CHAPTER 6

# Fertility and childbearing in South Africa

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## Introduction

One remarkable demographic achievement in South Africa has been the decline in fertility in the past four decades (Caldwell & Caldwell 1993, 2003; DoH 1998). Currently South Africa has one of the lowest fertility levels on the continent (Caldwell & Caldwell 2003; Anderson 2003). Although past estimates were based largely on unreliable and often fragmented data, many studies confirm the decline in fertility in South Africa (Caldwell & Caldwell 2003; Sibanda & Zuberi 1999; Udjo 2003). Fertility in South Africa declined from an average of 6 to 7 children per woman in the 1950s to an average of 4 to 5 children in the 1980s and about 3.3 children per woman in the mid 1990s (Chimere-Dan 1993, 1999; Moultrie & Timaeus 2003; Sibanda & Zuberi 1999; Udjo 1998, 2003).

The observed decline in fertility in South Africa varies by population group. The white population group experienced sustained fertility decline from the end of the nineteenth century until 1989, when they reached below replacement level with a total fertility rate (TFR) of 1.9 children per woman (Department of Population and Social Development 1998). Since then the TFR for the white population has remained unchanged. The nature and pattern of fertility transition for the white population in South Africa resembles the European fertility transition (Oosthuizen 2000).

The Asian population group witnessed fertility decline from around the 1950s. TFR declined from about 6 in the 1950s to 2.7 in the late 1980s and 2.5 in the mid 1990s. Fertility for the coloured population group, however, showed a rising trend in the mid 1940s up to early 1960 and thereafter showed a downward trend. TFR declined from 6.5 in the late 1960s to about 3 by the 1980s and 2.5 by the mid 1990s. As for the African population group, who constitute more than 75 per cent of the country's population, fertility decline commenced in the early 1960s and continued to the present (DoH 1998). TFR for this group declined from 6.6 in 1960 to 4.5 in 1980s and down to 3.3 in the 1990s. The pace of fertility decline appears to be slower among the African population than among the coloured population (Department of Population and Social Development 1998).

The observed fertility decline has not been uniform in this 'rainbow' nation, which prior to 1994 was dominated by a minority political regime committed to racialisation, classification and ethnification of society. Thus the observed differentials in fertility are largely a reflection of the socio-economic and general imbalances of the past in terms

of standards of living. For instance, apartheid policies favoured the white population and this in return led to white people attaining better living conditions and access to various health facilities while other racial groups suffered. The relationship between levels, trends and differentials in fertility in South Africa and apartheid ideology and policies is complex and not fully understood (Burgard 2004). One thing that is clear, though, is that demographic concerns were central to many apartheid policies (Camlin et al. 2004). While official population policies sought to reduce African fertility (driven by white South Africans' fear of being 'swamped'), other policies ensured that African people were systematically denied access to education, healthcare and urban residence – factors that were important in determining the pace of fertility decline in a variety of settings in both the developing and developed world (Camlin et al. 2004).

This chapter is therefore intended to examine the determinants of South African fertility using data from the 1998 South African Demographic and Health Survey (SADHS) and from the 1996 South African population census (DoH 1998; Stats SA 1999). More specifically, the analytical objective is to identify the differentials in fertility among sub-groups of populations in South Africa. The study will reveal whether the recent expansion of modernisation factors such as education, health, urbanisation and housing reform programmes have affected childbearing patterns in South Africa.

The findings of the analysis are provided in two parts. Part one deals with differentials on cumulative fertility by selected socio-economic and cultural factors (also known as the indirect determinants of fertility). Part two analyses the proximate determinants (also referred to as intermediate variables or direct determinants) using Bongaarts' model (Bongaarts 1978, 1985).

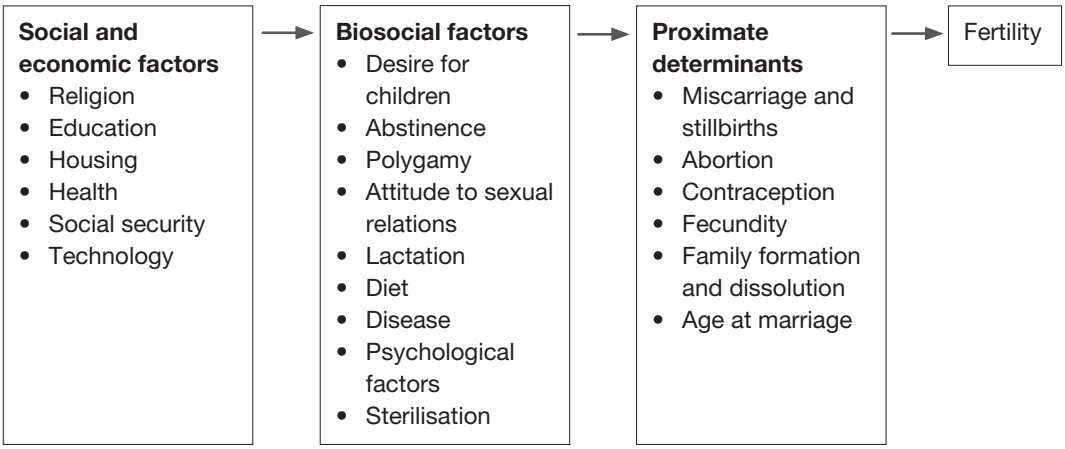
## Determinants of fertility

The level of fertility of any given population is known to be influenced by both indirect and direct determinants or factors. The former refers to socio-economic and cultural systems and includes factors such as education, rural–urban residence, religion, technology, housing, health, social security and so on. The latter are also referred to as proximate determinants or intermediate fertility variables and include the proportion of women in the total population who marry, effective contraceptive use, induced abortion, length of amenorrhea, and so on. These proximate determinants are of interest because of their direct impact on fertility, and consist of a set of biological and behavioural factors through which social, economic and cultural conditions can affect fertility. As noted by Freedman, 'the proximate variables stand between fertility and all other preceding variables. They immediately determine fertility, and all other variables act through combinations of them' (1986: 773).

The analytical framework of the proximate determinants (intermediate variables or direct determinants) first introduced by Davis and Blake (1956) and later modified by Bongaarts (1978, 1985), provided an opportunity for demographers to have a deeper

understanding of how socio-economic, cultural and environmental, and biological factors affect fertility. Thus knowledge has been instrumental in deciding the various means and ways best suited to achieving fertility reduction – more particularly in developing societies. This linkage between the socio-economic, cultural and environmental factors is demonstrated in Figure 6.1.

*Figure 6.1: Linkages between fertility and the socio-economic and cultural system through biosocial and proximate determinates*






## Socioeconomic and cultural determinants

In part one of the analysis, the relationship between selected socio-economic and cultural variables and fertility is discussed. The variables examined include education, type of place of childhood residence, region of usual residence, race or population group and a woman's work status for pay.

### *Education and fertility*

The spread of education and literacy among women is believed to be fundamental to changes in reproductive behaviour. The effect of women's education on fertility in less developed countries is found to be curvilinear; that is, fertility tends to rise first with education and then decreases sharply once a certain level of education is attained (Cochrane 1979). The argument is that education is positively associated with improved health and hygiene standards, which translate into lower chances of spontaneous abortion or foetal loss, lower levels of infertility, abandonment of traditional constraints upon sexual behaviour and the practice of breastfeeding, all of which are known to raise fertility levels. As the educational level increases, marriage tends to be postponed which causes a negative effect on fertility and counteracts the initial effect of fertility increase. Moreover, educated women desire relatively fewer children. They have high contraceptive prevalence and a high chance of working outside their homes. All of these factors are known to lower fertility levels (Cochrane 1979). However, there is also a possibility of the reverse causation that is less documented: that is, the initiation of childbearing causing the termination of education (Cochrane 1979). While analysing the relationship between fertility and the level of education in sub-Saharan Africa, Cohen (1993) has shown that fertility

is either curvilinear or negatively related with education but does not appear very responsive to few years of education.

According to the 1998 SADHS, fertility is highest among those with no education, followed by those with primary education, then those with secondary education, and lowest amongst those with tertiary education.

*Type of place of childhood residence and fertility*
Generally speaking, fertility is higher for women whose childhood place of residence up to age 12 was in rural areas compared to those who grew up in urban areas. A study by Cohen (1993) demonstrated that rural fertility is substantially higher than urban fertility in every African country included in the analysis. The 1998 SADHS indicated that TFR in urban areas was 2.3 compared to 3.9 in rural areas (DoH 1998). Higher levels of education, occupation, a more modern environment and aspirations for higher levels of living are among the factors that can cause fertility among urban women to be lower than among rural women. Also, it is assumed that urban women have a better knowledge of and access to modern contraception than women in rural areas (Cohen 1993).

*Region of usual residence and race or population group and fertility*
Variations in fertility have been observed in different regions or provinces and different race/population groups of the same countries. Such variations are, however, a reflection of differences or imbalances in social, economic and cultural development, which express themselves in the different levels (and quality) of education, urbanisation, industrialisation, employment, and access to health facilities and family planning services including abortion services and so on.

The role played by industrialisation and access to health facilities needs particular mention here. The influence of increasing industrialisation on the family, and on the role of the different members in the family, makes it a factor in fertility change. Abu-Gamrah (1977) identified such indicators as land area per tractor, use of fertilisers, steel consumption, energy consumption, production of manufactured goods, consumption of cement and number of commercial vehicles as among those used to measure the level of industrialisation.

Generally, it is expected that fertility is very low in those societies that have achieved radical changes in the level of industrialisation and therefore the mode of production. Likewise it can be argued that fertility transition will be completed much faster in those high-fertility societies experiencing rapid industrialisation.

As far as access to health facilities is concerned, societies with advanced health provision have also managed to bring their mortality to very low levels. Since high mortality, especially infant mortality, has been associated with high fertility, couples tend to respond to high infant loss with continued childbearing. A sharp decline in infant mortality, therefore, creates a favourable environment for family limitation.

*Work status of women and fertility*

Many studies have found working women to experience lower fertility than their counterparts who are not working. For instance, the 1998 SADHS indicated that TFR for women who are working is 2.2 children per woman whereas TFR for women who are not working is 3.3 children per woman. 'Role conflict' theory is often advanced as the basis for the differences in fertility of women who are in the work-force and those who are not. Working women, especially those engaged in non-domestic enterprises, have a conflict between work and reproduction. They find the care of children more difficult than those women who are not working and hence tend to have fewer children than the latter group. Even among the employed group there are substantial differentials by occupational groups. From the experience of contemporary rich nations, women engaged in agricultural pursuits tend to have higher fertility than those engaged in non-farm enterprise.

## Data source

This study utilises data extracted from the 1998 SADHS, which was conducted on behalf of the government of South Africa by the Medical Research Council (MRC) of South Africa in collaboration with Macro International (DoH 1998). The 1998 SADHS involved the use of three basic questionnaires. The first questionnaire on households recorded information on all household members. The second questionnaire recorded detailed information on eligible women who were identified from the household questionnaires. A total of 11 735 women were interviewed using the individual questionnaire. This questionnaire collected information on the respondent's background characteristics, reproductive history, knowledge and practice of family planning, breastfeeding practices, marriage, fertility preferences and so on, as well as information about her husband's background characteristics. The third questionnaire was administered to adults in every second household and a total of 8 156 women and 5 735 men were interviewed using this questionnaire. The analyses in this chapter will use data from the individual questionnaire only.

## Methods of analysis

### Estimates of fertility

There are a number of measures of fertility and these include crude birth rate (CBR), age-specific fertility rates (ASFR), TFR, gross reproduction rate (GRR), net reproduction rate (NRR) and lifetime fertility measures such as the average number of children ever born. In this study, usage is made of lifetime fertility measures.

The analysis of cumulative fertility differentials in part one of the chapter is based on all women, using the index of children ever born. The data were standardised for age at first marriage and for never married women to avoid the intervening effect on fertility of those variables analysed. This helped to clarify the relationship between those variables of interest and fertility. Standardisation for age at first marriage and the proportion never married was done based on the distribution of each entire age group according to the age at marriage (for more detailed discussion

on the standardisation procedure see Pullum 1978). The initial data consist of the unstandardised means of children ever born for each combination of age at marriage and selected socio-economic variables. The first step involved multiplying the proportions of women in the entire age group for each category of age at marriage by the unstandardised means in each combination of age at marriage and background variable. The numbers generated are then added across all categories of age at marriage. The result is the standardised means of children ever born for each age category of, for instance, type of place of residence in that age group.

Age at first marriage and never married women, together with current age, were the major demographic control variables in world fertility surveys. As Pullum (1978) observed, women who belong to the same birth cohort share many cultural and socialising experiences. They will have been exposed to a similar background of some norms and behaviour patterns. Women who marry at about the same historical time constitute a marriage cohort. When there is little premarital sexual activity and less marital separation and disruption, marital duration will tend to classify women in the same way as age. This will tend to go through similar changes in the introduction of modern contraception and attitudes towards induced abortion. It should be noted, however, that marriage is not such a good control for fertility because a lot of births occur before and outside marriage (Pullum 1978). In other words, childbearing is not confined to marriage. South Africa is no exception in this respect.

**Methods of analysis of the proximate determinants**

Part two of this chapter aims to quantify the proximate determinants of South African fertility and to find out whether fertility levels can be accounted for by the intermediate fertility variables using the model first developed by Davis and Blake (1956) and later modified by Bongaarts (1978, 1985). The model was developed to facilitate the understanding of the mechanism through which socio-economic and biosocial factors (the indirect determinants) affect fertility through biological and behavioural variables, otherwise known as the direct determinants of fertility.

In the initial model, Davis and Blake (1956) proposed 11 variables through which the various socio-economic and biosocial factors operate to affect fertility. Following this pioneering work, Bongaarts modified this model and introduced his own model based on seven intermediate variables, namely (1) proportion married among females; (2) prevalence of induced abortion; (3) contraceptive use and effectiveness; (4) duration of postpartum amenorrhoea; (5) fecundability (that is, probability of conception), normally assumed to reflect frequency of intercourse; (6) spontaneous intrauterine mortality rate; and (7) prevalence of permanent sterility. While the first four variables are known to exert strong influence on fertility, the remaining three are assumed to vary little between populations (Kalule-Sabiti 1984). In fact, proportion married, contraceptive use and effectiveness, induced abortion and postpartum infecundity are the most important variables in explaining fertility variation, accounting for up to 96 per cent of fertility change in some populations (Bongaarts 1985, 1978). Based on this finding, Bongaarts (1985) developed the following four indices:

- Index of proportion married (denoted as $C_m$): this captures the proportion of the population that marry or remain never married. Bongaarts defines marriage to include consensual unions. This variable measures the extent to which women are exposed to regular intercourse.
- Index of contraception (denoted as $C_c$): this measures the prevalence of effective contraceptive use. These two variables measure the prevalence of deliberate marital fertility control. $C_c$ equals 1 if no form of contraception is used and 0 if all fecund exposed women use modern methods that are 100 per cent effective.
- The index of postpartum infecundity (denoted as $C_i$): this index measures the natural marital fertility factors such as the length of period of non-susceptibility to conception after birth, frequency of intercourse, extent of involuntary sterility, extent of spontaneous intrauterine mortality and duration of viability of ova and sperm. These factors together determine the amount of postpartum infecundity. Postpartum infecundity refers to the period between childbirth and the time when the normal menstrual cycle resumes. Its length is induced by the intensity of uninterrupted breastfeeding. In the absence of contraception, intense and fulltime breastfeeding delays conception, thereby giving rise to longer non-susceptible period. It is therefore referred to as the period of infecundity or sterility. Like the other remaining three less important variables it is determined by the level of natural fertility.
- The index of induced abortion ($C_a$): this index measures the extent of use and non-use of induced abortion. Even though it is said that the practice of abortion, like prostitution, is as old as civilisation itself, requisite data to allow a detailed investigation on the impact of abortion are not readily available. As such, although abortion is one of the components of the Bongaarts model, few studies have incorporated it fully. The role of abortion is in effect assumed, but it is rarely quantified due to the lack of available data on the subject. Abortion was legalised in South Africa in 1996. In this application $C_a$ is assumed to be 1.

The fertility-inhibiting effects of the most important determinants are quantified in Bongaarts' model by these four indices, each of which assumes a value between 0 and 1. When the index is close to 1, the proximate determinant will have a negligible inhibiting effect on fertility, whereas when it takes a value of 0, it will have a large inhibiting effect.

The main equation of the model is: $TFR = C_m * C_c * C_a * C_i * TF$, where TFR is the total fertility rate and TF is the total fecundity.

The four indices are calculated using the following relationships:
**$C_m$ = TFR/TMFR**
where TMFR is the total marital fertility rate and TFR is the total fertility rate.
To calculate total marital fertility rates two approaches were considered. First, births in the last 36 months were cross-tabulated by marital status data. Using births occurring to married women only, age-specific marital fertility rates (ASMFRs) were calculated. From the calculated ASMFRs, total marital fertility rate (TMFR) was calculated as the sum of ASFMRs multiplied by 5. Second, using the distribution of women by marital status, the proportion married was calculated. ASFMR was

obtained by dividing the age-specific fertility rate (ASFR) by the proportion married, assuming that all births took place to married women.

**$C_c = 1 - 1.08^* u^* e$**

where u is the proportion currently using contraception among married women of reproductive age, and e is the average use-effectiveness of contraception and 1.08 is the sterility correction factor. The method-specific use-effectiveness level ($e_i$) is adopted from Bongaarts and Potter (1983). The weights are, in effect, equal to the proportion of women using a given method ($u_i$). The weights used are presented in Table 6.1.

*Table 6.1: Use-effectiveness of different contraceptive methods*

| Contraceptive method | Use-effectiveness |
|---|---|
| Pill | 0.90 |
| IUD | 0.95 |
| Injection | 0.99 |
| Sterilisation | 1.00 |
| Others | 0.70 |

*Source: Bongaarts & Potter 1983*

**$C_i = 20/ 18.5 + i$**

where i is the average duration (in months) of postpartum infecundity caused by breastfeeding or postpartum abstinence. According to Bongaarts, 20 is the average birth interval (in months in absence of breastfeeding and postpartum abstinence), while 18.5 is the sum of 7.5 months of waiting time to conception, 2 months of time added by spontaneous intrauterine mortality and 9 months of full-term gestation. In absence of breastfeeding, the average duration of postpartum infecundity is assumed to be 1.5 months. In order to estimate the average duration (in months) of postpartum infecundity (i) the following equation was used:

**$I = 1.753 * e^{0.1396 * B - 0.001872^* B^* B}$**

where B = mean or median duration of breastfeeding in months.

**$C_a = TFR/(TFR+(b^*TA))$**

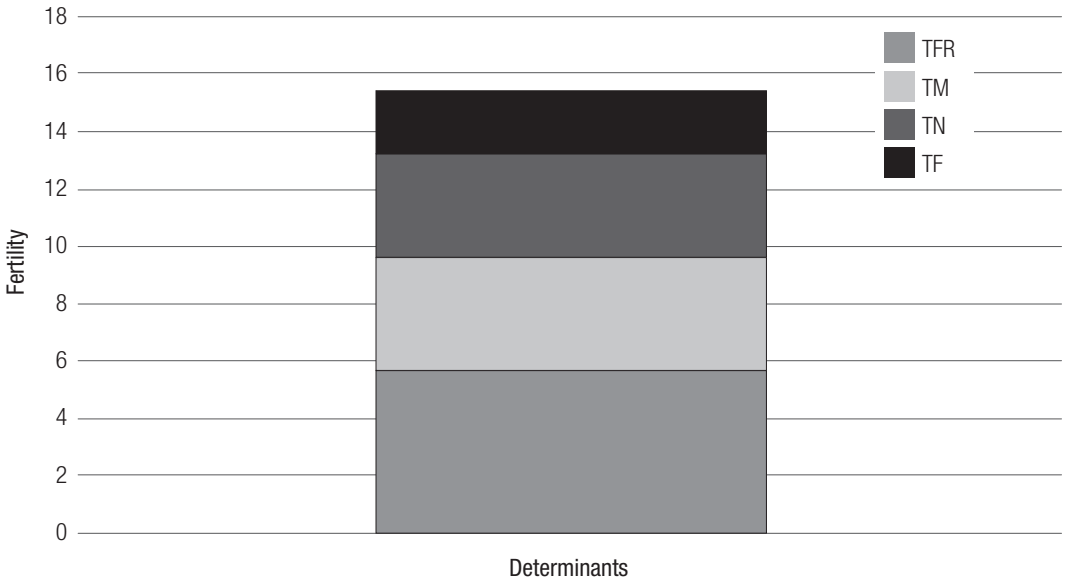
where TA is the total abortion rate equal to the average number of induced abortions per woman at the end of the reproductive period if induced abortion rates remain at prevailing levels throughout the reproductive period. B is the number of births averted per induced abortion which may be approximated by the equation $b = 0.4 (1+u)$.

The above framework has therefore two components: (1) the equations that express the effect on fertility of the first four determinants (which Bongaarts considered to exert a strong effect on fertility) in the model; (2) the assumption that the remaining proximate determinants vary little between populations. Evidence was produced

that foetal loss, sterility and fecundability do not vary sufficiently between most populations to account in any appreciable way for differences in fertility levels.

Figure 6.2 represents the suppressing effects of the four intermediate variables named above. When the influence of all four are present, as in the real world, fertility will be observed at a level of TFR. When the suppressing effect of non-marriage on fertility is removed, that is, when all women enter marriage at age 15 and marriages are stable, fertility will rise to a level of total marital fertility rate (TMFR). Eliminating further the suppressing impact of contraception and induced abortion, that is, they are not practised in a population, fertility will rise further to a level of total natural fertility rate (TN). And removing the effect of postpartum infecundity, fertility reaches the maximum level of total fecundity rate (TF) (Kalule-Sabiti 1983).

*Figure 6.2: Impact of proximate determinants on fertility*




The basic assumption made by Bongaarts in developing the model was that in the absence of lactation and contraception there is an average birth interval of about 20 months, of which about 7 months represent the interval of exposure (the menstruating interval); and in the absence of all determinants, the model is based on the premise that potential fertility of populations would vary within a narrow range of 13.5 to 17.5 births per woman with an average of 15.3 (Kalule-Sabiti 1984). The model has been validated on a number of populations (see Bongaarts 1985; Ferry & Page 1984; Kalule-Sabiti 1984).

The model was applied to the South African data sets using the following four steps:

- estimation of the intermediation fertility variables;
- estimation of the indices;
- estimation of total fertility rates;
- a comparison of the model estimates of the total fertility rates with the observed total fertility rates.

## Results and discussion

Table 6.2 presents estimates of fertility for selected socio-economic factors. In general the estimates confirm the findings from other countries. Differentials in fertility have been noted by education, childhood place of residence, province of residence, population group and working status of women. According to Table 6.2, fertility is highest among African people, closely followed by coloured then Asian people and lowest for white people. Mean number of children ever born is higher among females whose childhood place of residence is rural areas. Fertility is also affected by the level of education of women, with a mean number of children ever born of 3.39 children for women aged 45 years and over with no education compared to 2.54 children for women aged 45 years and over with tertiary education.

*Table 6.2: Mean number of children ever born to women by age and selected socio-economic factors, South Africa, 1998*

| Selected socio-economic factors | All ever married | Never married | 15–24 | | 25–34 | | 35–44 | | 45+ | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Unst. | St. | Unst. | St. | Unst. | St. | Unst. | St. |
| *Education* | | | | | | | | | | |
| None | 2.12 | 0.77 | 1.09 | 1.16 | 3.08 | 2.70 | 4.33 | 4.22 | 5.38 | 5.39 |
| Primary | 1.40 | 0.43 | 0.63 | 0.58 | 2.61 | 2.50 | 3.92 | 3.92 | 4.52 | 4.54 |
| Secondary | 1.00 | 0.33 | 0.41 | 0.42 | 1.79 | 1.83 | 2.88 | 2.94 | 3.14 | 3.13 |
| Tertiary | 1.10 | 0.22 | 0.29 | 0.36 | 1.26 | 1.37 | 2.33 | 2.43 | 2.62 | 2.54 |
| *Childhood place of residence* | | | | | | | | | | |
| City | 0.93 | 0.26 | 0.33 | 0.37 | 1.57 | 1.60 | 2.60 | 2.67 | 3.02 | 3.05 |
| Town | 0.99 | 0.28 | 0.35 | 0.39 | 1.73 | 1.74 | 2.83 | 2.91 | 3.20 | 3.28 |
| Rural/farm | 1.21 | 0.40 | 0.54 | 0.52 | 2.32 | 2.25 | 3.93 | 3.93 | 4.72 | 4.69 |
| *Province of residence* | | | | | | | | | | |
| WC | 0.88 | 0.28 | 0.35 | 0.36 | 1.63 | 1.70 | 2.75 | 2.74 | 3.07 | 3.26 |
| EC | 1.16 | 0.33 | 0.42 | 0.44 | 2.27 | 2.27 | 3.68 | 3.72 | 4.34 | 4.38 |
| NC | 1.02 | 0.36 | 0.46 | 0.45 | 1.86 | 1.91 | 2.91 | 3.00 | 4.31 | 4.28 |
| FS | 1.02 | 0.24 | 0.35 | 0.36 | 1.76 | 1.62 | 3.20 | 3.01 | 3.83 | 3.62 |
| KZN | 1.26 | 0.41 | 0.50 | 0.53 | 2.16 | 2.18 | 3.58 | 3.64 | 4.17 | 4.21 |
| NW | 1.31 | 0.37 | 0.45 | 0.51 | 1.83 | 1.90 | 3.30 | 3.36 | 4.15 | 4.06 |
| G | 1.04 | 0.29 | 0.40 | 0.40 | 1.82 | 1.77 | 2.85 | 2.89 | 3.29 | 3.32 |
| M | 1.27 | 0.45 | 0.54 | 0.57 | 2.24 | 2.19 | 3.81 | 3.80 | 5.09 | 4.92 |
| L | 1.15 | 0.33 | 0.55 | 0.44 | 2.48 | 2.29 | 4.45 | 4.09 | 5.26 | 5.19 |

| Selected socio-economic factors | All ever married | Never married | 15–24 | | 25–34 | | 35–44 | | 45+ | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Unst. | St. | Unst. | St. | Unst. | St. | Unst. | St. |
| *Race/population group* | | | | | | | | | | |
| African | 1.16 | 0.37 | 0.48 | 0.49 | 2.11 | 2.10 | 3.62 | 3.67 | 4.46 | 4.45 |
| Coloured | 1.09 | 0.36 | 0.45 | 0.47 | 1.69 | 1.75 | 2.83 | 2.86 | 3.42 | 3.61 |
| Asian | 0.59 | 0.01 | 0.08 | 0.10 | 1.61 | 1.11 | 2.22 | 1.90 | 2.59 | 2.30 |
| White | 1.12 | 0.01 | 0.24 | 0.17 | 1.80 | 1.27 | 2.67 | 2.38 | 2.84 | 2.80 |
| *Work status* | | | | | | | | | | |
| Working | 1.18 | 0.33 | 0.44 | 0.45 | 2.15 | 4.11 | 3.74 | 3.76 | 4.38 | 4.38 |
| Not working | 0.91 | 0.42 | 0.53 | 0.49 | 1.79 | 1.79 | 2.96 | 3.02 | 3.63 | 3.64 |

*Source: SADHS (DoH 1998)*

Variations in fertility are also observed at provincial level. Mean number of children ever born for women aged 45 years and older indicate that fertility is highest in Limpopo, Mpumalanga, Eastern Cape, Northern Cape, KwaZulu-Natal and North West provinces and is lowest in Western Cape, Gauteng and Free State provinces. According to these estimates provinces that are less developed also experience higher fertility rates (Limpopo and Eastern Cape) while those that are developed experience lower fertility rates (Gauteng, Western Cape and Free State). Furthermore, differentials in fertility by province are a reflection of the racial composition and the different levels of education, urbanisation and access to health and family planning services as created by the apartheid regime (Moultrie & Timeaus 2002).

Other things being equal, fertility is higher in provinces that have a high proportion of the African population group and is lowest in provinces with a high proportion of the white and coloured population groups. Provinces that are highly urbanised, such as Gauteng, Western Cape and Free State, have lower fertility as compared to the least urbanised provinces of Limpopo, Eastern Cape and North West.

The indices of marriage, contraceptive use and postpartum infecundity and the TFR and TF as obtained using Bongaarts' model for the year 1998 are presented in Table 6.3 and Figure 6.3.

*Table 6.3: Indices of proximate determinants of fertility by population group, South Africa 1998*

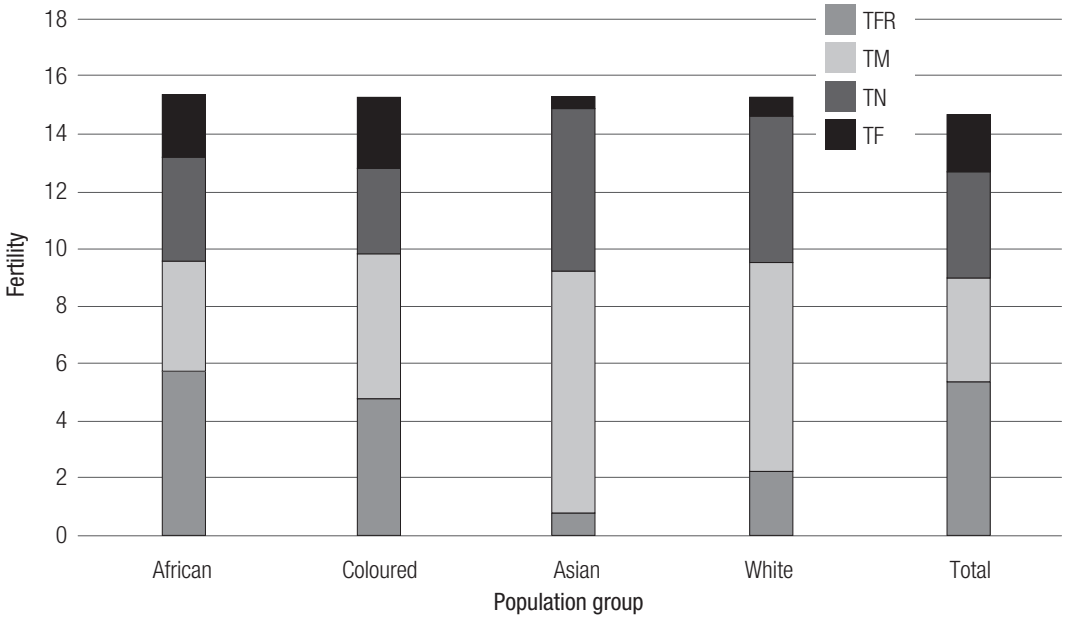
| | African | Coloured | Asian | White | Total |
|---|---|---|---|---|---|
| Reported TFR | 3.30 | 2.60 | 1.70 | 1.40 | 3.10 |
| TMFR | 8.80 | 5.50 | 23.70 | 11.20 | 8.70 |
| u | 0.49 | 0.54 | 0.58 | 0.56 | 0.50 |
| e | 0.38 | 0.45 | 0.54 | 0.52 | 0.40 |
| i | 13.30 | 10.30 | 2.50 | 4.80 | 12.20 |
| $C_m$ | 0.38 | 0.46 | 0.07 | 0.13 | 0.35 |
| $C_c$ | 0.59 | 0.52 | 0.42 | 0.44 | 0.57 |
| $C_a$ | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| $C_i$ | 0.63 | 0.69 | 0.95 | 0.86 | 0.65 |
| $C_i$ $C_a$ $C_c$ $C_m$ | 0.14 | 0.17 | 0.03 | 0.05 | 0.13 |
| TF | 15.30 | 15.30 | 15.30 | 15.30 | 15.30 |
| TN | 9.60 | 10.60 | 14.60 | 13.10 | 10.00 |
| TMFR | 5.70 | 5.50 | 6.10 | 5.80 | 5.60 |
| Estimated TFR | 2.20 | 2.50 | 0.40 | 0.70 | 2.00 |

*Source: Calculated by authors*

The model indices show that the most important index in explaining the level of fertility in South Africa is the index of marriage (or non-marriage) followed by indices of contraception and of postpartum infecundity. Furthermore, the results indicate that the effect of proximate determinants on fertility differs by population group. Post-partum infecundity (PPI) is most important for Africans followed by coloured then white people and least important for Asians. Contraceptive use is most important for the white population group, followed by the coloured and the Asian and least important among the African population group. The effect of marriage is almost the same in all population groups in that marriage accounts for nearly 25 per cent of the fertility.

Owing to unavailability of requisite information on induced abortion, we assume that the overall total induced abortion rate is zero. However, the effect of this variable will be automatically subsumed in the estimation of the total fecundity.

*Figure 6.3: Proximate determinants of fertility in South Africa by population group*




**Marriage**

The importance of marriage in determining the overall level of fertility in South Africa is consistent with the changes that are taking place with the institution of marriage in the country. In most societies, marriage not only signals the onset of a woman's exposure to the risk of childbearing, but also determines the length and pace of reproductive activity. Therefore, marriage is considered one of the four main proximate determinants of fertility (Bongaarts & Potter 1983).

In most African countries marriage takes place at an early age and is universal. In the absence of contraception, early and universal marriage practice leads to, among other consequences, higher fertility. Women who marry late will have on average shorter exposure to the chance of becoming pregnant, implying late age at childbearing and lower fertility for a society.

This is not the case with South Africa where, although motherhood begins early, marriage takes place later in life. Available statistics indicate that adolescent fertility is very high in South Africa. According to the 1998 SADHS, one-sixth of the more than 26 000 children born to African women in the 36 months preceding the survey were to women younger than 20 years at the time of birth (DoH 1998). In the past most African societies considered virginity to be essential for the first marriage and premarital pregnancy was a social embarrassment among most ethnic groups in Africa. Today, however, this is being accepted as an inevitable consequence of the modernisation process, even among the most conservative communities. In the olden days, a girl who became pregnant before marriage was required to confess, and

the man responsible was forced to marry her. Today the man responsible is only required to accept supporting the child financially.

Data on marital status presented in Chapter 5 indicate that the proportion of never-married women has increased for all age groups with the exception of those aged 15–19 where it has decreased slightly. Overall for women of reproductive age group the proportion of never married has increased slightly from 54 per cent in 1996 to 55 per cent in 2001. These figures indicate that more than half of women in childbearing are single.

In addition, the proportion of married women has decreased for all age groups in the childbearing period. Overall for women of reproductive age group, the proportion married has decreased from 35 per cent in 1996 to 31 per cent in 2001. Assuming that marriage was once universal in South Africa, and that almost all women were expected to marry, these figures indicate that nowadays only about a third of women marry.



Available data indicate that the proportion of women living together has increased for all age groups in the childbearing period. Overall for women of reproductive age group, the proportion of women living together has increased from 6 per cent in 1996 to 9 per cent in 2001.

Another important variable that contributes to fertility levels in a society is marital disruption arising from separation, divorce or widowhood. The analysis in Chapter 5 has shown that the proportion of women divorced and separated has decreased for all age groups in the childbearing period. Overall for women of reproductive age group, the proportion married has decreased from 3.2 per cent in 1996 to 3.0 per cent in 2001. At the same time the proportion of women widowed has increased slightly for all age groups in the childbearing period, with the exception of age groups 20–24 and 25–29, where it has remained constant. The highest increase was observed in the age group 45–49. Overall for women of reproductive age group, the proportion widowed has increased from 2.1 per cent in 1996 to 2.4 per cent in 2001. The slight increase in the number of widowed women may be due to the increase in mortality among adults probably arising from HIV/AIDS.

Recent decades have witnessed a dramatic increase in the proportion of all births that occur out of wedlock, from 5 per cent in 1960 to 27 per cent in 1989 (Mostert 1991). This change has paralleled delays in the age of first marriage and increases in female labour force participation.

It was also noted in Chapter 5 that a significant percentage of all women in the reproductive age group are unmarried. The large prevalence of unmarried women led to society accepting that many of these women will, during their lifetime, give birth to children, hence a universal fertility among women, irrespective of their marital status. In the past childbearing was limited to married couples only. These days any woman, married or not, can have children. As a result of this some studies

have found little difference in fertility rates between married and unmarried women in South Africa (Chimere-Dan 1999). This observation has led to the saying that 'marriage has lost its value as a determinant of fertility' (Department of Population and Social Development 2000).

Nevertheless, unmarried women are less constrained in the choice of number of children by husbands and in-laws, making them more susceptible to reducing fertility in response to socio-economic advancement. Thus, unmarried women have a considerably lower fertility rate than married women, resulting in lower overall fertility.

The net effect of changes observed in marital status on fertility depends on the combined effect of the variables described here. On the one hand, variables such as the high age at first marriage, increased proportion of never married, increased widowhood, and reduced proportion married have a negative impact on fertility. On the other hand, the increased proportion of living together and reduction in the proportion divorced/separated at all ages increases the proportion married, and is likely to enhance fertility. This means that the combined effect of all the changes in marital variables is to depress fertility.

**Contraception**

Contraceptive use has also contributed to the level of fertility in South Africa. One of the reasons for low fertility in South Africa is the relatively high contraceptive knowledge and use. Knowledge about family planning methods is now almost universal. The 1988 and 1998 SADHS collected data about knowledge and use of family planning methods. The 1998 DHS indicated that 97 per cent of all women interviewed had heard at least of one modern method of family planning (DoH 1998). This high level of knowledge is a result not only of the long history of the national family planning programme but also of the general improvement of social and economic conditions as measured by adult literacy levels.

Current use of contraception is expressed as the proportion of currently married women who report they are using a method at the time of the interview (in a survey). The level of modern contraceptive use in South Africa has increased gradually in the last two decades. The contraceptive prevalence rate (CPR) in South Africa increased from 55 per cent in 1990 to 60 per cent in 1994 (DoH 1998). Furthermore, the 1998 SADHS indicated that CPR is highest for Asian women (80 per cent), followed by white women (76 per cent) then coloured women (69 per cent) and lowest among African women (59 per cent). The high contraceptive use for Asians is surprising and may be related to sampling fluctuation or the methodological problem arising from small sample size.

Contraceptive use has increased in all provinces. Contraceptive prevalence ranged from 74 per cent in Western Cape, 70 per cent in North West, 68 per cent in Free State, 66 per cent in Northern Cape, 62 per cent in Gauteng, 60 per cent in Eastern Cape, 57 per cent in KwaZulu-Natal and 53 per cent in Mpumalanga and Limpopo (DoH 1998). This variance can be complemented with the socio-economic divisions

along racial and urban–rural lines (Department of Population and Social Development 2000). The statistics presented here suggest that although CPR is high throughout the country, there is need to intensify the family planning programme in the poorer provinces to bring them in line with the rest of the country.

Another important aspect of contraceptive use in South Africa is the heavy reliance on reliable, long-term and permanent methods such as injectables, pills and female sterilisation. Two things can be said about this issue. First, this may be an indication that women are now using contraception to limit rather than space births. Second, the methods indicate that contraceptive use in South Africa is clinic-based. This suggests that the South African model of family planning delivery is expensive and raises doubts as to whether it can be replicated in other African countries that are still struggling to increase contraceptive use and reduce fertility (Caldwell & Caldwell 2003).

The high contraceptive knowledge and use in South Africa was partly achieved as a result of the apartheid government's funding of the private and public family planning services and the provision of free contraception from as early as 1963. In addition, available data suggest that South Africa is one of the first nations on the continent to disseminate information about family planning. Although designed for the white population, family planning programmes were introduced in the early 1930s (Kaufman 1997, 1998; Klausen 1999). One consequence of the introduction of family planning among the white population was to create awareness among the other racial groups (African, Asian and coloured) about the existence of methods to prevent pregnancy.

In 1974, at the time when developing countries rejected family planning programmes at the Bucharest Conference by proclaiming that 'development is the best contraceptive', the South African government launched a relatively well-funded National Family Planning Programme.

**Breastfeeding**

Breastfeeding is another important proximate determinant of fertility. The fertility-reducing effect of breastfeeding arises from its role in lengthening the period of postpartum amenorrhea and consequently in extending the birth interval. Lengthy and intense breastfeeding lengthens the duration of postpartum amenorrhea. The duration of postpartum amenorrhea is much shorter among women who partially breastfeed their infants. Breastfeeding is also known to delay the return of ovulation following a birth, thereby contributing to longer birth intervals than would otherwise occur in absence of lactation. Both breastfeeding and postpartum abstinence delay the return of the menstrual flow and therefore the period during which the woman is exposed to the risk of getting pregnant. Thus the net effect of breastfeeding on fertility is to delay the return of menstrual periods after birth (postpartum amenorrhea), leading to longer birth intervals.

Breastfeeding is a common practice in South Africa. According to the 1998 SADHS about 87 per cent of the babies are breastfed for at least some time (DoH 1998). Rural, non-literate and older women are more likely to breastfeed for longer periods than their urban, educated and younger counterparts. On average South African women breastfeed their children for 16 months. The median duration of breastfeeding ranges from 5 months for Asian women, 0.6 months for white women, and 11 months for coloured women to 17 months for African women (DoH 1998).

The 1998 SADHS also showed that the median birth interval in South Africa was 47 months (DoH 1998). The median birth interval varies by population group. The median birth interval is 58 months for coloured women, 47 months for African women, 35 months for white women and 34 months for Asian women (DoH 1998).

The median duration of postpartum amenorrhea was estimated to be 2.4 months in 1998 (DoH 1998). It is lowest amongst coloured women (0.7 months), then Asian women (2.1 months) followed by African women (2.4 months), and highest among white women (3.4 months).

The median duration of postpartum abstinence was estimated to be 4.9 months. The variations by population group were such that it was lowest among Asian women (0.4 months), followed by white women (2.2) then African women (5.2 months) and highest among coloured women (5.5 months).

## Conclusion

In this study, an attempt has been made to estimate the fertility-inhibiting effect of the three most important proximate determinants: marriage, contraception and lactational infecundity. Although abortion is legal in South Africa, data on induced abortion are not readily available and its effect therefore remains essentially immeasurable. The analysis shows that the fertility level of South Africa is low; TFR is estimated at around three births per woman.

The study has also shown that the strongest reduction in fertility has been caused by the index of marriage. In South Africa today, other things being equal, marriage is no longer universal and is characterised by late age at marriage, high rate of divorce and remarriage and a high rate of single parenthood. These factors are associated with lower levels of fertility.

The second factor contributing to the level of fertility is high contraceptive use. There is no doubt that the previous minority government in South Africa paid great attention to increasing both the availability and utilisation of contraception, especially among African women. Many studies indicate that during the apartheid regime the government policy was such that fertility of white people was encouraged whereas that of African people was discouraged (Moultrie 2001).

Given that some provinces still exhibit high fertility levels, there is a need to manipulate the proximate determinants of fertility in these provinces in order to

have further decline in fertility in South Africa. Much can be done to increase the contribution of contraception and induced abortion, especially in areas that still have high fertility. In these areas governmental policies can concentrate on efficiently increasing contraceptive utilisation and effectiveness, particularly of condoms, and on encouraging breastfeeding and raising the age at first marriage.

Whether the established fertility transition will be sustained remains to be seen. Future fertility trends are likely to be influenced by the HIV/AIDS epidemic. There has been much apprehension about the effect of HIV/AIDS on fertility in South Africa (Anderson 2003). There is evidence that being HIV-positive lowers fecundity. There are also arguments that behavioural changes among those who are HIV-positive could lead to either lower or higher fertility. It is possible that young unmarried people will postpone entry into sexual union (preferably marriage) leading to further increase in age at first marriage or that couples may avoid having sex for fear of becoming infected with the HIV virus or of worsening the progression from HIV to AIDS if they are already infected. Studies indicate that HIV seropositive women tend to have lower fertility, possibly because they know that pregnancy may lead to early progression to AIDS and early death.

Based on a variety of studies in Africa, being HIV-positive seems to lower fertility from 25 to 40 per cent in comparison with HIV-negative women (UN 2002; Zaba & Gregson 1998). The United Nations (UN 2002) further argues that a 25 per cent national adult prevalence of HIV/AIDS translates into a 10 per cent decline in the total fertility rate, mainly through biological mechanisms.

A recent review of the literature on the relationship between HIV/AIDS and fertility based on studies conducted in Zaire and Uganda revealed that fertility was reduced by approximately 20 per cent among HIV-positive women after controlling for factors such as exposure and contraception (Camlin et al. 2004). Stover (2002) made a similar conclusion based on studies conducted in Uganda and Zimbabwe. In his projection model of the demographic impact of HIV/AIDS, Stover recommended a 20 per cent reduction of fertility among HIV-positive women aged 20–49 years, and a 50 per cent reduction of fertility among HIV-positive women aged 15–19 years.

The following policy implications relating to the achievement of further fertility decline can be drawn from this study. There is a need to:

- Campaign for a further increase in the age at marriage of women, especially in rural areas and poor provinces where early marriages are still common;
- Strengthen the existing national family planning programme in order to increase the quality and the quantity of contraceptive use and achieve higher use-effectiveness that will lead to a greater contribution to fertility decline, especially in areas where fertility is still high;
- Provide a method mix that meets the varied needs of couples and individuals. In this regard, condoms that provide dual protection need to be promoted;
- Ensure the commitment of additional resources to maintain current programme momentum; and

- Provide more information to women about the low cost and much greater benefits of longer duration breastfeeding in order to encourage full and intensive breastfeeding.

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