growing up healthy and they reach old age and look after their parents.*

### 4.4.6. Desire to Limit Fertility

Worldwide, the proportion of women with the desire to limit their fertility due to varied reasons has been on the increase. Table 4.21 shows the proportions of women by residence and education; with the desire to limit their fertility in Zimbabwe. The proportion of women with the desire to limit their fertility increased from 41 percent in 1999 to 44 percent in 2005. Higher proportions were observed in the urban than the rural for both surveys. The proportion increased by 7 percentage points between 1999 and 2005 in the urban, while in the rural the proportion increased by only 2 percentage points from 39 percent to 41 percent. The percentage of women wanting no more children is positively associated with the women's educational levels. The proportion of women with higher education desiring to limit their fertility increased most, from 43 to 54 percent between 1999 and 2005, while that for those without formal education category remained constant at 46 percent during the same period.

**Table 4.21: Percentage Distribution of Desire to Limit Fertility by Married Women in Zimbabwe**

| | | 1999 | 2005 | Percentage Points Change |
|---|---|---|---|---|
| **Residence** | Urban | 43.6 | 51.1 | 7.5 |
| | Rural | 39.4 | 41.0 | 1.6 |
| | **Total** | **40.9** | **44.4** | **3.5** |
| | | | | |
| **Education** | No Education | 53.1 | 54.8 | 1.7 |
| | Primary | 45.9 | 45.7 | -0.2 |
| | Secondary | 32.8 | 41.9 | 9.1 |
| | Higher | 43.2 | 54.3 | 11.1 |

$n_{1999}$ = 3,609 and $n_{2005}$ = 5,143

## 4.5. The Role of Proximate Determinants on Fertility in Zimbabwe

Bongaarts model has been widely adopted for the estimation of the share of the proximate determinants of fertility through the use of aggregate-level decompositions. The indices of marriage, contraceptive use, postpartum infecundability, and the estimated and actual TFRs are presented in Table 4.25. The derivation of the total, urban and rural indices are shown in Table 4.22, Table 4.23, and Table 4.24 respectively.

The ZDHS data enable us to apply the Bongaarts model of proximate determinants of fertility. The model formulates the TFR that is determined by total fecundity (TF), a hypothetical potential of fecundity that a woman would have in her lifetime, being inhibited by the indices of non-marriage ($C_m$), contraception ($C_c$), induced abortion ($C_a$), and lactational infecundability ($C_i$). The model can be quantified through the following equation:

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

Theoretically, the value of each index ranges from 0 to 1. The complement of each index represents the proportionate reduction in fertility attributed to each determinant of fertility; the smaller the index value, the greater the fertility-reducing effect of the variable. Multiplying all of the indices together by the total fecundity rate of 15.3 produces the predicted TFR for the population. The predicted TFR will typically differ from the observed TFR because of the underreporting of births, underreporting of any of the behaviours measured by the indices, or the omission of proximate determinants that are influential in determining fertility levels, such as induced abortion.

## Table 4.22: Calculation of Indices - Total

| Age Group | 1999 | | | 2005 | | |
|---|---|---|---|---|---|---|
| | m(a) | f(a) | m(a)*(f(a) | m(a) | f(a) | m(a)*(f(a) |
| **15-19** | 0.1920 | 0.1120 | 0.0215 | 0.2020 | 0.0990 | 0.0200 |
| **20-24** | 0.5680 | 0.1990 | 0.1130 | 0.5950 | 0.2050 | 0.1220 |
| **25-29** | 0.7100 | 0.1800 | 0.1278 | 0.7470 | 0.1720 | 0.1285 |
| **30-34** | 0.7490 | 0.1350 | 0.1011 | 0.7530 | 0.1440 | 0.1084 |
| **35-39** | 0.7290 | 0.1080 | 0.0787 | 0.6510 | 0.0860 | 0.0560 |
| **40-44** | 0.7660 | 0.0460 | 0.0352 | 0.6800 | 0.0420 | 0.0286 |
| **45-49** | 0.7090 | 0.0150 | 0.0106 | 0.6640 | 0.0130 | 0.0086 |
| **Total** | 4.4230 | 0.7950 | 0.4881 | 4.2920 | 0.7610 | 0.4721 |
| | | | | | | |

| | 1999 | 2005 |
|---|---|---|
| **TFR** | 3.98 | 3.81 |

| | 1999 | 2005 |
|---|---|---|
| **$C_m$** | **0.61** | **0.62** |

| Method | 1999 | | | 2005 | | |
|---|---|---|---|---|---|---|
| | e(a) | u(a) | e(a)*u(a) | e(a) | u(a) | e(a)*u(a) |
| Female Sterilisation | 0.9800 | 0.0260 | 0.0255 | 0.9800 | 0.0200 | 0.0196 |
| Male Sterilisation | 0.9800 | 0.0010 | 0.0010 | 0.9800 | 0.0010 | 0.0010 |
| Pill | 0.9900 | 0.3560 | 0.3524 | 0.9900 | 0.4300 | 0.4257 |
| IUD | 0.9600 | 0.0090 | 0.0086 | 0.9600 | 0.0030 | 0.0029 |
| Injectables | 0.9600 | 0.0810 | 0.0778 | 0.9600 | 0.0990 | 0.0950 |
| Implants | 0.9900 | 0.0050 | 0.0050 | 0.9900 | 0.0120 | 0.0119 |
| Male Condom | 0.8500 | 0.0180 | 0.0153 | 0.8500 | 0.0140 | 0.0119 |
| Female Condom | 0.8700 | 0.0000 | 0.0000 | 0.8700 | 0.0000 | 0.0000 |
| LAM | 0.9800 | 0.0090 | 0.0088 | 0.9800 | 0.0050 | 0.0049 |
| Other | 0.7500 | 0.0040 | 0.0030 | 0.7500 | 0.0030 | 0.0023 |
| Total | | 0.5090 | 0.4974 | | 0.5870 | 0.5751 |

| | 1999 | 2005 |
|---|---|---|
| **e** | 0.9772 | 0.9798 |
| | | |
| **u** | 0.5090 | 0.5870 |
| | | |
| **$C_c$** | **0.4628** | **0.3789** |
| | | |
| **Breastfeeding Duration (BF)** | 19.6000 | 18.8000 |
| **i** | 13.1753 | 12.4805 |
| | | |
| **$C_i$** | **0.6314** | **0.6456** |

**Notes:**

$C_m$ = sum of age specific proportion currently married times age specific marital fertility divided by age specific marital fertility.

$C_c$ = sum of contraceptive effectiveness rates for women for all modern methods times proportion of currently married women using modern contraceptive method.

$C_i$ = 20/(18.5 + i) and m(a) = Proportion of currently married women

f(a) = Age specific fertility rates

e(a) = Contraception effectiveness

u(a) = Proportion of currently married using contraception

u = sum u(a)

e = sum ((e(a)*u(a)) divided by u

$$i = 1.753 * e^{(0.1396*BF - 0.001872*BF^2)}$$

## Table 4.23: Calculation of Indices - Urban

| Age Group | 1999 | | | 2005 | | |
|---|---|---|---|---|---|---|
| | m(a) | f(a) | m(a)*(f(a) | m(a) | f(a) | m(a)*(f(a) |
| **15-19** | 0.1920 | 0.0930 | 0.0179 | 0.2020 | 0.0700 | 0.0141 |
| **20-24** | 0.5680 | 0.1700 | 0.0966 | 0.5950 | 0.1470 | 0.0875 |
| **25-29** | 0.7100 | 0.1470 | 0.1044 | 0.7470 | 0.1300 | 0.0971 |
| **30-34** | 0.7490 | 0.0870 | 0.0652 | 0.7530 | 0.1120 | 0.0843 |
| **35-39** | 0.7290 | 0.0680 | 0.0496 | 0.6510 | 0.0510 | 0.0332 |
| **40-44** | 0.7660 | 0.0270 | 0.0207 | 0.6800 | 0.0060 | 0.0041 |
| **Total** | 3.7140 | 0.5920 | 0.3542 | 3.6280 | 0.5160 | 0.3203 |

| | 1999 | 2005 |
|---|---|---|
| **TFR** | 2.96 | 2.58 |

| | 1999 | 2005 |
|---|---|---|
| $\mathbf{C_m}$ | 0.60 | 0.62 |

| Method | 1999 | | | 2005 | | |
|---|---|---|---|---|---|---|
| | e(a) | u(a) | e(a)*u(a) | e(a) | u(a) | e(a)*u(a) |
| Female Sterilisation | 0.9800 | 0.0370 | 0.0363 | 0.9800 | 0.0340 | 0.0333 |
| Male Sterilisation | 0.9800 | 0.0000 | 0.0000 | 0.9800 | 0.0010 | 0.0010 |
| Pill | 0.9900 | 0.4450 | 0.4406 | 0.9900 | 0.4770 | 0.4722 |
| IUD | 0.9600 | 0.0190 | 0.0182 | 0.9600 | 0.0080 | 0.0077 |
| Injectables | 0.9600 | 0.0760 | 0.0730 | 0.9600 | 0.1120 | 0.1075 |
| Implants | 0.9900 | 0.0130 | 0.0129 | 0.9900 | 0.0280 | 0.0277 |
| Male Condom | 0.8500 | 0.0210 | 0.0179 | 0.8500 | 0.0190 | 0.0162 |
| Female Condom | 0.8700 | 0.0000 | 0.0000 | 0.8700 | 0.0000 | 0.0000 |
| LAM | 0.9800 | 0.0070 | 0.0069 | 0.9800 | 0.0050 | 0.0049 |
| Other | 0.7500 | 0.0120 | 0.0090 | 0.7500 | 0.0150 | 0.0113 |
| Total | | 0.6300 | 0.6146 | | 0.6990 | 0.6818 |

| | 1999 | 2005 |
|---|---|---|
| **e** | 0.9755 | 0.9753 |
| | | |
| **u** | 0.6300 | 0.6990 |
| | | |
| $\mathbf{C_c}$ | **0.3362** | **0.2637** |
| | | |
| **Breastfeeding duration (BF)** | 19.1000 | 16.9000 |
| **i** | 12.7402 | 10.8689 |
| | | |
| $\mathbf{C_i}$ | **0.6402** | **0.6810** |

**Table 4.24: Calculation of Indices -Rural**

| Age Group | 1999 | | | 2005 | | |
|---|---|---|---|---|---|---|
| | m(a) | f(a) | m(a)*(f(a) | m(a) | f(a) | m(a)*(f(a) |
| **15-19** | 0.1920 | 0.1250 | 0.0240 | 0.2020 | 0.1200 | 0.0242 |
| **20-24** | 0.5680 | 0.2240 | 0.1272 | 0.5950 | 0.2480 | 0.1476 |
| **25-29** | 0.7100 | 0.2020 | 0.1434 | 0.7470 | 0.1980 | 0.1479 |
| **30-34** | 0.7490 | 0.1610 | 0.1206 | 0.7530 | 0.1640 | 0.1235 |
| **35-39** | 0.7290 | 0.1280 | 0.0933 | 0.6510 | 0.1110 | 0.0723 |
| **40-44** | 0.7660 | 0.0540 | 0.0414 | 0.6800 | 0.0590 | 0.0401 |
| **Total** | 3.7140 | 0.8940 | 0.5499 | 3.6280 | 0.9000 | 0.5556 |
| | | | | | | |

| | 1999 | 2005 |
|---|---|---|
| **TFR** | 4.47 | 4.50 |

| | 1999 | 2005 |
|---|---|---|
| **$C_m$** | 0.62 | 0.62 |

| Method | 1999 | | | 2005 | | |
|---|---|---|---|---|---|---|
| | e(a) | u(a) | e(a)*u(a) | e(a) | u(a) | e(a)*u(a) |
| Female Sterilisation | 0.9800 | 0.0200 | 0.0196 | 0.9800 | 0.0130 | 0.0127 |
| Male Sterilisation | 0.9800 | 0.0010 | 0.0010 | 0.9800 | 0.0000 | 0.0000 |
| Pill | 0.9900 | 0.3030 | 0.3000 | 0.9900 | 0.4060 | 0.4019 |
| IUD | 0.9600 | 0.0040 | 0.0038 | 0.9600 | 0.0000 | 0.0000 |
| Injectables | 0.9600 | 0.0830 | 0.0797 | 0.9600 | 0.0920 | 0.0883 |
| Implants | 0.9900 | 0.0010 | 0.0010 | 0.9900 | 0.0040 | 0.0040 |
| Male Condom | 0.8500 | 0.0160 | 0.0136 | 0.8500 | 0.0120 | 0.0102 |
| Female Condom | 0.8700 | 0.0000 | 0.0000 | 0.8700 | 0.0000 | 0.0000 |
| LAM | 0.9800 | 0.0100 | 0.0098 | 0.9800 | 0.0060 | 0.0059 |
| Other | 0.7500 | 0.0430 | 0.0323 | 0.7500 | 0.0200 | 0.0150 |
| Total | | 0.4810 | 0.4607 | | 0.5530 | 0.5380 |

| | 1999 | 2005 |
|---|---|---|
| **e** | 0.9578 | 0.9729 |
| | | |
| **u** | 0.4810 | 0.5530 |
| | | |
| **$C_c$** | **0.5024** | **0.4189** |
| | | |
| **Breastfeeding duration (BF)** | 20.2000 | 19.4000 |
| **i** | 13.7000 | 13.0010 |
| | | |
| **$C_i$** | **0.6211** | **0.6349** |

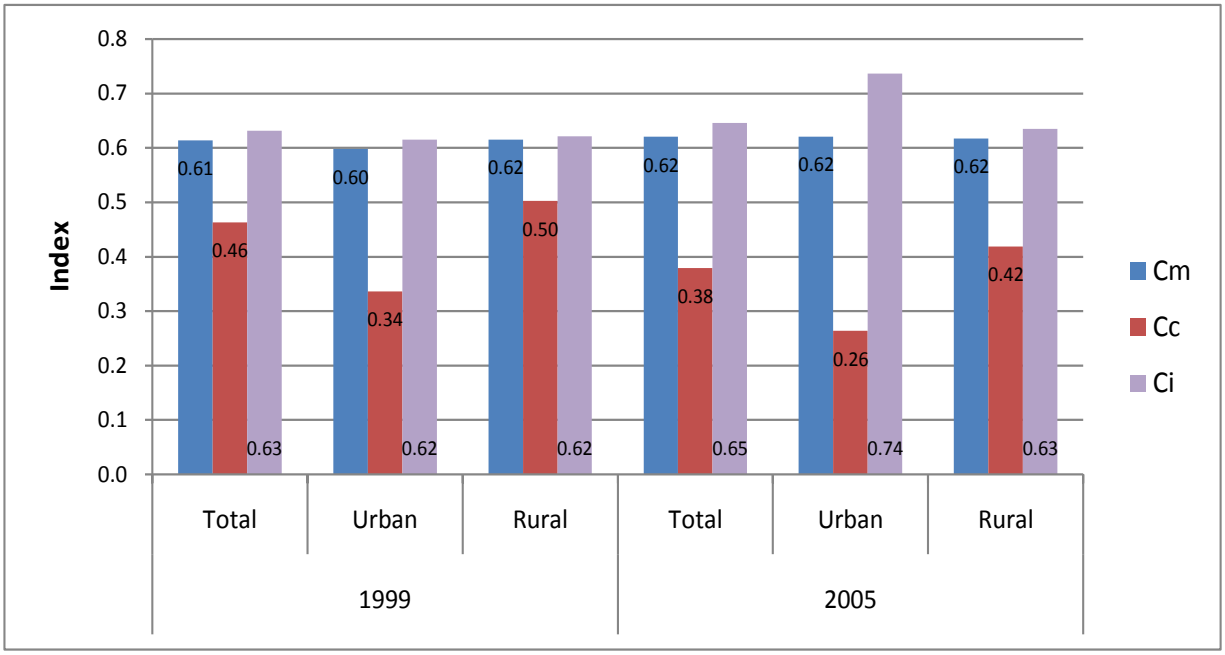
To document the changes among the indices over the period 1999 to 2005, the estimated values of the indices for the three principal proximate determinants of fertility estimates for two time points are compared in Table 4.25. Figure 4.7 shows a graphical illustration of the derived indices.

**Table 4.25: Derived Indices of Proximate Determinants**

| Model Indices | 1999 | | | 2005 | | | Percentage Change | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | Urban | Rural | Total | Urban | Rural | Total | Urban | Rural |
| Index of Marriage ($C_m$) | 0.6139 | 0.5983 | 0.6151 | 0.6203 | 0.6208 | 0.6173 | 1.05 | 3.76 | 0.36 |
| Index of Contraception ($C_c$) | 0.4628 | 0.3362 | 0.5024 | 0.3789 | 0.2637 | 0.4189 | -18.14 | -21.57 | -16.62 |
| Index of Postpartum Infecundability ($C_i$) | 0.6314 | 0.6151 | 0.6211 | 0.6456 | 0.7363 | 0.6349 | 2.24 | 19.70 | 2.22 |
| $C_m x C_c x C_i x C_a$ | 0.1794 | 0.1237 | 0.1920 | 0.1517 | 0.1205 | 0.1642 | -15.43 | -2.59 | -14.47 |
| TFR(predicted) | 2.7449 | 1.8934 | 2.9370 | 2.3213 | 1.8442 | 2.5121 | -15.43 | -2.59 | -14.47 |
| TFR(observed) | 4.0000 | 2.9600 | 4.4700 | 3.8000 | 2.6000 | 4.5000 | -5.00 | -12.16 | 0.67 |
| $LogC_m+LogC_c+LogC_a+LogC_i$ | -0.7462 | -0.9075 | -0.7168 | -0.8190 | -0.9189 | -0.7847 | 9.76 | 1.26 | 9.47 |

**Notes:**
$C_m$ = sum of age specific proportion currently married women times age specific marital fertility divided by age specific marital fertility.
$C_c$ = sum of contraceptive effectiveness rates for women for all contraceptive methods multiplied by proportion of women currently using contraception.
$C_i = 20/(18.5 + i)$.

**Figure 4.7: Derived Indices of Determinants**




The results in Table 4.25 and Figure 4.7 indicate that between 1999 and 2005, an appreciable amount of change has occurred only for contraceptive use. Overall, in 2005, the marriage pattern reduced the actual fertility level by 38 percent ($C_m$=0.62); a decline from 39 percent ($C_m$ = 0.61) in 1999. The index has the second greatest inhibitive effect on fertility in the two surveys analysed. Urban $C_m$ also increased from 0.60 in 1999 to 0.62 in 2005 and the rural $C_m$ remained constant at 0.62 during the same period. However, it is important to note that the levels of $C_m$ with respect to residence are not significantly different for both surveys.

Contraception has the strongest effect on fertility, accounting for a reduction of about 62 percent ($C_c$ = 0.38) in the total fertility rate in 2005; a rise from 54 percent ($C_c$ = 0.46) in 1999. The index of contraception contributed significantly to fertility decline in Zimbabwe in the two ZDHS under analysis. In the urban, the index declined from 0.34 in 1999 to 0.26 in 2005;andalso declined in the rural, from 0.50 in 1999 to 0.42 in 2005. Table 4.25 And Figure 4.7 show that $C_c$ is the most important index in explaining the TFR in the two ZDHSs analysed although other proximate determinants also influenced fertility in Zimbabwe. The index of contraception played a crucial role in fertility reduction in Zimbabwe in the mid-1980s ((Mhloyi 1992; Guilkey and Jayne 1997).

Postpartum infecundability has the lowest fertility-reducing impact, reducing the total fertility rate by 35 percent ($C_i$ = 0.65) a decline from 37 percent ($C_i$ = 0.63) in 1999. In the urban, the index increased significantly from 0.62 in 1999 to 0.74 in 2005 indicating its reduction in the inhibiting effect on fertility. The index also realised a marginal increase in the rural from 0.62 in 1999 to 0.63 in 2005. The index has the least inhibitive effect on fertility in the two surveys analysed. The proximate determinant with the greatest inhibiting effect is contraception followed by marriage patterns, and then postpartum infecundability in the two surveys analysed.

Thus, the decline in TFR based on observed single-year age data (from 4.0 to 3.8) between 1999 and 2005 was caused primarily by the fertility-reducing effect of contraception. The combined fertility-limiting effect of the three proximate determinants ($C_m$, $C_c$, and $C_i$) was 0.18 in 1999 and 0.15 in 2005.

In the urban, TFR declined by 12 percent from 2.96 in 1999 to 2.60 in 2005. This total decrease in TFR is attributed to an increase of just over 4 percent (or 0.11 births per woman) owing to the marriage patterns, a decline of more than 22 percent (or 0.64 births per woman) owing to an increase in contraceptive use, and an increase of more than 1 percent (or 0.58 births per woman) due to the patterns of lactational infecundability. However, in the rural, there was a slight increase in TFR between 1999 and 2005. This total, marginal increase in TFR is attributed to an increase of less than 1 percent (or 0.02 births per woman) owing to the marriage patterns and a decline of more than 17 percent (or 0.74 births per woman) owing to an increase in contraceptive use. There was little effect on TFR owing to the patterns of lactational infecundability. The change in TRF, caused by changes in other proximate determinants, is in no way negligible.

Overall, the difference in inhibiting effect between breastfeeding and contraception in 1999 was 17 percent in favour of contraception. However the difference had increased to 27 percent by 2005. The difference in inhibiting effect between breastfeeding and marriage remained almost constant between 1999 and 2005 at 2 percent in 1999, and 3 percent in 2005, in favour of marriage. In 1999 the difference in inhibiting effect between contraception and marriage was 15 percent in favour of contraception but it increased to 24 percent by 2005.

These results show that contraception will persist as the most important inhibiting factor in Zimbabwe.

**Table 4.26: Percentage Index and Fertility Inhibiting Effect**

| Indices (%) - Total | | | | | | |
|---|---|---|---|---|---|---|
| **Year** | **Index** | | | **Fertility Inhibiting Effect of $C_a$, $C_c$, $C_i$** | | |
| | **$C_m$** | **$C_c$** | **$C_i$** | **$C_m$** | **$C_c$** | **$C_i$** |
| **1999** | 61.39 | 46.28 | 63.14 | 38.61 | 53.72 | 36.86 |
| **2005** | 62.03 | 37.89 | 64.56 | 37.97 | 62.11 | 35.44 |
| | | | | | | |
| **Indices (%) - Urban** | | | | | | |
| **Year** | **Index** | | | **Fertility Inhibiting Effect of $C_a$, $C_c$, $C_i$** | | |
| | **$C_m$** | **$C_c$** | **$C_i$** | **$C_m$** | **$C_c$** | **$C_i$** |
| **1999** | 59.83 | 33.62 | 61.51 | 40.17 | 66.38 | 38.49 |
| **2005** | 62.08 | 26.37 | 61.73 | 37.92 | 73.63 | 38.27 |
| | | | | | | |
| **Indices (%) - Rural** | | | | | | |
| **Year** | **Index** | | | **Fertility Inhibiting Effect of $C_a$, $C_c$, $C_i$** | | |
| | **$C_m$** | **$C_c$** | **$C_i$** | **$C_m$** | **$C_c$** | **$C_i$** |
| **1999** | 61.51 | 50.24 | 62.11 | 38.49 | 49.76 | 37.89 |
| **2005** | 61.73 | 41.89 | 63.49 | 38.27 | 58.11 | 36.51 |

Table 4.27 exhibits the magnitude of the total fertility-inhibiting effect being accounted for by each proximate fertility determinant at two points in time, 1999 and 2005. The difference between the total fecundity (TF), taken as 15.3, and the estimated TFR is attributed to the result of the inhibitory effect of each determinant. The total fertility-inhibiting effect is pro-rated by the proportion of the logarithm of each index to the sum of the logarithm of all indices (Wang et al. 1987). For example, the fertility-inhibiting effect of the marriage variable is obtained as:

$$\frac{(TF - TFR) \times \log C_m}{(\log C_m + \log C_c + \log C_a + \log C_i)}$$

The fertility-inhibiting effects of other factors are obtained similarly. The results indicate that, of a total of about 12.6 births being inhibited in 1999, 3.6 births (28 percent) were due to the effect of the marriage variable, 5.6 births (45 percent) were due to contraception, and 3.4 births (27 percent) were due to lactational infecundability. Similarly, in 2005, a total of 13 births were inhibited; 3.3 births (25 percent) were due to marriage, 6.7 births (52 percent) were due to contraception, and 3.0 births (23 percent) were due to lactational infecundability.

The fertility-inhibiting effects of the three proximate factors were also derived for the urban and rural areas. The results indicate that, in the urban, of a total of about 13.4 births being inhibited in 1999, 3.3 births (25 percent) were due to the effect of the marriage variable, 7.0 births (52 percent) were due to contraception, and 3.1 births (23 percent) were due to lactational infecundability. Similarly, in 2005, in the urban, a total of 13.5 births were inhibited; 3.0 births (23 percent) were due to marriage, 8.4 births (63 percent) were due to contraception, and 2.0 births (14 percent) were due to lactational infecundability. For the rural in 1999, of a total of about 12.4 births being inhibited in 1999, 3.6 births (29 percent) were due to the effect of the marriage variable, 5.2 births (42 percent) were due to contraception, and 3.6 births (29 percent) were due to lactational infecundability. In 2005, in the urban, a total of 12.8 births were inhibited; 3.4 births (27 percent) were due to marriage, 6.2 births (48 percent) were due to contraception, and 3.2 births (25 percent) were due to lactational infecundability.

From the foregoing analysis, it may be noted that contraception has the highest fertility-reducing effect; although this may not be considered as the single most important determinant of fertility-reduction in Zimbabwe. Marriage was the second most important fertility-reducing factor in all the two surveys. Although the impact of the non-marriage component has increased, the rate of change is very slow. However, the fertility-reducing effect of lactational infecundability is decreasing from 1999 to 2005.

**Table 4.27: Magnitude of Total Inhibiting Effect Accounted for by Each Proximate Fertility Determinant**

| Total | | | | |
|---|---|---|---|---|
| | Births per Woman | | Percent | |
| | 1999 | 2005 | 1999 | 2005 |
| Marriage | 3.57 | 3.29 | 28.40 | 25.32 |
| Contraception | 5.63 | 6.68 | 44.84 | 51.47 |
| Lactational Infecundability | 3.36 | 3.01 | 26.76 | 23.21 |
| Total: 15.3 - TFR (estimated) | 12.56 | 12.98 | 100.00 | 100.00 |
| | | | | |
| **Urban** | | | | |
| | Births per Woman | | Percent | |
| | 1999 | 2005 | 1999 | 2005 |
| Marriage | 3.30 | 3.03 | 24.58 | 22.53 |
| Contraception | 6.99 | 8.48 | 52.16 | 63.00 |
| Lactational Infecundability | 3.12 | 1.95 | 23.26 | 14.47 |
| Total: 15.3 - TFR (estimated) | 13.41 | 13.46 | 100.00 | 100.00 |
| | | | | |
| **Rural** | | | | |
| | Births per Woman | | Percent | |
| | 1999 | 2005 | 1999 | 2005 |
| Marriage | 3.64 | 3.41 | 29.44 | 26.70 |
| Contraception | 5.16 | 6.16 | 41.70 | 48.16 |
| Lactational Infecundability | 3.57 | 3.22 | 28.85 | 25.14 |
| Total: 15.3 - TFR (estimated) | 12.36 | 12.79 | 100.00 | 100.00 |

To quantify the contribution made by each of the proximate determinants of fertility to an observed change in fertility between two points in times (in this analysis, 1999 and 2005), Bongaarts and Potter (1983) turned the Bongaarts (1978) model into a decomposition equation. The equation states simply that a given proportional change in the TFR between two points of time equals the sum of the proportional fertility changes due to the different proximate determinants plus an interaction term. The decomposition results are presented in the Table 4.28.

Results indicate that TFR declined during the whole period of observation by 5 percent (or in absolute terms by 0.2 births per woman), from 4.0 births in 1999 to 3.8 in 2005. This total decrease in TFR is found to come from an increase of just over 1 percent (0.04 births per woman) owing to the marriage pattern, a decline of more than 18 percent (0.73 births per woman) owing to an increase in contraceptive use, and more than 2.2 percent (0.09 births per woman) increase due to the patterns of lactational infecundability. The change in TRF, caused by changes in other proximate determinants, is in no way negligible.

**Table 4.28: Decomposition of the Change in Total Fertility**

| Factor | Percentage Change in TFR (1999 – 2005) | | |
|---|---|---|---|
| | Total | Urban | Rural |
| TFR | -5.00 | -12.16 | 0.67 |
| Proportion of Married Women | 1.05 | 3.76 | 0.36 |
| Contraception Practice | -18.14 | -21.57 | -16.62 |
| Duration of Postpartum Infecundability | 2.24 | 19.70 | 2.22 |
| Other Proximate Determinants | 9.86 | -14.05 | 14.72 |

## 4.6. Conclusion

This chapter basically presented the findings of the 1999 and 2005 DHS in Zimbabwe. Levels, patterns and trends of fertility between 1999 and 2005 have been presented. The impact of the three main proximate determinants of fertility has been presented also. The next chapter discusses the results of the study and also presents recommendations with regard to future regulation of fertility.

# CHAPTER 5

# DISCUSSION AND RECOMMENDATIONS

## 5.1. Introduction

This chapter focuses on the summary of the findings and general discussion of the results. It further goes on to make recommendations for future roadmap with regard to fertility regulation in Zimbabwe, based on the discussion. The chapter finally, gives a conclusion to the study.

## 5.2. Summary of Findings

The results from both surveys show that Zimbabwe is indeed experiencing a decline in fertility of almost 2 births over the past two decades. ASFRs have declined in both rural and urban areas since 1988 across all age groups. TFR has also declined from 4 in 1999 to 3.8 in 2005. However, rural women posted a slight increase by 1 percent in TFR between 1999 and 2005. On average, rural women are having almost two children more than urban women (3.0 – urban and 4.6 - rural in 1999, and 4.6 - rural and 2.6 – urban in 2005).TFR also varies from one province to the other, ranging from 2.3 in Bulawayo to 4.9 in Masvingo in 2005. In 1999 TFR ranged from 2.98 in Harare and Bulawayo to 4.8 in Matabeleland South. TFR is negatively associated with educational level with a range from 2.7 for women with higher education to 5.8 for women without formal education in 2005; and from 1.9 for women with higher educational level to 5.2 for women without formal education in 1999. FGDs revealed that couples nowadays desire smaller families mainly due to economic reasons.

Marriage is almost universal in Zimbabwe. However, there was no significant change in proportion of married women between 1999 and 2005. FGDs revealed that everyone in the society at some point in time should be married. The age at first marriage in Zimbabwe among women age 25-49 years remained constant at 19 years between 1999 and 2005, from 18 in 1988. On average, urban women tend to marry one year later than rural women (20.0 years in urban and 19 years in both rural in both surveys). Further, age at first marriage increases with education level. For women without formal education, the age at first marriage was 18 years compared to 23 years for women with higher education in 2005.

However, age at first marriage declined marginally for all educational groups with highest decline in the higher education category, from 24 years in 1999 to 23 years in 2005. Marriage is the second factor responsible for fertility change in Zimbabwe. Marriage index inhibited 3.6 births and 3.3 births in 1999 and 2005 respectively.

Women in Zimbabwe nowadays generally initiate sexual activity before marriage. Age at first sexual intercourse remained constant at19years between 1999 and 2005. Age at first birth also remained constant at 20 years in 1999 and 2005. Age at first birth is generally higher in urban than in the rural areas, and is positively correlated to educational level. This means those with higher educational levels tend to delay engagement in sexual intercourse compared to those with lower educational levels. Birth interval has been on the increase in Zimbabwe, increasing by almost two months from 40 months in 1999 to 42months in 2005.

The majority of the women in Zimbabwe are in monogamous unions. However, the proportion of women in monogamous unions declined from 85 percent in 1999 to 84 percent in 2005. The proportion of women in polygamous unions is higher by more than double in the rural than in the urban. A higher proportion of women without formal education reported being in polygamous unions than those with higher education levels.

Duration of postpartum amenorrhoea increased by almost two months between 1999 and 2005; with a notable increase in the rural women. Overall, postpartum abstinence declined by more than a month while postpartum insusceptibility recorded no increase between 1999 and 2005. There was an increase in postpartum amenorrhoea by almost two months during the five year period while postpartum abstinence declined by almost a month; and postpartum susceptibility remained constant during the same period. Breastfeeding duration declined by more than a month, from 20 months in 1999 to 19 months in 2005. Postpartum infecundability is the third factor responsible for fertility change in Zimbabwe. Postpartum Infecundability index inhibited 3.4 births and 3.0 births in 1999 and 2005 respectively.

Overall, knowledge of family planning in Zimbabwe has been nearly universal since 1994. In 2005, 98 percent of all women reported knowing at least one contraceptive method; a rise from 97 percent in 1999. The pill, male condom, and injectable are the most widely known contraceptive methods in Zimbabwe. In 2005, more than 87 percent of currently married women have used a family planning method at least once in their lifetime compared to 83 percent in 1999. More than 60 percent of currently married women in 2005 are currently using at least one contraceptive method compared to 54 percent in 1999. In 2005, 58 percent

and 50 percent in 1999 of currently married women reported using a modern contraceptive method. The most popular method is the pill, used by more than 4 in every 10 currently married women (43 percent) in 2005. Contraception is the strongest factor responsible for fertility change in Zimbabwe. Contraception index inhibited 5.6 births and 6.7 births in 1999 and 2005 respectively.

Data from the both the 1999 and 2005 ZDHS indicate that the infant mortality rate was 60 deaths per 1,000 live births for the five-year period immediately preceding the surveys. Infant mortality is consistently lower in urban areas than in rural areas, probably due to the wide gap of access to health care; although the gap between the two significantly narrowed between 1999 and 2005. FGDs confirmed that substantial variations in infant mortality existed across provinces due to the disparities in the extent of coverage of the immunisation programme.

Generally, the study revealed that the fertility levels in Zimbabwe have been declining since the early 80's, although the patterns and levels of decline vary across provinces and subgroups. There are declines, and stalls in declines in TFR in some provinces and subgroups while there are increases in others. Further, there was an increase in the proportion of women willing to limit their fertility from 41 percent in 1999 to 44 percent in 2005. Background variables continue to influence fertility through proximate variables although the trend in decline since 1999 is becoming gradual.

## 5.3. Discussion of Results

Over the past few decades fertility levels have declined throughout the world. However, studies have shown that Africa and mostly sub-Saharan Africa still has relatively high fertility rates, compared to other regions in the world (Thomas and Muvandi, 1994). Botswana, Kenya, Swaziland, South Africa and Zimbabwe are some of the few countries in Africa with a low fertility rates (Rutenbeg and Diamond 1993; Cohen 1993; Africa Population Policy Research Centre 1998). The research findings indicated that the fertility declined from 4.0 in 1999 to 3.8 in 2005 and this shows evidence of fertility regulation among women in the reproductive age group.

Bongaarts (1978) estimated total fecundity at 15.3 in any population. Three proximate determinants have played a significant part in reducing fertility from total fecundity to TFR in Zimbabwe; the proportion of married women, contraceptive use and postpartum infecundability. Guilkey and Jayne (1997) also noted that marriage patterns, contraceptive

use and postpartum infecundability are responsible for fertility reduction in Zimbabwe. TFR was 5.5 in 1988, 4.3 in 1994, 4.0 in 1999, and 3.8 in 2005. The results confirm that fertility rates have declined in Zimbabwe over this period. Guilkey and Jayne (1997) noted that, the TFR observed in 1988 in Zimbabwe was relatively lower by sub-Saharan Africa standards; where TFRs were 7 to 8. In addition TFR was lower in Botswana (4.9) and South Africa (4.3) in 1988.

The unexplained differences observed between the actual and estimated fertility rates may be due to factors such as induced abortion, and HIV and AIDS which were not analysed in this study. Since abortion is illegal in Zimbabwe, there is no reliable data available to analyse this factor.

The subject of abortion awakens a kaleidoscope of emotions in people and generates much controversy in the public health discourse, underlined with significant cultural and moral considerations. In Zimbabwe abortion is illegal, with exceptions in cases of rape, incest, fetal impairment or preservation of the mother's health. Traditional and cultural norms in Zimbabwe highly stigmatise and discriminate against children born out of wedlock, further putting pressure on young women who fall pregnant before marriage to opt for abortion, either conducted by untrained persons or self-inflicted. Despite the stigma around abortion, backyard abortions are rife in Zimbabwe and put the lives of women at risk. The demand for abortion is fuelled by the erosion of traditional cultural values in the wake of rural-urban migration, the increased need to limit family size, delay in the age at marriage owing to increased educational opportunities for women and the fact that contraceptives are not readily available to women under 18 years of age (United Nations, 2010).

The transformation in the socio-economic and cultural environment may have led to a decline in fertility between 1999 and 2005; and the major inhibiting factors over this period were contraception, marriage patterns, and breastfeeding in order of importance. Results indicate that fertility transition between 1999 and 2005 is largely explained by changes in practice of family planning. Despite the moderate increase in the CPR between 1999 and 2005, it was also the shift from traditional methods of family planning to more effective modern methods which increased the fertility inhibiting effect of contraception over the past years.

The results have confirmed that contraception is the strongest factor responsible for fertility decline in both rural and urban areas from 1999 to 2005; inhibiting 5.6 births and 6.7 births in 1999 and 2005 respectively. Contraception inhibited more births in the urban than rural in both surveys, and its inhibiting effect generally increased between 1999 and 2005. Bongaarts et al. (1984) noted that knowledge of contraception is not positively related to use of contraception. This is revealed in the results obtained in Zimbabwe, where knowledge of contraception is nearly universal while the use of contraception is low. The current use of contraception increased for modern methods, and declined for the traditional methods in both urban and rural areas. Women in Zimbabwe are believed to be the custodians of family planning use, although sometimes authority comes from the head of the house, which is usually the husband (UNFPA, 2007). For married women, current use of contraception is even higher than other groups; a sign of the seriousness of fertility regulation for couples. However, traditional methods are on the decline due to the perceived low levels of their effectiveness, and associated after effects. The use of contraception increases with increasing levels of education, probably because it is easier to understand the benefits of these contraceptive methods for those with some form of education.

One would say that the socio-economic environment in Zimbabwe since independence, in 1980, has been conducive to a fertility decline. It can be noted that, contraceptive knowledge increased by almost 15 percentage points between 1984 and 2005. Knowledge of the use of injectables, pills, and male condoms increased most. A possible explanation for the male condom is its widespread promotion in the prevention of STIs and HIV. However, the most interesting result is the shift from traditional methods towards modern methods of contraception.

Locoh and Hertrich (1994) noted that, the high rate of contraceptive use in Zimbabwe is responsible for fertility reduction; hence fertility transition in Zimbabwe has been triggered by the use of modern methods of contraception. Well organised and administered family planning programmes introduced by government led to an increase in the knowledge and use of modern methods of contraception (Boohene and Dow 1987; Thomas and Muvandi (1994). Increases in use of contraception maybe due to an improvement in exposure to family planning messages; hence improvement in knowledge and use of fertility regulation. Further, results from the research reveal that couples now desire limiting their fertility, with the proportion of women willing to limit their family sizes continuing to increase between 1999 and 2005. Couples now prefer the quality of children rather than quantity. Guilkey and Jayne

(1997) observed that, factors such as low rates of infant and child mortality, an increase in the levels of education, and a well-organised family planning programme contributed significantly to the high rate of contraceptive use in Zimbabwe.

The results obtained are not in line with the notion of "natural fertility" observed in traditional societies (Henry, 1961). In such societies, fertility is influenced mainly by marriage patterns, and postpartum infecundability (Bongaarts an Potter, 1983). As a society economically develops, fertility is intentionally restricted by modern methods of contraception, and induced abortions (Henry, 1961). The results confirm that, in the case of Zimbabwe contraception has been the major factor contributing to the fertility decline. The period of "natural fertility" since 1999 was not observed in Zimbabwe. In addition the fertility transition took place, mainly as a result of the use of modern methods of contraception.

In Zimbabwe, marriage patterns are the second factor responsible for fertility decline from 1999 to 2005.Theyinhibited 3.6 births and 3.3 births in 1999 and 2005 respectively. Marriage patterns inhibited more births in rural than urban in both surveys, although there was a general decline in the inhibiting effect between 1999 and 2005. The proportion of married women declined slightly between 1999 and 2005 probably due to the effect of education, and the economic hardships which are generally prevailing in the country. The proportion of women in the higher education increased by almost 6 percentage points, and realised a decline in TFR of more than 3 percent between 1999 and 2005, indicating a possible delay in entry into marriage. Once a woman gets educated, and joins the labour force, fertility regulation is usually intensified in order to properly allocate time between economic production and child rearing. Ideas on fertility regulation are often discussed at the workplace and these trickle down to the household level.

Age at first marriage remained constant between 1999 and 2005, and marginally increased in the urban indicating a delay in marriage. This increase might be due to the effects of the girl-child education policy, which has realised many girls attending school up to tertiary education in both rural and urban areas before marriage. Age at first sexual intercourse generally declined although it remained constant in the urban areas between 1999 and 2005. However, it is important to note that sexual intercourse is starting in the teenage stages, and with access to contraception; its impact on fertility needs further examination. The age at first sexual intercourse increases with increasing education level which is an indication of the delay by women with higher education to indulge into early sex.

There was a general increase in the birth interval across all subgroups. Birth interval increased by almost four months and the urbanites contributed most to this increase. A notable increase in birth interval by almost four months is evident for those without formal education, and by three months for those with secondary education. This is one of the indicators of the family planning programme in Zimbabwe. It is important to note that longer birth intervals are associated with low fertility levels. Age at first birth also increased marginally between 1999 and 2005. Some studies suggest that the improvement in the levels of education has influenced women to delay marriage (Guilkey and Jayne 1997). Although marriage has been identified as one of the variables that affects fertility directly, it has been noted that in some societies women tend to spend some of their reproductive years outside a union as a result of divorce, death of a partner and may delay re-marriage (Bongaarts 1978).

In the sub-Saharan region some countries still practice polygamy. In the case of Zimbabwe, studies have shown that polygamy is not universal. In 1988, one in every six women was in a polygamous union (ZDHS, 1988). In 2005, approximately 11 percent of the women were in a polygamous union (ZDHS, 2005). Polygamy has also shown indications of declining, with the proportion of women in polygamous unions declining in both rural and urban areas, between 1999 and 2005. This decline may be due to the general fear of contracting HIV, once someone is within polygamy, and the high economic costs associated with marrying and up-keeping more than wife. Empowerment of women has also seen many of them denying entering a polygamous union.

Some studies suggest that polygamy tends to reduce a woman's exposure to regular intercourse (Bongaarts et al. 1984). There is a hypothesis which states that women in a polygamy relationship tend to have fewer children compared to women in a monogamous relationship since these women are not frequently exposed to intercourse (Bongaarts et al. 1984). In addition it has been observed that polygamy leads to long periods of postpartum abstinence which is an important proximate determinant of fertility in Africa (Bongaarts et al. 1984). However, in the African context, polygamy is usually associated with large families. This situation is not health nowadays due to the ever rising costs of bride-wealth and rearing children, even with high costs associated with maternity.

The third factor responsible for the fertility decline in Zimbabwe from 1999 to 2005 is postpartum infecundability; inhibiting 3.4 births and 3.0 births in 1999 and 2005 respectively. Postpartum Infecundability inhibited more births in rural than urban in both surveys, although there was a general decline in the inhibiting effect between 1999 and 2005.Postpartum amenorrhoea increased by almost two months between 1999 and 2005 while insusceptibility overall remained constant. Rural and urban areas posted increases in postpartum amenorrhoea between 1999 and 2005; and an increase in insusceptibility by almost one month for both areas.

It is the norm rather than the exception that as the country moves from a natural fertility regime to a controlling one, the duration of breastfeeding decreases. Zimbabwe is not spared either; duration of breastfeeding declined between 1999 and 2005. Breastfeeding is articulated for the health of the child and mother, as a fidelity measure and other socio-cultural strings attached to it, other than fertility spacing or limitation; hence its erosion by modernisation has proved difficult. Breastfeeding duration declined over the past years, with the highest decline being observed in urban areas.

This might be due to increased women's participation in the labour force; be it formal or informal, and the tendency by urban women to replace breastfeeding with other supplementary foods, within the first six months. However, government introduced feeding hours for employed mothers with newly born infants which will aid positively to longer breastfeeding periods.

Studies have confirmed that contraception use reduces fertility more than postpartum infecundability. Countries with postpartum infecundability as the leading inhibitive factors reduce fertility by few births while countries with contraception use as the leading inhibitive factor reduce fertility by more births. South Africa and Zimbabwe have the highest rate of contraceptive use in sub-Saharan Africa (Guilkey and Jayne (1997). Research has shown that South Africa had a TFR of 2.0 births in 1998. This shows that countries such as South Africa and Zimbabwe with high rates of contraceptive use have low fertility rates while countries such as Malawi, Yemen and Zambia, where contraceptive use is low, have high fertility rates. This also confirms that contraception has the highest inhibitive effect on fertility, than postpartum infecundability. Hence, the effect of each proximate variable varies from country to country and within countries.

IMR significantly declined in the rural (from 65 in 1999 to 51 in 2005) where fertility rates are usually very high. It is also interesting to note the significant decline in IMR by half (from 81 to 40) for those in the no education category between 1999 and 2005. The most probable implication of this result is fertility limitation since birth intervals are longer, and this is associated with low fertility levels. The probability that the new born child will survive to adulthood is higher hence, the need to have many children in fear of having some dying in their early ages, is now a phenomenon of the past. Credit for IMR decline is attributed to improved health technology in Zimbabwe, where most children are fully vaccinated through receiving one dose of BCG vaccine, three doses each of DPT and polio vaccines, and one dose of measles vaccine. The programme of immunisation has achieved a wide coverage although comparison of the 2005 ZDHS results with those of the earlier surveys shows a decline in vaccination coverage in Zimbabwe, from 80 percent in 1994 to 75 percent in 1999 to 53 percent (Ministry of Health and Child Welfare, 2009).

The decline in TFR may also be supported by the fact that, the proportion of women desiring more children declined between 1999 and 2005. Fertility seems to have declined as a result of both a reduction in the benefits and rising costs of children. Parents stated that children were becoming expensive to maintain as they grew up. While it is also true that children are perceived as economic assets, particularly because they give their parents security in their old age, the FG discussants maintained that, in view of limited access to fertile arable land, which is the basis for economic production, children had to be educated if they were to be useful. The high costs of child rearing namely education, clothing, food and health have put a positive check on fertility levels. The emphasis seems to be now on the quality of children. Wealth flows theory is not unique in proposing a link between costs of children and fertility. Notestein (1945) proposed that the cost of children and their economic value are major determinants of fertility. Becker (1960) also developed formal models of the demand for children based on the household production function, focusing on the trade-off between quantity and quality of children. Children have lost value as sources of labour since they now spend most of their time at school, entertainment, employment; and the infiltration of western culture has changed the perceived value of these children. The shift from an agrarian mode of production, which was pro-natal, has also devalued the role of children. Parents showed a tendency towards the need for quality rather than quantity in children.

Whilst the economic costs and benefits of children have risen and declined respectively, fertility levels have remained at above replacement level more so, due to the socio-psychological benefits of the children. Children provide moral support, security against random shocks like droughts and security at old age (Cain, 1981; Mhloyi, 1987). However, fertility will decline in Zimbabwe without a reversal of wealth flow as postulated by Caldwell (1982).

In rural areas it might be education of the children which affects a change in fertility rather than education of the parents (Mhloyi, 1987). Most parents in FGDs remarked that they did not want their children to suffer in the future, as they did without education. Yet educating children was reported as becoming more and more expensive; hence, the need to limit the children to a manageable number in terms of educating them.

Generally, FG discussants remarked strongly about the fact that they had to buy food due to the persistent droughts and unavailability of farming inputs; they argued that this was a new experience compared to their childhood era.

At independence the government prioritised education, health, subsidised primary and secondary education and offered loans and grants to universities, health services and other social services. The gains of the policies are clearly evident. However with the introduction of the IMF and World Bank funded Economic Structural Adjustment Program (ESAP) and the civil unrest under the current 'perceived' economic sanctions by the western countries, the government has had to cut expenditure on education, health and other social services. Hence it is likely that fertility will decline mostly due to lack of development than development in the near future – crisis driven fertility decline (Mhloyi, 1987).

## 5.4. Recommendations

There is need for awareness campaigns that will realise increases in the age at first marriage, so that women can be empowered, and hence, can decide on when to get married and have children. The strategies introduced should largely aim to improve the status of women. This can mainly be achieved by empowering women through intensifying educational opportunities. This situation will reduce early marriage and empower women to make decisions on their fertility.

The improvement in the status of women particularly education is fundamental in maintaining the momentum of fertility transition in Zimbabwe. This does not entail formal education only, but awareness of marital laws and other legislation that influence the day to day living of the women. The pervasive impact of education on the use of modern methods of family planning, postponement of marriage and in the long term, boosting employment, will certainly go a long way in the bid to further reduce or maintain fertility levels.

The government should continue its extended hours of breastfeeding campaign not only for the health of the child and the mother, but clearly highlight its inhibiting effect on fertility and the associated benefits of smaller family sizes. This campaign should target the urbanites mostly, which have short durations of breastfeeding. However the introduction of the breastfeeding hour was a huge step in the right direction, and government should continuously implement this legislation.

In the same vein the government should promote the Zimbabwe National Family Planning Council (ZNFPC) to provide efficient and effective services. ZNFPC should provide detailed information and educate communities about family planning and also assist parents to better communicate with their children on sexual and reproductive health issues. It should ensure that contraceptive commodities stock is adequate in all health institutions and community based distribution centres. Over and above, ZNFPC needs to carry out a detailed review to determine the demand for family planning services in each of the catchment areas currently served.

The information, education and communication campaigns on the methods of family planning, the sources, the benefits, and setbacks and remedies of the adverse effects of specific methods, should be stepped up. The imagined and real side effects of modern contraceptive innovations need to be thoroughly investigated. Most family planning programmes tend to focus mostly on the supply side rather than the demand side of innovation diffusion. There is a need for bringing a variety of family planning methods from which people can choose the best one suited to their needs to all communities especially the marginalised rural. All available methods in the country should be given equal publicity. The choice of an appropriate and affordable method should be the responsibility of the potential user. The popularity of the pill, injection and condom can be attributed to the fact that these methods are the most widely advertised in Zimbabwe.

Family planning services should be heavily subsidised to enable every willing woman the ability to space, limit or delay pregnancies. Family planning services should be available, affordable, accessible and acceptable to all women in the reproductive age group who need them. Employers should help by making family planning and other reproductive health services available to women. They should be encouraged to employ more women and to make full maternity benefits available to women.

Educators should include family planning in school curricula, from primary to tertiary levels. Legal age at which contraceptives can be offered should be reduced since many girls now reach menarche at as early as 10 years. The legal age of majority is set at 18 years in Zimbabwe, yet a woman can marry at 16 by parental consent. Girls under 18 years have no access to contraceptives (legally), yet they are allowed to marry and reproduce. The review of this contradiction is long overdue. Also, health workers and others who provide services to adolescents should be "youth – friendly" so as to reduce unwanted pregnancies among these adolescents.

Although men and women are aware of various family planning methods, they do not have adequate information about all available methods. It is therefore important to equip them with complete modern contraceptive information, and correct their misperceptions about some of the methods, so that they can choose the method that is best suitable for their need. To achieve this goal, policymakers and program planners need to understand local concepts, experiment with multiple information channels and design strategies for reaching communities, especially men.

Male attitudes and behaviour should form an integral part of fertility studies. Family planning programmes must aim at bridging the gap between positive attitudes to modern contraception and actual practice. In addition, programs must continue to encourage couple communication, so that couples' family planning decisions are made jointly. Some potential strategies suggested by the findings for involving men in family planning programs involve, face-to-face dissemination of information by knowledgeable persons, encouraging couple communication within communities, training male health workers to discuss family planning with male groups, and strengthening access to, and availability of reversible methods, so that dependence on female sterilisation is reduced.

Family planning designers and implementers should be aware of cultural and social environment in which people live. They must respect the values and traditions of user and potential user through participatory interventions. The methods advocated should undermine the user's attitudes, needs and problems as these affect the approval and use of contraception.

The low level of contraceptive use in some provinces may be a result of lack of consideration of cultural values, by the advocates of family planning, and the fact that some of the contraceptive methods on offer do not conform with the social and cultural norms of the respondents.

Providers of family planning services should be frank in discussing contraception methods, particularly the side effects, efficiency and problems of misuse. People who are left to discover contraceptive side-effects after having adopted a method are likely to be discouraged from using other methods, and are likely to discourage other potential adopters of family planning.

## 5.5. Conclusion

The preceding analyses have examined a series of measures of fertility using the data available from 1999 and 2005 ZDHS data. By and large, the analyses confirm that there is decline in fertility in Zimbabwe. The total fertility rate in 1969 was around 7 births per woman while that in 2005 was 3.8 per woman. The evidence of fertility decline provided suggests that there was an acceleration of fertility decline in the 1980s to the 1990s and eventually slowly declining in the late 2000s. Contraception is responsible for fertility reduction from 1999 to 2005. The impact of contraception on fertility is highest and it has increased over the years. The index of contraception is followed by marriage patterns and postpartum infecundability during the same period.

As couples choose to have fewer children, TFRs in Zimbabwe will decline to levels below 3 births per woman or even replacement level. This is due to individual decisions arising from the higher cost of maintaining a family, and these decisions can easily be implemented, given the widespread use of contraception in Zimbabwe. The omission of the index of induced abortion and HIV and AIDS in the study is a major limitation. Some studies conducted in the country have shown that induced abortion has increased over the years.

However the omission of induced abortion in the analysis may have an impact on the accuracy of the inhibitive effect of proximate determinants on fertility from 1999 to 2005 in Zimbabwe.

Zimbabwe is one of the countries in sub-Saharan Africa with a high HIV and AIDS prevalence rate (WHO 2004; UNAIDS 2006). A study conducted in Zimbabwe showed that HIV and AIDS has influenced people to change their behaviour in order to protect themselves from the epidemic. These behaviours have promoted fertility reduction in the country (Gregson et al. 1997). Guy (1999) supports this position, noting that HIV and AIDS influences fertility and proximate determinants in different ways; hence there is a need for research to examine further the effect of HIV and AIDS and induced abortion on fertility and proximate determinants in Zimbabwe.

Government support is beneficial to families and it may hasten decisions to conceive. Government policies may have small effects on fertility rates, however, whether the governments transfer cash to families for pregnancy and child support, or provide payments for assisted human reproduction. On the contrary, efforts to improve education are associated with better quality of life and higher economic growth at the societal level (McAllister and Baskett (2006); Lutz etal. (2008a)). Support of education and compatibility of work and family life are the most likely strategies in the long-term to improve prosperity and allow couples to have the family size they prefer.

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# APPENDIX 1: FOCUS GROUP DISCUSSION GUIDE

1. What is the acceptable number of children? Why? Any difference between rural and urban areas?
2. Has the acceptable number of children changed? What has changed?
3. What are the determinants of marriage for men, women, why?
4. Are men marrying earlier than say 10 years ago? Why? How about females? Explain.
5. Have patterns of breastfeeding changed? How have they changed?
6. Has infant mortality changed? How? Since when? Why?
7. Do you think family sizes have changed? How? Why?
8. Is it easy for couples to regulate their fertility? How? Can men participate by getting sterilised? Why?