FERTILITY TRANSITION: THE CASE OF RURAL COMMUNITIES IN KARNATAKA, INDIA.

T.V.Sekher
Institute for Social and Economic Change, Bangalore, India.

Abstract

Most developing societies are now experiencing demographic transition at varying levels. In a vast country like India with high demographic diversity and heterogeneity, the levels and stages of fertility decline differ significantly from state to state. Given this situation, it is interesting to have a look at demographic transition in South India (a population of 220 million in 2001), which has now entered its last phase with fertility rates registering significant decline during the last two decades well ahead of other parts of the country. However, in view of the average level of economic development in this part of the country, the South Indian experience has revived discussions on the determinants of fertility reduction, notably about the respective role played by endogenous (cultural and historical features) and exogenous (economic transformations and governmental interventions) factors in popularizing family planning.

The present paper has aimed at understanding the channels of fertility decline in the South Indian State of Karnataka through an analysis of socio-cultural and spatial differentials. It has also attempted to capture the self- sustaining nature of fertility reduction by bringing out the fact that fertility decline in one social group is fuelled by low fertility behaviour in other groups. For this purpose, three village studies were carried out by employing focus group discussions and individual case studies to gather qualitative data from different social groups.It was observed that villagers were trying to cope with new 'risk factors ' by modifying their behaviour, and one among them was the fertility behaviour. The varying fertility in the villages appeared to be the consequence of level of development in and around the village and the "risk perceptions" among the people. Though the diffusion mechanism and imitation factors were relevant to a great extent, their impact varied considerably across communities and geographical locations.

INTRODUCTION

Most developing societies are now experiencing demographic transition, though at varying levels. In a vast country like India with high demographic diversity and heterogeneity, the levels and stages of fertility decline vary significantly from state to state. Even within a state, we observe large-scale regional disparities with regard to health and demographic indicators. The demographic transition in South India (a population of 220 million in 2001) has now entered its last phase with fertility rates registering significant decline during the last two decades compared to other parts of the country.

This paper deals with the fertility transition by examining the socio-economic and demographic indicators at the district level and below in the south Indian state of Karnataka.. This study is aimed at understanding the channels of fertility decline through an analysis of the socio-cultural and spatial differentials. In a large state like Karnataka, where regional disparities are more pronounced, a district level analysis is certainly necessary and is expected to provide some useful insights. This is more important

considering the greater emphasis now being placed in formulating a state level population policy in view of the present thrust on decentralizing planning and administration to better address the region- specific issues and local problems.

Unlike the three neighbouring states of Kerala, Tamil Nadu and Goa, demographic transition in Karnataka has not received much attention. Researchers have identified various factors – social, economic and political - for the significant reduction in fertility in both Kerala and Tamil Nadu (Zachariah 1983; Bhat and Rajan 1990; Antony 1992; Srinivasan 1995; Kulkarni *et al*. 1996; Zachariah and Rajan 1997; Nagaraj 1999). The fertility decline in Kerala in the seventies, despite low level of economic development, received international attention and admiration. Social scientists have put forth a number of explanations for the spectacular decline in Kerala's fertility. Factors like high female literacy, agrarian reforms, matrilineal customs, better health and educational facilities, government sponsored welfare measures and political consciousness are believed to have been responsible for the rapid and unusual demographic transition in Kerala. The state is also known for its notable achievements in the social sector, particularly in literacy and primary health care. In the case of Tamil Nadu also various explanations have been advanced to explain the demographic transition which include strong political will, Dravidian movements, social reforms, influence of mass media particularly films, and efficient official family planning programme. After reviewing all available literature, Kulkarni *et al* have concluded that "we have a fairly good idea of the 'when' and 'how' of the fertility transition in Tamil Nadu but are yet to have a convincing answer to the 'why' question?" (1996:63).

Andhra Pradesh, the first state to formulate a state population policy, also witnessed a fairly rapid decline in fertility during the 1990s despite slow progress in socio-economic development. The total fertility rate has declined significantly from 4.0 in 1981 to 2.5 in 1996, a 38 per cent decline in 15 years. Even with a low level of female literacy, the decline was very significant and there are a few studies which try to explain the factors for the fertility decline (Raju 1998; Balasubramanian1999; James 1999).

The pace and levels of fertility transition in Karnataka is altogether different. To understand the changes in the population front, it has been felt useful to analyse the data sets of large-scale demographic surveys conducted in Karnataka at various periods, apart from the census and official statistics. The Mysore Population Study (MPS), a pioneering work of its kind in the country, was a joint venture of the United Nations and the Government of India which was conducted in 1951-52, provides valuable information on births, deaths, age at marriage and the motivational aspects of fertility regulation. The MPS collected data from about 10,000 households in rural and urban areas of the old Mysore state (United Nations 1961). The MPS was an experiment in the use of sample survey of households to measure the trends and characteristics of population and also to examine the interrelationship between fertility behaviour and socio-economic development. Another major survey, the Bangalore Population Study (BPS), was undertaken in 1975 by the Population Centre, Bangalore, which analysed the factors affecting fertility and also assessed the impact of family planning programme and demand for contraception (Srinivasan *et al* 1978). About 5,000 households were covered in BPS. The MPS and BPS covered roughly the same geographic area and hence, fertility patterns reported in the two surveys can be compared to understand the changes over a generation. The Karnataka Fertility Survey, carried out by the Institute for Social and Economic Change with financial support from the World Bank, covered about 3,000 rural

households in 1979-80, studied the trends and factors that determine age at marriage and fertility (Rao *et al* 1986). The National Family Health Survey of 1992-93 covered about 4,400 ever-married women aged 13-49 years in urban and rural areas of Karnataka (PRC, ISEC and IIPS 1995). The NFHS-2 in 1998-99 collected information from 4,374 ever-married women aged 15-49 (IIPS and ORC Macro 2001). The primary objective of the NFHS was to provide state-level data on fertility, nuptiality, family size preferences, family planning, the level of unwanted fertility, utilization of health services, child nutrition etc. A comparative analysis of the data and the findings from these major surveys provide us with sufficient information to understand the changes in fertility patterns during the last four decades in the state of Karnataka.

There are also many other studies on various aspects of demographic and health changes in Karnataka (Caldwell *et al* 1983 and 1986; Chandrasekaran *et al* 1985; Kanbargi 1979; Kulkarni 1985; Rajaretnam and Deshpande 1994; Rayappa and Sekher 1996; Srinivasan 1986; Hutter 1998; Sekher and Rayappa 1999; Sekher 2001;Sekher et al 2001;Sekher and Raju,2004). Some studies have also examined the pattern of demographic transition in South India (Guilmoto 1992; Rayappa and Lingaraju 1996; Guilmoto and Rajan 2001).

This study has attempted to examine the fertility differentials across the districts and the regions of Karnataka, and to identify the factors responsible for such differentials. The computerized data sets of the 1991 census provide an opportunity to examine the fertility patterns at the micro/village level. This is followed by three village studies to understand the changes in attitudes and perceptions on fertility behaviour and value of children.

The State of Karnataka:

Till 1956, a major part of the present state of Karnataka was under the princely state of Mysore. With the reorganization of the states on the basis of language, more districts were added from the neighbouring states, that is from the former Bombay and Madras presidencies, the princely state of Hyderabad and Coorg state. Kannada became the official language of the new Mysore state which was renamed as Karnataka in 1973. In 1998, a division of some districts was effected taking the total number to twenty seven. Since this reorganization of districts has taken place few years back, the analysis in this report is based on the earlier configuration of twenty districts as per the 1991 census. However, to give an overview of the present situation, some basic demographic information of the 27 districts have been presented in Table 1, as per 2001 census.

Regional Disparities:

There exist considerable disparities in terms of socio-economic development between different regions within the state. The areas added to the state of Mysore in 1956 were at different levels of economic development. The Princely state of Mysore was considered as one of the most progressive and developed provinces at the time of independence. Modern system of education was established here as early as 1833. The first school for girls was started in Bangalore city by the London Mission in 1840, when education of a girl was a rare occurrence. In Bombay-Karnataka region modern system of education was established as early as 1826, whereas in Hyderabad-Karnataka region, not much progress was made in education till independence. Only 7 per cent of the women in Hyderabad-Karnataka area were literate at the time of the 1961 census when female literacy was

Table 1. Basic Demographic Data of Districts of Karnataka: 2001.

State/ District	Population			Decadal Growth Rate (1991-2001)	Sex Ratio	Density	Literacy Rate (7 + age)		
	Total	Males	Females				Persons	Males	Females
INDIA	**1,027,015,247**	**531,277,078**	**495,738,169**	**21.34**	**933**	**324**	**65.38**	**75.85**	**54.16**
Karnataka	**52,850,562**	**26,898,918**	**25,951,644**	**17.25**	**964**	**275**	**66.6**	**76.1**	**56.9**
Belgaum	4,214,505	2,150,090	2,064,415	17.40	960	314	64.21	75.70	52.32
Bagalkot	1,651,892	834,247	817,645	18.84	980	251	57.30	70.88	43.56
Bijapur	1,806,918	926,424	880,494	17.63	950	172	57.01	69.94	43.47
Gulbarga	3,130,922	1,592,789	1,538,133	21.02	966	193	50.01	61.77	37.90
Bidar	1,502,373	771,022	731,351	19.56	949	276	60.94	72.46	48.81
Raichur	1,669,762	841,840	827,922	21.93	983	241	48.81	61.52	35.93
Koppal	1,196,089	603,312	592,777	24.57	983	166	54.10	68.42	39.61
Gadag	971,835	493,533	478,302	13.14	969	209	66.11	79.32	52.52
Dharwad	1,604,253	823,204	781,049	16.65	949	376	71.61	80.82	61.92
Uttara Kannada	1,353,644	686,876	666,768	10.90	971	132	76.60	84.53	68.47
Haveri	1,439,116	740,469	698,647	13.29	944	298	67.79	77.61	57.37
Bellary	2,027,140	1,029,714	997,426	22.30	969	240	57.40	69.20	45.28
Chitradurga	1,517,896	776,221	741,675	15.05	955	179	64.45	74.66	53.78
Davangere	1,790,952	917,705	873,247	14.78	952	302	67.43	76.37	58.04
Shimoga	1,642,545	830,559	811,986	12.90	978	193	74.52	82.01	66.88
Udupi	1,112,243	522,231	590,012	6.88	1130	286	81.25	88.23	75.19
Chikmagalur	1,140,905	574,911	565,994	11.98	984	158	72.20	80.29	64.01
Tumkur	2,584,711	1,313,801	1,270,910	11.87	967	243	67.01	76.78	56.94
Kolar	2,536,069	1,286,193	1,249,876	13.83	972	307	62.84	73.17	52.23
Bangalore	6,537,124	3,426599	3,110,525	34.80	908	2979	82.96	87.92	77.48
Bangalore Rural	1,881,514	962,183	919,331	12.21	955	323	64.70	73.99	54.99
Mandya	1,763,705	888,034	875,671	7.14	986	355	61.05	70.50	51.53
Hassan	1,721,669	859,086	862,583	9.66	1004	253	68.63	78.37	59.00
Dakshina Kannada	1,897,730	938,434	959,296	14.51	1022	416	83.35	89.70	77.21
Kodagu	548,561	274,831	273,730	11.64	996	133	77.99	83.70	72.26
Mysore	2,641,027	1,344,670	1,296,357	15.04	964	383	63.48	70.88	55.81
Chamaraj-nagara	965,462	489,940	475,522	9.16	971	189	50.87	59.03	42.48

Source: *Census of India, Karnataka, 2001.*

about 19 per cent in the rest of the state. In the area of basic health services, Mysore was the first state in the country to take up vaccination against small pox in 1806. A government hospital was set up in Bangalore in 1846. The first two official family planning clinics in the world were opened by the Government of Mysore in 1930 (Rayappa and Sekher 1998). By contrast, in Hyderabad-Karnataka region, even now many villages lack basic health facilities.

POPULATION GROWTH AND DYNAMICS

The population of Karnataka which stood at 13 million in 1901 increased to 19 million by 1951 and to 45 million by 1991. Thus, the population in the state has increased by three and a half times during the last ninety year period. The population of Karnataka was 52.7 million by 2001 A.D. The sex ratio indicates that there were 964 females per 1,000 males in the state, compared to 933 for the country as a whole. Further, one-fifth of the total population in the state belonged to Scheduled Castes and Tribes category. A detailed discussion on the demographic profile of Karnataka has been presented in this section.

Trends and Levels in Population Growth :

The population growth in the state has not been uniform in the present century, with variations from decade to decade. There was a slight fall in the population during 1911 to 1921 mainly due to famines and epidemics after the first world war (Table 2). Historically, the population growth in Karnataka has been close to the national average. However, there was a sharp decline in the growth rate during the last two decades.

Table 2. Population Growth in Karnataka, 1901-2001.

Year	Population			Decennial Growth Rate	
	Persons	Males	Females	Karnataka	India
1901	13054754	6582195	6472559	--	--
1911	13525251	6827801	6697450	+ 3.60	+ 5.75
1921	13377599	6793718	6583881	- 1.09	- 0.31
1931	14632992	7445458	7187534	+ 9.38	+ 11.00
1941	16255368	8294043	7961325	+ 11.09	+ 14.22
1951	19401956	9866923	9535033	+ 19.39	+ 13.31
1961	23586772	12040923	11545849	+ 21.57	+ 21.51
1971	29299014	14971900	14327114	+ 24.22	+ 24.80
1981	37043451	18869494	18173957	+ 26.43	+ 24.79
1991	44977201	22951917	22025284	+ 21.12	+ 23.85
2001	52733958	26856343	25877615	+ 17.25	+ 21.34

Source: India, Registrar General (1993a, 2001)

The growth rates vary widely across the districts. It is observed that until 1940, some districts like Kodagu and Chikmagalur experienced decrease in their population due to the scourge of malaria. The fastest growing region in the state has been Southern Maidan comprising districts belonging to old Mysore state, followed by Northern Maidan, Coastal and Malnad areas (Table 3). But the northern districts (coming under Gulbarga division) experienced higher growth during 1981-91. Good irrigation facilities encouraged large scale migration into Bellary and Raichur districts in the eighties which led to higher growth rate of population in this region. This is evident from the fact that out of the 20 districts in the state, only four districts which belong to Gulbarga division, experienced higher growth rate during the last decade than during the previous decades. Of the remaining districts, except Bangalore (the capital city of Karnataka), all other districts have growth rates close to or less than 2 per cent, with Kodagu showing the lowest growth rate (0.5 per cent) during the last decade .

Table 3. Decadal Variation in Population Growth by Regions in Karnataka, 1901-2001.

State/ Regions	1901-11	1911-21	1921-31	1931-41	1941-51	1951-61	1961-71	1971-81	1981-91	1991-2001
Karnataka	+ 3.60 (+3.55)	-1.09 (-1.10)	+9.38 (+9.01)	+11.09 (+10.57)	+19.36 (+17.85)	+21.57 (+19.72)	+24.22 (+21.92)	+26.43 (+23.73)	+21.12 (+19.16)	17.25 (15.91)
Coastal and Malnad	- 0.51	-1.11	+5.71	+7.81	+17.24	+32.67	+24.19	+24.33	+13.13	11.47
Northern-Maidan	+ 3.15	- 4.98	+9.96	+11.05	+15.60	+19.27	+22.53	+23.60	+23.00	18.76
Southern-Maidan	+ 6.44	+3.35	+10.42	+12.81	+24.25	+19.55	+25.90	+30.15	+22.62	14.35
All India	+ 5.75 (+ 5.60)	- 0.31 (-0.31)	+11.00 (+10.49)	+14.22 (+13.39)	+13.31 (+12.58)	+21.51 (+19.78)	+24.80 (+22.40)	+24.66 (+22.36)	+23.51 (+21.12)	21.34 (20.27)

Note: Coastal and Malnad regions consist of six districts, namely, Dakshina Kannada, Udupi and Uttara Kannada (Coastal) and Chikmagalur, Shimoga and Kodagu (Malnad).

Southern Maidan includes Bangalore Urban, Bangalore Rural, Chamarajanagara, Chitradurga, Davangere, Hassan, Mandya, Mysore, Kolar and Tumkur districts.

Northern Maidan includes Bagalkot, Belgaum, Bellary, Bidar, Bijapur, Dharwad, Gadag, Gulbarga, Haveri, Koppal and Raichur districts.

Figures in the parentheses are decadal exponential growth rates.

Source: India, Registrar General (various years).

MARRIAGE AND FAMILY PLANNING

Nuptiality

Age at marriage can be gauged by looking at data on two indicators, namely, proportion never married in the total population by age as well as by calculating singulate mean age at marriage. Marriage is almost universal in the state as elsewhere in the country. There are many factors that determine the age at marriage in a traditional society, particularly in rural areas. "Under the conditions which prevail in the rural areas of old Mysore state, it is not economic status but what has been prescribed by custom that has an overriding influence on marriage practices" (United Nations 1961).

As per the 1991 census data, the average age at marriage for females in the state was 20.15 years whereas for males it was 26.22 years. Historically, age at marriage has been lower in the districts of Northern Karnataka and higher in the Coastal and Malnad areas of the state. The singulate mean age at marriage was 26 years for males and 19 years for females in 1991. The differences between rural and urban areas were on

expected lines – 25 years in rural and 27 years in urban areas for males and 18 years and 20 years respectively for females. The difference between the lowest and the highest age at marriage in the districts of Karnataka was about 5 years for both sexes, both in urban and rural areas. While the difference between male and female age at marriage was usually about 5 years, the difference between the urban and rural areas was only about 2 years. According to NFHS (1992-93), urban women married about two years later than the rural women and males married 6.5 years later than females in Karnataka. Although marriage before age 15 has been quite common in Karnataka, it has been virtually eliminated at least in urban areas. NFHS also shows that the median age at marriage was essentially the same as the median age at first cohabitation with husband, indicating that formal marriage was immediately followed by cohabitation with the husband in almost all the cases. It is interesting to note that marriage between relatives (consanguineous marriage) was quite common in the state, particularly among the lower castes. As per the NFHS data, more than one-fourth of women married a first cousin and about nine per cent married a second cousin, uncle or other blood relative.

Significant changes have been observed from 1961 to 1991, in the proportion of single women in the age groups of 15-19 and 20-24 years. In 1961, only 31 per cent were single, whereas in 1991 it was about 73 per cent in the age group of 15-19 years. Same way, in the age group of 20-24, only 6 per cent were unmarried in 1961, whereas 1991 data show about 24 per cent single in that age group. However, variation across districts was quite remarkable. In Dakshina Kannada, 94 per cent of the females in the age group 15-19 years were unmarried in 1991. But, in Raichur and Bijapur districts, the proportion was only about 52 per cent. Age at marriage of females was highest in Dakshina Kannada (23.4 years) followed by Kodagu (22 years). In six districts of Karnataka, the average age at marraige for women was between 18 and 19 years (Table 9). But in rural areas of Raichur and Bijapur (Northern Karnataka), the age at marriage for women was less than 18 years (the minimum legal age for marriage) in 1991.

Family Planning:

Karnataka had an early start in family planning. Two government sponsored family planning clinics were opened, one in Bangalore and one in Mysore, as early as 1930. These were the first official family planning clinics in the world. According to NFHS, the knowledge of family planning was nearly universal in Karnataka, with 99 per cent of ever-married women reporting knowledge of at least one modern method of birth control. Even though knowledge of family planning was almost universal, the practice of contraception was relatively lower in the state. Half of the currently married women, aged 15-49 years, were not using a contraceptive method (NFHS 1992-93). Forty-eight per cent were using a modern method (43 per cent sterilization, mostly female sterilization and only 5 per cent spacing methods). The ideal family size preferred by the women was, on an average, 2.5 children. But as per the Mysore Population Study conducted in 1951-52, it was 4.7. To understand the changes in attitudes, a comparison of selected demographic indicators based on major surveys conducted in the state during the last four decades, has been presented in Table 4. NFHS (1992-93) also indicates that 18 per cent of the currently married women had an unmet need for family planning (12 per cent for spacing births and 6 per cent for limiting the number of births). If all the women with an unmet need for family planning were to adopt it, the current contraceptive use rate would increase from 49 to 67 per cent. The unmet need for family planning was high among

Muslims (26 per cent) and Scheduled Castes (21 per cent). According to NFHS-2 (1998-99), the per cent of women with unmet need for family planning was 11.5.

Table 4. Comparison of Selected Demographic Indicators-Karnataka

Indicators	Source	Period	Level
1. Mean Desired Family Size	Mysore Population Study (MPS)	1951-52	4.7
	Karnataka Fertility Survey (KFS)	1979-80	3.6
	National Family Health Survey (NFHS)	1992-93	2.5
2. Per cent of Women not Wanting Additional Children (Desire for additional children among currently married, fecund and sterilized women)	Mysore Population Study (MPS)	1951-52	31
	Bangalore Population Study (BPS)	1975	46
	K F S	1979-80	57
	NFHS - 1	1992-93	64
3. Son Preference (per cent of women who want next child to be a boy)	K F S	1979-80	52
	NFHS - 1	1992-93	44

Source : United Nations (1961); Srinivasan, *et al.* (1978); Rao, *et al.* (1986); PRC, ISEC and IIPS (1995).

Couple Protection Rate (CPR) went up considerably during the last three decades – 9.3 in 1971 to 23.2 in 1981 to 48.2 in 1991. Interestingly, up to 1980, the CPR in the state was lower than the national average. But, after 1980, Karnataka's CPR improved gradually. The latest official statistics show the CPR as 55.6 per cent in 1997 whereas it was 45.4 for all India . Female sterilization was the most popular and preferred method with 43.6 per cent of the currently married women accepting it. There were significant variations in the level of family planning performance by districts. Mandya had the highest CPR in 1993-94 (71 per cent), and Raichur (38) and Gulbarga (39) had the lowest CPR. Six districts (Mandya, Hassan, Chikmagalur, Mysore, Kodagu and Shimoga) had achieved more than 60 per cent CPR. On the other hand, another six districts, (Raichur, Gulbarga, Bellary, Bijapur, Uttara Kannada and Dakshina Kannada) were having CPR below 50. As per NFHS-2, 58 per cent of the married women were currently using some method of contraception and female sterilization was by far the most popular method.

Breast-feeding is universal in the state and three-fifths of children received exclusive breast-feeding up to 4 months of the age as recommended by international guidelines. However, only 5 per cent of the children were breast-fed within one hour of birth and 18 per cent within 24 hours of birth. The mean duration of breast-feeding was 21.4 months as per NFHS (1992-93). NFHS also provides some data about abortion, which, otherwise, is not available. Information regarding induced and spontaneous abortions was generally suppressed by respondents and any data on abortion collected through surveys needed to be analysed cautiously. Among all pregnancies reported in the survey, 92 per cent resulted in live births, 2 per cent in stillbirths, 5 per cent in spontaneous abortions and one per cent in induced abortions. In 1992-93, among children aged 12-23 months, 52 per cent were fully vaccinated against six common childhood diseases. Eighty-two per cent of the children had received BCG, 71 per cent had received three doses of both DPT and Polio vaccines and 55 per cent had been vaccinated against measles (PRC, ISEC and IIPS 1995). National Family Health Survey also provided some information regarding nutritional status of children. Acute under-nutrition or wasting was quite evident in Karnataka, affecting 1 in 6 children. Nineteen per cent of the children were severely underweight and 23 per cent were severely stunted. NFHS-1 also indicates that rates of under-nutrition were slightly higher for females than males, but rural children were most likely to be under-nourished than urban children. NFHS-2 also indicates that 71 per cent of the children age 6-35 months were anaemic in the state. It also shows that 39 per cent of the women in Karnataka were undernourished. Nutritional deficiency was particularly serious for women in rural areas, illiterate women and women in disadvantaged socio-economic groups.

FERTILITY LEVELS AND DIFFERENTIALS

The crude birth rate (CBR) has been declining in Karnataka since early 1970s. CBR which remained relatively stable at a higher level of about 40 or more in the 1950s and 1960s, reached a level of about 28 by 1990. According to SRS, the CBR was 22.2 in 2001 (23.6 in rural and 19 in urban areas). At the national level, the figures were 25.4, 27.1 and 20.2 respectively. The total fertility rate (TFR) was 4.4 in 1971 and declined to 2.5 in 1997. In urban Karnataka, it was 2.1. Estimates based on census data indicate that CBR declined from 32.2 during 1974-80 to 28.0 in 1984-90 (Bhat 1996). During the same period, TFR declined from 4.3 to 3.4 (Table 5). Among the districts, the decline was most significant in Mandya (37.3 per cent).

In fact, major demographic surveys conducted in Karnataka like the Mysore Population Study (MPS) in 1951-1952, the Bangalore Population Study (BPS) in 1975 and the Karnataka Fertility Survey in 1979 - 80 provide us sufficient data to analyse the changing fertility trends over a period of time. The MPS and BPS covered roughly the same geographic area. Changes in fertility between these two time periods can be gauged by examining current fertility in different geographical locations as stated in these surveys. The crude birth rate declined 7.6 points in the rural hills, 2.0 points in the rural plains, 4.5 points in the towns and 2.6 points in Bangalore city over the 24 year period and it appears that the decline had been caused more by changes in marriage patterns than by changes in the number of children married couples had (Srinivasan *et al* 1978). A comparison of data of these two surveys also indicates that there was a real increase in the potential fertility of the women during the period 1951-1975, as a result of relaxation of some of the traditional checks such as prolonged breast-feeding, prohibition of sexual intercourse on certain days for social or religious reasons and prohibition of remarriage by widows. According to the

MPS, the total fertility rate (15-44 age group) was 6.30, whereas in BPS it was 6.12. The MPS and BPS data sets provide a good opportunity to understand the fertility differentials in rural and urban areas of old Mysore state in a span of nearly 25 years. In both the studies, the average number of children born was substantially higher among Muslims than among other religious groups. As per the NFHS estimate, for the three year period of 1990-1992, the total fertility rate was 2.9 children per woman and crude birth rate was 26 per thousand population. The mean number of children ever born to women age 40-49 was 4.7 and mean ideal number of children was 2.5. NFHS also indicates that fertility in Karnataka was lower than the national average. The NFHS estimates for India for 1989-1992 shows a CBR of 28.7 and TFR of 3.4 (IIPS 1995). According to NFHS-2, the state had almost reached the replacement level of fertility of just over two children per woman.

A woman in rural area would have, on an average, 0.7 more children in her child bearing years than a woman in urban area. The TFR among illiterate women was 3.39, declining significantly with the increase in the level of education. Among women, those who had education of high school and above, it was only 2.0. According to NFHS-1, the TFR among Hindu, Muslim and Christian communities were 2.73, 3.91 and 2.25 respectively. The TFR among Scheduled castes was 3.15 and Scheduled tribes 2.15 (PRC, ISEC and IIPS 1995). NFHS-2 indicates that the TFR for Hindu, Muslim and Christian communities were 2.04, 2.84 and 1.57 respectively. For Scheduled castes it was 2.49.

Even though we do not have information regarding the fertility levels by caste (apart from SC/ST), it is interesting to examine the caste composition of high fertility districts of Karnataka. There is considerable proportion of Muslims, Scheduled castes and some most backward communities in the districts of Bidar, Bellary, Bijapur, Gulbarga and Raichur districts, which may explain, to a certain extent, the higher fertility in these districts of northern Karnataka. However, this assumption needs to be probed further.

SOCIO-ECONOMIC FACTORS AND FERTILITY: A VILLAGE LEVEL ANALYSIS OF CENSUS DATA

So far we discussed the fertility pattern of Karnataka using the census and SRS data at the state and district levels. However, it is equally important to analyse the fertility trends below the district level which will provide useful insights. Since measures like CBR and TFR were not available at the village level, it was decided to use child-woman ratio. The 1991 census provides an opportunity to analyse the fertility pattern at the village level for the first time. Even though the original purpose was to compute the literacy rate for the population aged seven years and over, it has been used here to compute the child-woman ratio.

The primary census abstract of the 1991 census gives the population of each village by sex in two broad age groups — 0 to 6 years and 7 + years. From this, the child-woman ratio (CWR) can be calculated.

CWR = (Population 0-6 years/Female population 7+ years)*K

Where K = 1,000

Detailed information on amenities and other population characteristics are available at the village level. Relevant factors have been considered to study their influence on fertility. Factors considered in the study are per cent female literate, per cent

female workers, per cent workers in agricultural sector, per cent Scheduled Castes and Tribes population, per cent irrigated land, presence of educational facility, medical facility, market facility, communication facility and distance to the nearest town. Presence of each facility in the village has been given a value `1', otherwise `0'. Multivariate regression analysis has been used. The analysis is restricted to only rural Karnataka.

Effect of Socio-economic Factors on Rural Fertility

The results of regression analysis have been presented in Table 6. It may be observed that all the variables considered in the model are statistically significant. The model as a whole is able to explain about 39 per cent of the total variation in the child-woman ratio at the village level. The expected and observed direction of influence of each variable on child-woman ratio have been presented below:

Observed and Expected Direction

Variable	Observed	Expected
Per cent female literate	- ve	-ve
Per cent female workers	- ve	+ve
Per cent worker in agricultural sector	+ve	-ve
Per cent Scheduled Caste population	+ve	+ve
Per cent Tribes population	+ve	+ve
Per cent irrigated land	- ve	+ve
Educational facility	- ve	+ve
Medical facility	- ve	+ve
Market facility	- ve	+ve
Communication facility	- ve	+ve
Distance to the nearest town.	- ve	+ve

Variables like Scheduled Tribes, and medical facility in the village indicates the influence on child woman ratio in the expected direction. On the other hand, it was also observed that while re-running regression equation with primary health centre facility in the rural areas as one of the independent variables, its presence had a negative and significant impact (data are not shown) on child-woman ratio. Other factors have shown their influence on child-woman ratio in expected direction. This might be because of correlation among the factors considered in the model.

Table 6. Influence of Socio-Economic and Infrastructural Variables on Child-Woman Ratio (CWR): Village Level Analysis, Karnataka, 1991.

Variable	Regression Co-efficient	't' value	`p' value
Per cent Female Literate	- 3.7	-102.087	0.000
Per cent Female in LFP	0.74	25.978	0.000
Per cent Workers in Agriculture	- 0.65	-21.348	0.000
Per cent Cultivable Land Irrigated	- 0.05	-2.456	0.014
Per cent SC Population	0.47	12.924	0.000
Per cent ST Population	0.48	10.394	0.000
Educational Facilities in the Village	8.64	2.338	0.019
Medical Facilities in the Village	2.22	1.695	0.090
Market Facilities in the Village	18.77	11.958	0.000
Communication Facilities in the Village	11.76	7.931	0.000
Distance from the Nearest Town	3.46	8.131	0.000
Constant	535.94	102.095	0.000
No. of Observations	26,886		
Percent Variation (R2)	39.00		
F-Value	1549		

Notes: The dependent variable is child-woman ratio, computed as:
CWR = (Population aged 0-6/Female population aged 7+) × 1000.

The infrastructure variables are dichotomous
1 = If facility exists in the village;
0 = Otherwise
The regression is based on weights (number of female population age 7 +).

Only those villages with valid values for all the variables have been included in the analysis.

In general, per cent female literacy and per cent workers in the agricultural sector had a negative and substantial influence on child-woman ratio. Female literacy has been recognized as the most important factor influencing not only fertility but also many other demographic indicators. It is found to be the important factor even at the village level. Though female literacy in Karnataka was lower than that in the neighbouring states of Kerala and Tamil Nadu, it was an important factor in influencing fertility in rural areas.

Values Given for the Variables Used in the Regression Analysis

Variable	Value
Per cent female literate	= As it is
Per cent female worker	= As it is
Per cent workers in agricultural sector	= As it is
Per cent irrigated land	= As it is
Per cent Schedules Caste	= As it is
Per cent Scheduled Tribe	= As it is
Educational Facility	= 0 = Not Available 1 = Available
Medical Facility	= 0 = Not Available 1 = Available
Market Facility	= 0 = Not Available 1 = Available
Communication Facility	= 0 = Not Available 1 = Available
Distance from the nearest town	= As it is

The residuals in CWR on the basis of regression were obtained and weighted district totals have been presented in Table 16. Positive residuals were found for the districts of Dharwad, Raichur, Gulbarga and Shimoga. The residuals were negative in Kolar, Tumkur, Hassasn, Mysore and Bangalore Rural districts. Even though the socio-economic and infrastructural variables used in the regression explain the variations to a certain extent, we had to look for explanations beyond the variables which were included in the model.

The distribution of villages by the residual in CWR has been presented in Table 17 for all the districts of Karnataka. This was restricted to villages with population exceeding 750. In Mandya, Mysore, Kolar and Tumkur districts, many villages had large negative residuals. On the other hand, Bellary, Bidar, Bijapur and Raichur had large positive residuals in many villages. The average CWR for Karnataka was 421. Highest CWR was in Gulbarga district and lowest in Dakshina Kannada . Taluk level CWR also showed significant variations in many districts. The northern districts under Gulbarga Division were generally considered as high fertility region. In southern Karnataka, particularly the old Mysore region had relatively low fertility. A mapping of fertility indicators like CWR at the taluk level will be useful in identifying the pockets of varying fertility in the state.

Table 7. Child-Woman Ratio (CWR): Values, Deviations, Predicted Values and Residuals by Districts of Karnataka, 1991.

District	Mean CWR	Mean Deviation (from State Rural Average) in CWR	Mean Predicted Value of CWR	Mean Residual in CWR
Bangalore Urban	412	- 9	391	21
Bangalore Rural	379	-40	414	-35
Belgaum	447	26	427	20
Bellary	526	105	468	58
Bidar	531	110	463	68
Bijapur	495	75	419	76
Chikmagalur	342	78	380	-37
Chitradurga	420	1	426	6
Dakshina Kannada	327	-94	333	6
Dharwad	453	32	410	43
Gulbarga	536	116	495	42
Hassan	360	-61	391	-32
Kodagu	344	-77	357	-14
Kolar	397	-23	440	-43
Mandya	352	-69	411	-59
Mysore	389	-32	443	-55
Raichur	534	113	488	46
Shimoga	383	-38	377	6
Tumkur	367	-54	407	-41
Uttara Kannada	377	-44	356	20
Karnataka State	**421**	**0.0**	**423**	

Notes: The predicted values are obtained from the regression shown in Table 15.

The district means are weighted (by the number of women of age 7 +).

Only those villages for which valid values were available for all the variables in the regression have been included in the analysis.

The mean CWR (weighted) for all the villages in the state included in the analysis is 421.

Source: Computed from 1991 Census data

Table 8. Distribution of Villages by Residuals in CWR by Districts of Karnataka, 1991

District	Residual in Child-Woman Ratio				
	Less than -25	-25 to 0	0 to25	25 and above	Total
Bangalore Urban	4	308	350	13	675
Bangalore Rural	21	1120	543	23	1707
Belgaum	1	458	659	15	1133
Bellary	2	132	443	12	589
Bidar	1	120	460	6	587
Bijapur	253	923	60	3	1239
Chikmagalur	19	691	297	9	1016
Chitradurga	16	653	591	21	1281
Dakshina Kannada	394	221	-	-	615
Dharwad	5	364	933	36	1338
Gulbarga	3	406	860	26	1295
Hassan	32	1532	754	42	2360
Kodagu	179	96	1	-	276
Kolar	73	1963	802	43	2881
Mandya	22	1093	239	10	1364
Mysore	30	1127	422	23	1602
Raichur	8	405	920	63	1396
Shimoga	16	898	814	38	1766
Tumkur	47	1781	664	42	2534
Uttara Kannada	12	538	639	43	1232
Karnataka State	**1138**	**14,829**	**10,451**	**468**	**26,886**

Notes : The residuals are obtained from the regression shown in Table 16.

The distribution pertains to only those villages for which valid values were available for all the variables in the regression and with a population exceeding 750.

Source: Computed from 1991 Census data**.**

Table 9. Means and Standard Deviation of the Variables Used in the Regression Analysis

Variable	Mean	Standard Deviation
Per cent female literate	32.85	17.96
Per cent female worker	33.05	21.55
Per cent workers in agricultural sector	83.48	19.19
Per cent irrigated land	19.09	23.14
Per cent Schedules Caste	19.24	19.00
Per cent Scheduled Tribe	5.74	14.30
Percent villages having educational facility	86.50	34.17
Percent villages having medical facility	12.41	32.98
Percent villages having primary health centre facility	5.95	23.66
Percent villages having market facility	4.59	20.93
Percent villages having communication facility	67.28	46.92
Distance from the nearest town	15.66	9.44

Note: The means and standard deviations are weighted by the number of women age 7 and above

CONCLUSIONS FROM THE SECONDARY DATA

Karnataka has been one of the progressive states in India in the sphere of health and family planning. As mentioned earlier, the first two official family planning clinics in the world were started in old Mysore state as early as 1930. In 1976, about 16 per cent of the estimated 5 million couples in the reproductive age group in the state were protected by methods of family planning (Government of India 1977). To improve the family planning performance, in the context of a prevailing favourable health infrastructure and socio-economic status, Karnataka was selected as one of the two states for the India Population Project (IPP) in 1973, sponsored by the World Bank and the Swedish International Development Authority (SIDA).

The comparison made in this study of the findings of two major demographic surveys carried out in Karnataka (The Mysore Population Study of 1951-52 and the Bangalore Population Study in 1975) provides a unique opportunity to understand the changes in fertility patterns and attitudes during the third quarter of the last century. Even with an intensive family planning programme, the decline in CBR during this period was small. The reduction in general marital fertility was only 5 to 6 per cent. An increase in the potential fertility rates of married women during the period was also observed which could be attributed to the relaxation of various social and cultural restrictions that directly or indirectly reduced fertility (Srinivasan *et al* 1978).

During the eighties and nineties, Karnataka experienced considerable reduction in fertility, lower in scale and slow in pace, in comparison to two of its neighbours – Kerala and Tamil Nadu. The crude death rate declined from 19 per 1,000 in 1951-61 to 7.6 per 1,000 in 1997, although districts like Bidar, Bijapur, Dharwad and Gulbarga still have CDR greater than 10 per 1,000. The infant mortality declined from 81 per 1,000 in 1981 to 53 per 1,000 in 1997. SRS also indicates that the crude birth rate in Karnataka was 22.7 (23.9 in rural and 20.1 in urban areas) and had a natural growth rate of 15.1 in 1997. The projected population of the state for 2001 was 52,720,000 and for 2016 is

62,783,000. Karnataka would attain a replacement level only by 2009 (Registrar General 1996). Among the four South Indian states, Kerala and Tamil Nadu have already attained replacement levels and Andhra Pradesh is likely to attain a TFR of 2.1, which is the estimated level of population stabilization, in 2002. As per the estimation, an increase in the population in the age group 15 to 59 years between 1996 and 2016 would be about 132 million and that in the age group 60 + would be around 2.7 million.

With regard to many health and demographic indicators, there still exists considerable regional disparities. Female age at marriage was relatively higher in the Malnad and Coastal districts but there are areas where it is still below the legally prescribed minimum of 18 years. In the Southern and Coastal regions of Karnataka, mortality declined considerably and any further decline might be hard to come by. The fertility levels show large variations across districts. Northern Karnataka region, specially the five districts of Bidar, Bellary, Gulbarga, Raichur and Bijapur, were lagging behind in almost all demographic indicators. The achievement of demographic transition in Karnataka, to a great extent, depends on the overall development of these backward districts (Rayappa 1998). If the state can make substantial efforts for improvements in the quality of life of its population, fertility transition may be sooner than expected.

Many surveys have clearly demonstrated that the knowledge of contraception is near universal in the state but there are factors (social, economic, cultural and infrastructural) which result in non-adoption of family planning. Micro–level studies to explore and investigate these factors will be useful in understanding the changing facets of fertility transition in different locations of the state having varying levels of economic development.

OBJECTIVES AND METHODOLOGY OF VILLAGE STUDIES

Why Village Studies

Based on a comparative analysis of data and findings from these major surveys, in the first phase of the project, the fertility patterns during the last five decades in the state were examined and the factors for relatively slow decline in fertility identified (Sekher *et al* 2000).

There existed disparities with regard to health and demographic indicators between the regions of the state. Fertility decline was faster in southern and coastal regions, and at a tardy pace in backward northern districts characterized by low literacy, low female age at marriage, poor health infrastructure and low status of women.

The high fertility in the state is essentially a problem of a few districts in northern Karnataka. Based on a regional analysis using NFHS (1992-93) data, Bhat and Zavier (1999) observe that for almost all socio-demographic variables, the north-eastern plateau in the state (districts of Bidar, Bijapur, Gulbarga and Raichur) shows very poor performance. The region had the lowest percentage of literate females (22 per cent) and the highest concentration of Muslims (12 per cent) in the state. The mean age at first marriage of females was less than 18 years and the couple protection rate was below 40. The backwardness and poor health infrastructure of the region were evident from the fact that it had the lowest percentage of institutional deliveries (17) whereas the state average was 38 per cent, and the lowest per cent of fully immunized children (30). The districts of northern *maidan* and the region as a whole show lower level of achievement compared to

other parts of the state with regard to human development and health indices as well as in the availability of public health care facilities. The socio-economic backwardness of the region characterized by limited exposure to mass media and low status of women in a way explain the tardy decline of fertility in the northern districts. If the state can make substantial efforts for the improvement in the quality of life in the northern backward districts, fertility transition may be achieved sooner than expected (sekher *et al* 2001). The poor heath infrastructure existing here makes it extremely difficult to effectively implement the family planning programme. No programme can make a significant dent in fertility reduction without certain levels of infrastructural support and conducive social atmosphere.

Objectives of the Village Studies

In the second phase of the project, our research aim was to capture the self-sustaining nature of fertility decline by showing that fertility decline in one social group was fuelled by low fertility behaviour in other groups. Here, the attempt was to document how groups were influenced by other groups that had already reduced their fertility and how the message of the advantages of 'small family norm' had spread across communities and regions.

It is true that the dynamics of fertility decline is partially self-sustaining through diffusion mechanisms. In a region where fertility is coming down, people are encouraged and motivated to reduce their fertility though the socio-economic conditions are not really favourable for a change. There is always a tendency for a comparison between social groups in the villages where some groups consider that their fertility is higher than the other social groups. It is also an established fact that people tend to emulate better-off communities not only in their occupations and life-styles, but also in the behaviour of regulating family size. The socio-economic and developmental changes taking place in the village and its vicinity also influence the attitude and behaviour of young couples. Various demographic surveys and official statistics clearly show that Karnataka is gradually on the way to replacement level fertility. Except the five districts of northern region, in the remaining parts of the state, the reduction in fertility is quite remarkable. However, the winds of demographic change sweeping across the state and neighbouring areas are resulting in more and more districts attaining the replacement level fertility. The pressure is high on the laggard districts of the state to perform and reach the goal. Naturally, we expect, even in high fertility "pockets" of Karnataka, a deliberate attempt at reducing the family size.

Many surveys have clearly demonstrated that the knowledge of contraception is near universal in the state but there are factors (social, economic, cultural and infrastructural) which result in the non-adoption of family planning. To understand the factors behind the fertility transition among the different communities of the state, it was decided to make an intensive micro-level study in selected villages.

Methodology

Qualitative Information

The earlier demographic surveys carried out in Karnataka, starting from the Mysore Population Study, examined the changes in fertility behaviour at the macro-level. But the motivating factors behind the intention to restrict the family size at the village and

community level were not probed convincingly. This can only be done by employing qualitative research methodology with a focus on certain rural communities / social groups.

It is now, generally, felt that qualitative approaches such as focus group discussions (FGDs) and individual interviews are more useful in understanding the factors responsible for high or low fertility. A focus group, generally consisting of 8-10 persons with similar socio-economic and demographic background, can provide valuable insights. FGDs encourage the lively discussion by the participants on specific issues, moderated and facilitated by the researcher. The entire discussion is tape recorded which help prepare detailed transcripts later. FGDs not only provide experiences and opinions of the participants but also their perceptions on various issues and groups. It is important to conduct FGDs separately for different communities as well as persons belonging to different age groups and sex. A detailed check-list of items to be probed during FGDs were prepared and deliberated during the SIFP meetings. This provided a guideline for the field staff to focus on certain issues and extract the opinions and perceptions of the villagers.

It is also possible that many personal and sensitive issues may not come up for discussions during FGDs. Considering this, it was decided to identify a few key informants from each village and conduct in-depth individual interviews. The information gathered through FGDs was supplemented with individual interviews. All these qualitative information was pooled together and synthesized to arrive at conclusions.

Selection of the Area and the Villages

For the purpose of this micro-level study, three districts were identified as (a) high fertility area, (b) medium fertility area, and (c) low fertility area. Accordingly, Gulbarga, Chitradurga and Mandya districts were selected. They broadly represent three different regions of the state having varying levels of socio-economic development. From these districts, three villages were identified for detailed investigation.

As per the 2001 census data, Mandya recorded one of the lowest decadal population growth rate (7.14). It is located in the southern *maidan* and has an excellent track record in family planning. According to the National Commission on Population (Govt. of India 2001), Mandya district was having 71.70 per cent current users of family planning. Chitradurga, at the central region of the state, showed average levels of health and development indicators. This district is also having considerable proportion of scheduled castes and scheduled tribes (SC/ST) population. On the other hand, Gulbarga belong to the backward Hyderabad - Karnataka region of the state, with a decadal population growth rate of 21.02 during 1991-2001. Only 39.2 per cent of the population currently uses a family planning method in the district (Government of India 2001). According to a recent estimate based on 2001 census data, the total fertility rate (TFR) was 1.9 for Mandya, 2.3 for Chitradurga and 3.5 for Gulbarga (Guilmoto and Rajan 2002). The Crude Birth Rate (CBR) was estimated at 16.9, 20.4 and 26.7 for Mandya, Chitradurga and Gulbarga respectively. For the state as a whole, the estimated CBR was 20.9 and TFR was 2.4 in 2001.

The next step was to identify a typical village from these districts for detailed field investigation. Based on the available census data of 1991 and also interacting with the public, three villages were selected for the study, namely, K. Gowdagere in Mandya, Sanehalli in Chitradurga and Kollur in Gulbarga.

Period and Duration of Fieldwork

The study was initiated in June 2002. As a first step, all the available secondary information was gathered from various sources including census, village revenue office, Gram Panchayat etc. Interaction with key informants such as school teachers, health workers, Anganawadi workers, elected representatives were very informative and provided good insights on changing social and demographic scenario of the villages. Actual field work was started in August 2002 and completed in January 2003 (six months for three villages). Nearly two months were devoted by the entire research team on each village for collecting all required information and conducting FGDs and indepth interviews. A detailed village profile was prepared for each site.

The average time taken for a FGD was 90 minutes. In the case of individual interviews, it was about 45 minutes. FGDs were conducted in Panchayat office, temples, *Anganwadi* centres and in some cases, at the residences of some members. But most of the indepth interviews were arranged at the residence of the key informants. Retaining all the participants till the end of FGD was a challenging task for our research team. In general, villagers were very forthcoming in expressing their views and revealing their perceptions.

Staff and Visits by Principal Investigators

Three field investigators (Ms Manjula Devi, Ms Taj Unnisa and Mr. R. Shankarappa) were involved in the field work for six months. All of them had previous fieldwork experience and were involved in both qualitative and quantitative data collection. They also attended the two-day training programme organized at Coimbatore by SIFP team to discuss the data collection methods and strategies. They stayed in the study villages for several weeks and in the process established good rapport with the villagers. The researcher used to visit the villages frequently and were also involved in focus group discussions (FGD). The field work operations were reviewed periodically at the meetings in ISEC. The interaction with the SIFP teams from other states also helped in formulating appropriate strategies for the data collection methods. The experiences of other states were shared during the workshops organized at Tirupati and Bangalore. During these workshops, various operational difficulties in conducting FGDs at the village level were discussed at length.

Cooperation and Attitudes of the Villagers

In general, the villagers in all the three sites extended full co-operation to the research team by extending hospitality and also by giving required information at the expense of their time. In K. Gowdagere they were kind enough to provide an old house free of cost for the stay of our three investigators. In the course of FGDs and observations, sometimes, the investigators found it difficult to distinguish between actual facts, real incidents, perceptions and intentions of the respondents. Detailed guidelines were given to the field staff on how to go about in extracting the necessary and accurate information.

Wherever possible, comparative informations were obtained not only for the various social groups present in the village but also for the neighboring areas in the same taluk.

However, organizing FGDs had some difficulties in each village. The study villages are multi-caste and, therefore, it was decided to conduct FGDs among the major communities separately. FGDs for men and women were also organized separately. It was decided to have a few FGDs and in-depth interviews with older persons in low fertility villages where fertility transition took place long time ago, to understand the changes and the attitudinal differences during the last 40 years. To conduct the FGDs within the manageable time and also to avoid misunderstanding between communities, the FGDs were primarily focused on that particular community and did not seek opinions about other communities/castes. The FGDs also explored the role of government programmes in effecting changes in family size desire/norm as well as in providing means to regulate fertility. All the FGDs were audio taped and transcriptions were prepared, first, in local language (Kannada) and later, in English.

FIELD SITE 1 K. GOWDAGERE

Characteristics and Social Composition of the Village

K. Gowdagere village is located 15 Kms away from Mandya town and 3 kms from Nagamangala main road. As per the household census conducted by the local Anganwadi centre in August 2002, the population of the village was 1,654, of which 820 were women. Altogether there were 384 households (the village level population figures of 2001 census available now is presented in the annexure 1).

This is basically a Hindu village. Only 5 Muslim households are there in Gowdagere. There are 243 Vokkaliga households, the dominant community in the village as well as in the district. “Vokkaliga”, in Kannada language, means "a cultivator" and they are traditional agriculturists. Usually, the personal name of Vokkaliga ends with the suffix *Gowda.* The word Gowda means a chief or headman and is deemed to be a term of honour. The other communities are Banajiga (28 households), Besta (17 households), Agasa (11 households), and Bajanthri (9 households). Most of these communities are generally considered as backward. Banajigas, also called as Balijas, are traditional traders. Although their traditional occupation is trading, many of them in this village are agriculturists. Bajanthris (Hajamas) are barbers by occupation. Agasas (Madivalas) are washermen (traditional occupation). There are 5 Brahmin households in this village. The Brahmins are traditionally priests, but they have now taken up various occupations.

There are 56 scheduled caste households (Adi Karnataka) in the village. Adi Karnataka or Madiga are a wide-spread community found throughout the state in varying numbers. Most of them are agricultural workers. Undoubtedly, Vokkaligas are the dominant caste in the village and they control the bulk of the cultivable lands. Adi Karnataka, Muslim and Besta are basically landless communities.

Birth Control: Traditional and Modern

Earlier, women had high fertility. But now, among Vokkaligas, it is only one or two children. Tubectomy is the most popular family planning method. Only a few women take oral pills and accept IUD. Some couples also use condoms for birth control. The

poorest families, particularly SC households, are not using temporary methods. The use of modern methods of family planning started in the village during the 1970s, more specifically around 1975 to 1977 at the time of emergency when Ms. Indira Gandhi was the Prime Minister of India. Family planning camps were organized at the district head-quarter in Mandya, and Vokkaliga women from the village were taken in a jeep for the operation. Some old women narrated the stories about how they ran away when they saw the government jeep. It was the women from better-off Gowda families who accepted sterilization initially and later, other communities also realized the advantages of small family. Among the younger generation, all couples, irrespective of caste, accept family planning.

The information about various methods of family planning is usually provided by the ANM during her village visits. The laperoscopy operation is becoming more popular because it involves less complication and women can go back to their houses on the same day after operation. Abortion was prevalent in the earlier days and even now it is occurring in the village. But the main difference is the usage of crude methods of abortion in the earlier days where there was high risk involved, costing sometimes the life of the women. Women reported as consuming papaya, sesamum, sugarcane juice, and roots of some plants for effecting abortion though they were not very sure whether they really induced abortion or not. Nowadays, those who want to undergo abortion preferably go to private hospitals in Mandya or even at Bangalore. Though sex determination of the foetus is illegal, many private doctors and nursing homes carry out this at the request of the couples and charge heavily for their service.

Ideal Family Size

On an average, the scheduled caste couples have one child more than the Vokkaliga families. During our fieldwork, we came across four Vokkaliga families which had only one child and which decided to accept family planning. According to them, if they had more than one child, it would be extremely difficult to provide good education and meet the cost of upbringing of children. As narrated in our focus group discussions (see, appendices), since land was limited it was difficult again to divide as well as to maintain the standard of living. In general, there were no signs of strong son preference among Vokkaligas, though it was visible among some backward communities. Nowadays, other communities compare their family size with that of Gowdas, and there is a tendency to have less number of children for various reasons. During the FGDs, it was clear that a majority of the men and women from the Vokkaliga community considered two children as ideal family size. When probed further, young couples reiterated that they would have only two children, irrespective of their sex. Many felt that the fear of undergoing operation prevented many women from accepting permanent methods of birth control. However, men were not very keen to undergo sterilization- “if we go for it, who will work in the field? If we have operation our strength and health will reduce”. When asked about this unpleasant question, Nanje Gowda retorted - “my wife has decided to accept sterilization. So, where is the need for me to go for it ?”

However, among the couples of Adi Karnataka community, still some consider the importance of having at least two sons. “In our old age, only sons can look after us. If one is not caring, the other one may take care of us”. But they are also aware of the preference for fewer children among Gowdas and other well-to-do families in the village. During discussions all of them stated that they treated their children, whether boy or a girl, with equal care and affection. “My daughter is the Lakshmi of this family. How can I ill-treat

her ?". At the same time, Ramappa also realizes the problem of having girls particularly, arranging their marriage and giving dowry. Cutting across all communities, the value of education is realized and parents are willing to provide the best possible education to their kids. Linganna, a scheduled caste agricultural labour is hopeful of a better future for his children – "we spent our lives by toiling in the paddy fields. Even when we are sick, we have to work. If our children study well, they can get government jobs and have a better life".

Old Age and Family Support

Most of the Vokkaliga families are nuclear. Men continue to stay in the same household even after marriage. Both young couple and parents look after each other. Old parents take care of young children in the family. After the marriage, women have no right over the parental property including land. All the family assets are inherited by the sons.When probed about the old age support they expected from their children, many old parents were little apprehensive. "What is the guarantee that they will look after us when we are old and sick ? it all depends on our *karma* (fate)".

Summing up Demographic Variations and Changes

Based on individual interviews and focus group discussions, we find that there was a strong preference for small family. Most of the couples in Gowdagere had already accepted family planning. It was the land owning Vokkaligas who accepted birth control measures initially, followed by other communities. The preference for fewer number of children was seen even among the landless labourers. The fertility transition in the area is unique and interesting. Even with low level of female literacy the transition is almost complete here.

Distinguishing Features Between Communities

If we consider the two major communities of Gowdagere, the land owning Vokkaliga and the landless Adi Karnataka, there are many common features with regard to education, marriage and family size. The two child norm is very common among the Vokkaliga community. But even among poorer SC families, there is a realization and an attempt to restrict the family size. Only very few consider having large number of children as an asset. A majority felt that it was responsibility and some times burden to have more number of children, irrespective of their gender. \

Trends in Demographic Behaviour

The decline in fertility in this region started mainly due to population pressure on land and high dependency on agriculture. The predominance of small and marginal farmers reduced the economic value of children. In 1981, about 24 per cent of the males and 60 per cent of the females in the 10-14 age group were reported to be idle (neither in school nor in labour force) in this district. This figure was much higher than the state average. It is also to be noted that the population in this district is homogeneous and physically compact with a good network of roads. The best irrigation facilities (36 per cent of the district area under irrigation compared with the state average of 14 per cent in 1988-89) also resulted in enhanced economic conditions. All these characteristics combined together with a strong family planning programme changed the fertility attitudes substantially.

The fertility transition experienced in this village and other parts of Mandya district has been unique and one can see a strong relationship between population pressure

on land and rapid fertility decline. The dependence on agriculture in Mandya district, both in rural and urban areas, is far greater than anywhere else in the state. The paucity of cultivable land and the availability of irrigation have resulted in an increase in land values. The agrarian structure in the village is dominated by small land holdings. In this context, the economic value of children, in general, and of sons in particular, is expected to be low because of excess of family labour. Given this situation, the perceptions of sons as a major source of old age security may not be prevalent very strongly. The land owning Vokkaligas desire to have less number of sons to avoid further fragmentation of land. For Vokkaligas, it can be said that land is the source of old age security.

However, similar trend is not clearly visible among the landless scheduled caste families. They depend upon their children to look after them in old age, though some of them consider having more children can be a burden nowadays. The FGDs and indepth interviews indicate that even SC families try to imitate the Gowdas not only in their life-style but also in their fertility attitudes. There is a diffusion process taking place slowly and silently in which the attitudes and behaviour of one community slowly influences the attitude and practice of other social groups in the vicinity.

FIELD SITE 2 SANEHALLI

Characteristics and Social Composition of the Village

The study village, Sanehalli, which is located in this district, had a total population of 1,382 as per the 1991 census. There were 240 households in the village, with a total area of 1,079.6 hectares. There were 233 scheduled caste and 122 scheduled tribe persons in the village in 1991. The male literacy was 70 per cent and female literacy was 38 per cent (2001 census figures for the village is presented in annexure 1).

Sanehalli village is located about 16 Kms from Hosadurga town, the taluk headquarter. According to the records at the local Anganwadi centre, there were 275 households with a population of 1,367 in 2002. Lingayats, also known as Veerashaivas, are the dominant community in this village (117 households). The Lingayat sect rose into prominence in the 12th century. Basaveshwara, the founder of this faith was the son of an Aradhya of Ingleshwar near Bagewadi about 20 miles south-east of Bijapur. The Lingayats claim that *linga* (Phallus) worship existed even before Basaveshwara and they look at him as the restorer of the faith. They formed a separate entity rejecting the scriptures and abandoning some of the traditional Hindu ceremonies, fasts and feasts and pilgrimages. Lingayats generally wear a Linga, which consists of a silver box containing a stone phallus, which is the symbol of his or her faith.

Apart from Lingayats, there are other communities such as Adi Karnataka (68 households), Nayakas (30 households), Upparas (50 households), Muslims (2 households), Bovis (2 households), Devangas (4 households) and Marati (2 households). Adi karnataka and Bovis belong to the scheduled caste (SC) category and Nayakas come under the scheduled tribe (ST) category. Lingayats own most of the agricultural land whereas Adi Karnataka, Bovis, and Nayakas are basically landless agricultural workers.

Birth Control: Traditional and Modern

Most of the young couples after having two children accept permanent family planning methods, either tubectomy or laperoscopy. In 1977, a few men from this village

underwent vasectomy. During the emergency time (1975-77), there was a concerted effort to make family planning popular and persuade as many couples as possible to accept birth control measures. According to our observation, most of the couples nowadays accept family planning after having two children. We also came across five couples who accepted permanent methods with a single child. Out of them, three were having a girl child. The focus group discussion conducted in the village clearly indicates the increasing preference for small family among all the communities. But the usage of traditional family planning methods is very restricted or almost absent. Many cultural practices prevalent among Nayakas are also responsible for prolonged abstinence from sex.

During FGDs most of the male and female participants expressed their knowledge and awareness of modern family planning methods. However, many of them were apprehensive about the side-effects of using methods like oral pills and IUDs. It was observed that the adoption of certain family planning method was done after discussion at home which included elders in the family apart from the couples. A few young couples revealed that though the older people in the family wanted to have more number of children, they did not agree to that.

Ideal Family Size

During our discussions with the villagers, the preference was quite evident. They wanted one child or a maximum of two children. No couple told us that they desired to have more than two children. The preference for small family could be noticed among young couples, irrespective of their educational and employment status. In other words, there was a consensus among the younger generation to have one or two children only. This was more visible among the educated Lingayats.

When the same matter was discussed with Nayakas and Bhovis, some of them replied that the number of children they wanted to have was not their choice but the wish of the god. They felt that if they had more number of children, particularly boys, it would be advantageous for them in their old age. But then "how can we provide food, cloth and schooling for them, when we ourselves have no money for food?".

Old Age and Family Support

Most of the families are nuclear. However, we found a few joint families in all communities. Usually in Lingayat families, the parents preferred to stay with their elder son. In families where there were no sons, the parents requested one of their daughters to stay with them and naturally the family property was inherited by her. Parents expected that their children would take care of them in old age. " We looked after our parents till their death. We also expect our children to look after us when we are old". Since children were educated and sometimes employed in far away places, it might not have been possible for them always to look after the parents. However, "their love and affection are enough for us" as Krishnappa realized the gravity of the situation.

Distinguishing Features Between Communities

The dominant Lingayat community was ahead of other social groups in terms of education, economic status, living conditions, and political influence. They were the first ones to take advantage of education and many of them got into government service. The backward and scheduled groups took some time to realize the value of education. But many developmental and welfare programmes initiated by the government and local panchayats benefited the poor families. For example, the free availability of public health

services, not only in the village but also in the nearby Hosadurga town, was a real blessing for the economically weaker sections.

Trends in Demographic Behaviour

It was observed that the lower caste communities tended to imitate the forward community, mainly, Lingayat. It was them who first voluntarily accepted family planning. Later, other communities followed.

Another notable factor in this village was the influence of the Swamiji who belonged to the Lingayat community. The present Swamiji came here about 25 years back and initiated various social and developmental activities. This resulted in all round progress in the village. His influence could be seen in village infrastructure, education, health care, and social harmony of the communities. He has considerable following not only among the Lingayats, but also among other social groups. He is also a strong advocate of increasing age at marriage of girls, women's education, small family norm etc. Though the changes in the village may be a result of overall changes and development taking place in the district, one cannot forget the contributions of the Swamiji and the catalytic changes triggered by his work and influence. Many families regard him as their benefactor.

The increasing acceptability of family planning across communities is significant and justifiable. The uncertainty of monsoon and lack of irrigation facilities have forced the villagers to realize their over-dependence on agriculture which is at the mercy of timely rain. At the same time, they also understand the need for giving good education to their children, which is also expensive. In this difficult situation, one rational option available to them is to restrict the family size and provide the best possible education to the children. So many young couples are now convinced of the need to have only one or two children.

FIELD SITE 3 KOLLURU

Characteristics and Social Composition of the Village

Kolluru, the study village, is located 18 kms from Gulbarga town, very near the Gulbarga -Afzalpura state highway. According to the records of the local Anganawadi centre (ICDS), there were 130 households in the village. The total population was 891. The communities presently living in the village are Muslims (82 households), Adi Karnataka (18 households), Kuruba (18 households), Guttedar (10 households) and Lingayats (2 households). The two Lingayats families in the village are very rich and influential (see, individual interviews in the Appendices). Each of the Lingayat household is having about 25 acres of cultivable land. Muslims also own land, but none of them own more than 10 acres. Kurubas, a backward community are traditionally involved in sheep rearing and blanket making. Adi Karnatakas (SC) are mainly landless agricultural labourers, though a few families own small pieces of land (2001 census figures in annexure 1).

The population in this village is bilingual, Kannada and Urdu (the mother tongue of Muslims). As per the 1991 census the total population of the village was 699. There were 129 households. The scheduled caste population was 92 and there were no scheduled tribes. Total literates were 189. The Hindus and Muslims live and work together in all spheres of human activity. We observed no communal tension or distrust between various

religious/caste groups. According to Lingappa, a Scheduled caste labourer, “life is a hell here, whether we are Hindus or Musalmans”.

Birth Control: Traditional and Modern

Even now there are a few instances of illegal and crude abortion conducted in the village. Two years back, one woman underwent abortion with a traditional *vaidya* in the village resulting in her death. Though people are aware about this tragic incident, even now the old practice of unsafe abortion continues. Some women told us that they underwent abortion without the knowledge of their husbands. They did not want to have more children. Most of the Muslim women have five children or more, on an average. Many of them believe that accepting family planning method is against their religious faith. But the non-availability of family planning methods and lack of awareness enhance the burden of poor women. But, in other communities, nowadays, some people are going for tubectomy. They are doing this after having more than four or five children. As can be seen from our individual interviews there is no conscious attempt to limit the family size in the communities here. The role of the health department and ANM is practically nil in motivating women to undergo sterilization. There are no facilities available in the village or in the vicinity for contraceptive services.

Ideal Family Size

There are many factors contributing to the high fertility in this area. Parents believe that if they have more children it will help increase the family income by employing them in the field. Poor education and lack of awareness also contribute to the higher family size. Coupled with these factors, religious beliefs of some communities also go against birth control measures. We also observed a strong son preference among communities here, particularly among Muslims. This, in a way, is responsible for having large number of children.

During FGDs, it was quite clear that there was a strong preference for sons among Muslim and Adi Karnataka families. When asked about the ideal family size, many young women replied that they wanted to have at least two sons and one daughter. They had their own justification for this- “we are poor people. We have to work to earn our daily food. If we have sons they can work and look after us when we are sick and old”.

Old Age and Family Support

There are both joint and nuclear families in the village. Sons even after marriage continue to stay with the parents. Some of them expressed the desire to have a separate house but they could not afford. In Muslims families, the parental property is inherited by the sons. Daughters, after their marriage, have no rights over the parental property.

Most of the elderly are looked after by their sons. Many also work in the field, despite poor health. During discussions, some of them expressed their displeasure towards the way they were treated at home and the fact that no one was really interested in taking care of them. Ahamed, a 71 year old agricultural labourer, who is suffering from cancer sums up his future “My children are waiting for the day I am going to die. They think I am a great burden on them. My wife was lucky. She went long back”.

Distinguishing Features between Communities

The two major communities, Muslims and Adi Karnataka, are socially and economically very backward. Poor levels of literacy and lack of exposure to modern ways

of life and medical treatment prevent them from improving their awareness. Absence of basic infrastructure, particularly education and health care, make them doubly vulnerable to poor health and unhygienic living conditions. During many months they have to look for employment opportunities outside the village and they are the worst affected during drought, which is a regular event in this region.

In the case of age at marriage, surprisingly there was not much difference between various communities. Lack of educational facilities has forced all families to arrange marriage for their daughters as early as possible. This was true in the case of Kurubas, Guttedars, Muslims, Adi Karnatakas and even Lingayats.

Trends in Demographic Behaviour

In general, all the evidences indicate that the fertility transition in this area is rather very slow. There are no significant social and economic development taking place in these backward villages. The relative economic backwardness, poverty and lack of any considerable governmental intervention have resulted in higher levels of fertility. The female age at marriage is still low. A majority get married before reaching the legally prescribed minimum age for marriage (18 years). Female literacy is very low and unfortunately, even now there are no efforts from either the government or panchayat bodies and people's organization to increase the level of literacy. Northern Karnataka region has the lowest percentage of literate females (22 per cent) and the highest concentration of Muslims (5 per cent). The couple protection rate is below 40. This region has the lowest percentage of institutional deliveries (17) and lowest per cent of fully immunized children (30).

Health infrastructure in this area is very poor. Most of the primary health centres are not functioning at all. The vacancy level of medical staff is very high in this district. The medical personnel posted here do not want to continue here and seek immediate transfer to other places. The poor health infrastructure existing here has made it extremely difficult to effectively implement any family planning programme.

Though we expected the diffusion mechanism to function in spreading the small family norm, it is not really happening. One major reason for this may be that the village is located in an isolated area with very poor communication facilities. Even among the better off social groups there are no significant desire to accept family planning as a means to achieve higher social and economic status. In other words, even in respect of 'trickling down' of modern life-styles and values, there is a big time-gap, particularly in poor communities of a backward region.

GENERAL CONCLUSIONS

The three village studies provide information regarding different levels of socio-economic development and various stages of fertility transition. The communities living in these villages are also different in terms of socio-cultural background. The villages are from three different geographical regions of Karnataka broadly representing different levels of socio-economic development.

Perception of Risk Factors

Rural India has been witnessing many developments since independence. Some of these developments have been traced in the three villages. All these developments have

been inducing faster changes in the hitherto existing socio-economic conditions in villages. Concomitant to these socio-economic changes, new risk factors are emerging. Villagers are trying to cope with these new risk factors by modifying their behaviour and one among them is the fertility behaviour. Varying fertility in villages seem to be the result of the level of development in and around a village and the risk perceptions among the villagers. This process of change and response have been examined by interactions with local people through focus group discussions and individual case studies. All the three villages have been visited by the two principal investigators to collect information on these risk factors, apart from three trained field investigators. In K Gowdagere, the often cited risk factor was land division. In Sanehalli, many risk factors like no rain, dowry, children's education, and indebtedness were cited. No rain, dowry, lack of minimum needs were cited more often in Kollur.

For the purpose of analysis, the changes have been broadly categorized into agricultural, economic and social changes. The associated risk factors concomitant to these changes have been identified and explained here.

The major changes in agricultural sector are irrigation, use of high yielding seeds, use of fertilizers and pesticides and change to commercial crops.With the advent of irrigation, farm land values have gone up. Usually, the family holdings of specifically irrigated land are never large as a result of partition among sons from generation to generation. The risk of further division is being restricted by having small number of children.

In the mid-1960s, high yielding seeds were introduced. These seeds were bought by the farmers from the market. Prior to this, the farmers were recycling the seeds from their own agricultural produce. High yielding variety seeds need constant monitoring of the crops in terms of water, pest control, fertilizer use and also timely rainfall, despite assured water supply from canal, tank or bore well.

It is necessary to use fertilizers and insecticides for high yielding crops. Otherwise, the yield will be very low. That is the reason for subsidizing the fertilizers for medium and small farmers. Despite the subsidies, the expenditure incurred is very high. As a consequence of this, change from food crops to cash crops in many areas happened with the expectation of higher income. But this depended upon the market situation on the one side and the possibility of a good crop on the other side. There is high risk perception involved here.

Traditional *jajmani* system is no longer in operation in many villages. Assured labour supply in need is denied to the farmers. Wages have gone up and farmers have to hire labourers at a high wage rate in cash terms.

The cash economy has increased the farmer's need for money at all stages of agricultural operation. In addition, the money assured at the end of marketing his agricultural produce is uncertain. Therefore, the farmer likes to economize at each stage of agricultural operation to get maximum returns from his land.

In social sector, the perceived changes are dowry and children's education. Now, many farmers like to send their children to school. By doing so, the farmer is loosing income from child labour directly or indirectly. In addition, sending children to school

involves expenditure like good clothes, books and the like. Farmers are not sure that their children can get jobs because of high unemployment prevailing in society. On the one hand, education is becoming more and more expensive, on the other, there is no assured return from it in future .

Dowry, wealth flow from bride's family to groom's family, is becoming a common practice in all castes and communities. The communities which never had to give 'dowry' in the past have now started this 'practice' in a big way. This has put enormous burden on the families to arrange for dowry demanded by the boy's family and also to meet the increasing marriage expenses. The quantum of payment of dowry will increase with increased number of children.

In sum, having more number of children is a financial burden on the family in terms of sending them to school and in performing their marriages. It is observed that the risk perception was seen much earlier in K Gowdagere. It is a recent phenomenon in Sanehalli and seems to be absent in Kolluru. While the fertility decline has been experienced for a longer time in K. Gowdagere, it is recent in Sanehalli and is yet to be accelerated in Kolluru.

Though a few important ' risk factors' emerged during our discussions with villagers, its effect and magnitude varied considerably across villages and communities. When certain groups perceive the risk factors more seriously, they always try to minimize the risk situation by adopting safety measures. One such thing is the decision to restrict the number of children. Children are seen as more a 'burden and liability' than as a 'support and asset' in the present day changing socio-economic conditions. But to realize these 'risks' and to prevent the negative impact of these risks, certain conditions are necessary like awareness of the advantages of small family norm, community pressure and means to regulate one's fertility. When these facilitating conditions are met, people react favourably and quickly. But in those areas wherein the conducive atmosphere is absent, any change in the attitude may not result in action.

Fertility Differentials in Three Villages

In the first village in Mandya district, family planning is near universal. Despite low levels of female literacy and urbanization, this area is far ahead of other regions in demographic transition. The land owning Vokkaliga community was the pioneer in accepting family planning followed by other communities. The unique agrarian structure, pressure on land, small landholdings are peculiar features of this area. For Vokkaligas, land is generally considered as old age security. Beals (1955: 98) while studying social change in a Mysore village stated that – " Namhalli's landowning group, while not threatened with starvation, has been faced, in recent years, with the problem of dividing a limited quantity of land among an ever increasing population. Within the village many solutions to this problem, ranging from abortion to the adoption of iron plows, have been tried. In almost every family in Namhalli at least one child has been groomed for urban employment".

The second village belongs to Chitradurga district, a medium fertility region of the state. This village has witnessed socio-economic development particularly during the last decade. The dominant Lingayat community, traditionally agriculturists, is in the forefront of effecting changes at the village level. The governmental health services here

strengthened the family planning programme in many ways and facilities are available for those desiring to limit their family size. Another interesting thing observed in this village is the influence and ability of the local religious leader in shaping the attitudes of the people. This religious head is responsible for major developments in the village and provides intellectual leadership. One can expect the level of family planning to go up quite fast in this area as the atmosphere is conducive for that. The fact that the lower castes are trying to imitate the educated and forward communities in their fertility behaviour, a sort of "sanskritisation" taking place rather silently in this village.

The third village is in Gulbarga district, one of the most backward regions of Karnataka. This village is a typical example of how development can bypass certain areas. The educational and health infrastructure is abysmally poor and there are no efforts to improve the condition. Muslims, a major community in this village, are not very much in favour of family planning, partly due to their poor economic position, illiteracy and also due to their religious belief. Though they perceive the differences in fertility behaviour as compared to other social groups, they are not inclined to accept family planning. The proximity to other communities alone is not enough to effect a change in fertility attitude. Even the impact of media and communication is very negligible here. Due to all these factors, people are not easily accepting contraception. At the same time, it is safe to state here that young mothers of this village, irrespective of their communities, gave birth to less number of children than their mothers did. This is an indication of changes taking place, though slowly.

The above discussion illustrates that the social, economic, spatial and cultural factors together determine the fertility behaviour of certain groups. But more than that, their perception of "risk factors" influences their fertility decision-making directly. Though the diffusion mechanism and imitation factor are relevant to a great extent, its impact varies considerably across communities and geographical locations. More importantly, any change in the attitude towards fertility behaviour can only be possible if there is a positive change in the socio-economic and infrastructural conditions of rural population.

(Acknowledgements: This paper is based on a study carried out in Karnataka under the South India Fertility Project , sponsored by the Wellcome Trust, UK and coordinated by the French Institute of Pondicherry. I am particularly thankful to Prof.C.Z. Guilmoto(IRD, Paris) and Prof. K.N.M.Raju (ISEC, Bangalore) for their valuable guidance and suggestions. However ,the usual disclaimers apply).

Address for Correspondence: sekhertv@hotmail.com ; tvsekher@isec.ac.in

Annexure: 1

Profile of Three Study villages – 2001

Key Indicators		**K. Gowdagere**	**Sanehalli**	**Kolluru**
No of Households		372	282	132
Total Population		1,624	1,589	745
Population (0-6)		177	137	117
SC and ST Population		247	458	89
Household size		4.0	6.0	6.0
Sex Ratio (females per 1000 males)		1035	880	1003
Sex Ratio (0-6 years)		825	1015	800
Literacy Rate (%)	Total	63.7	68.3	35.5
	Male	75.0	77.2	46.6
	Female	53.1	58.1	24.9
Work Participation Rate (%)	Total	46.9	47.5	44.6
	Male	62.8	52.9	52.4
	Female	31.6	41.4	36.7
Proportion of Main Workers (%)		45.4	30.9	28.5
Proportion of Marginal Workers (%)		1.5	16.6	16.1
Proportion of Non-Workers (%)		53.1	52.5	55.4

Source: Census of India-2001, Karnataka, Primary Census Abstract.

REFERENCES

Antony, T.V. (1992). The Family Planning Programme – Lessons from Tamil Nadu's Experience. A Paper Presented at the Symposium on India's Development in the 1990s held at the Nehru Memorial Museum and Library. New Delhi: Centre for Policy Research.

Balasubramanian, K. (1999). Pace of Fertility Decline and Prospects for Population Stabilization in Andhra Pradesh. Demography India, XXVIII(1):23-46.

Basu, A. M. (1999). Fertility Decline and Increasing Gender Imbalance in India, Including a Possible South Indian Turnaround. Development and Change, 30(2): 237-63.

Beals, Alan R. (1995). Interplay among Factors of Change in a Mysore Village. In McKim Marriott (ed.), Village India: Studies in the Little Community. Chicago: University of Chicago Press.

Bhat, P.N.M. (1994). Levels and Trends in Indian Fertility. Economic and Political Weekly, XXIX (51-2):3273-80.

Bhat, P.N.M. (1996). Contours of Fertility Decline in India: A District Level Study Based on 1991 Census. In K. Srinivasan (ed.), Population Policy and Reproductive Health, New Delhi: Hindustan Publishing Corporation.

Bhat, P.N.M. and S. Irudaya Rajan (1990). Demographic Transition in Kerala Revisited. Economic and Political Weekly, XXV(35& 36):1957-80.

Bhat, P.N.M. and Francis Zavier (1999). Findings of National Family Health Survey: Regional Analysis. Economic and Political Weekly, XXXIV (42-3):3008-32.

Caldwell, J.C., P.H. Reddy and P. Caldwell (1983). The Social Components of Mortality Decline: An Investigation in South India Employing Alternative Methodologies. Population Studies, 37(2):185-205.

Caldwell, J.C., P.H. Reddy and P. Caldwell (1986). The Causes of Demographic Change in Rural South India. Population and Development Review, 8(4):689-727.

Chandrasekaran C., P.H. Reddy, V.S. Badari and K.N.M. Raju (1985). Has Modernization Increased Fertility in Karnataka, India? Demography India, 14(2):174-96.

Epstein. Scarlett T. (1962). Economic Development and Social Change in South India, Bombay: Media Promoters and Publishers.

Epstein. Scarlett T. (1978). South India: Yesterday, Today and Tomorrow, London: The English Language Book Society and The Macmillan press Ltd.

Epstein. Scarlett T, A.P. Suryanarayana and T. Thimmegowda (eds.) (1998). Village Voices: Forty Years of Rural Transformation in South India. New Delhi: Sage Publications.

Government of India (Various Years). Family Welfare Programme Year Book. New Delhi: Ministry of Health and Family Welfare.

Government of India (2001). District-wise Social Economic Demographic Indicators, New Delhi: National Commission on Population.

Government of Karnataka (1986). Report of the Second Backward Classes Commission, Vol. III., Bangalore: Government of Karnataka.

Government of Karnataka (1994). Karnataka State Gazaetteer, Decennial Supplement (1983-1993). Bangalore: Government of Karnataka.

Government of Karnataka (1997). Status Report ,1995-96. Bangalore: Directorate of Health and Family Welfare Services.

Government of Karnataka (1999). Human Development in Karnataka, 1999. Bangalore: Planning Department.

Goyal, R. P. (1988). Marriage Age in India. New Delhi: B. R. Publishing Corporation.

Guilmoto, C. Z. (1992). Towards a New Demographic Equilibrium: The Inception of Demographic Transition in South India. The Indian Economic and Social History Review, 29(3):247-89.

Guilmoto, C. Z. and S. Irudaya Rajan (2001). Spatial Patterns of Fertility Transition in Indian Districts. Population and Development Review, XXVII(4): 713-38

Guilmoto, C. Z. and S. Irudaya Rajan (2002). District Level Estimates of Fertility from India's 2001 Census, Economic and Political Weekly, XXXVII (7): 665-72.

Hutter, Inge (1998). Reproductive Health and Child Spacing in Rural South India: Contribution to a Reorientation of Population Policies in India. Demographic Report No: 23. Groningen: Faculty of Spatial Sciences, University of Groningen.

IIPS (1995). National Family Health Survey 1992 –1993, India. , Bombay: International Institute for Population Sciences.

IIPS and ORC Macro (2001). National Family Health Survey (NFHS-2) – India 1998-99, Karnataka. Mumbai: International Institute for Population Sciences.

India, Registrar General (Various Years). Census of India, 1961, 1971, 1981, 1991 and 2001.

India, Registrar General (Various Years). Sample Registration System, Vital Rates for India, 1971-1998.

India, Registrar General (1973). Census of India, 1971, Mysore, Series – 14, Part II A. General Population Table.

India, Registrar General (1986). Census of India, 1981, Karnataka, Series – 9, Part IV – A, Socio-Cultural Tables.

India, Registrar General (1987). Census of India, 1981. Occasional Paper No. 11 of 1987. Fertility and Child Mortality Estimates of Karnataka.

India, Registrar General (1988a). Census of India, 1981. Occasional Paper No. 13 of 1988. Fertility in India: An analysis of 1981 Census data.

India, Registrar General (1988b). Census of India, 1981. Occasional Paper No. 7 of 1988. Female Age at Marriage : An Analysis of 1981 Census Data.

India, Registrar General (1989). Fertility Differential in India, 1984.

India, Registrar General (1991a). Census of India District Census Hand Book-Mandya District, Karnataka.

India, Registrar General (1991b). Census of India District Census Hand Book-Gulbarga District, Karnataka.

India, Registrar General (1991c). Census of India District Census Hand Book-Chitradurga District, Karnataka.

India, Registrar General (1993a). Census of India, 1991. Provisional Population Totals.

India, Registrar General (1993b). Sample Registration System. Fertility and Mortality Indicators, 1991.

India, Registrar General (1995). Indirect Estimates of Fertility and Mortality at the District Level, 1981. Occasional Paper No. 13 of 1994.

India, Registrar General (1996). Population Projections for India and States 1996 – 2016.

India, Registrar General (1997). Census of India, Karnataka, Series – 11, Part IV – B (i), Table C – 9, Religion.

India, Registrar General (1998). Census of India, Karnataka, Series – 19, Part IV –A – C Series, Social and Cultural Tables.

India, Registrar General (2001). Census of India. Provisional Population Total – Karnataka.
Provisional Population Total – Karnataka.

James, K.S. (1999). Fertility Decline in Andra Pradesh: A Search for Alternative Hypotheses. Economic and Political Weekly, XXXIV (8): 491-9.

Kanbargi, R. (1979). Fertility Differentials in Karnataka: A Census Analysis. Journal of Family Welfare, 25(4):40-9.

Kulkarni, P.M. (1985). Population Projections for Karnataka, 1981-2001. Bangalore : ISEC. Mimeo.

Kulkarni, P.M., S. Krishnamoorthy and N. Audinarayana (1996). Review of Research on Fertility in Tamil Nadu . Coimbatore: Department of Population Studies, Bharathiar University.

Landy, Frederic (1992). To Migrate or to Stay in the Maidan: A Survey in Two Rural Systems in South India. Pondy Papers of Social Sciences, Pondicherry: French Institute.

Nagaraj, K. (1999). Extent and Nature of Fertility Decline in Tamil Nadu. Review of Development and Change, IV(1):89-120.

Population Research Centre (PRC) ISEC and IIPS (1995). National Family Health Survey 1992-1993, Karnataka. Mumbai : International Institute for Population Sciences.

Prakasam, C.P., P.K. Murthy and B.N.M. Chowdhary (1998). Singulate Mean Age at Marriage : An analysis of 1991 Census data. Bombay: IIPS.

Rajaretnam, T. and R.V. Deshpande (1994). Factors Inhibiting the Use of Reversible Contraceptive Methods in Rural South India Studies in Family Planning, 25(2):111-21.

Raju, K.N.M. (1998). Family and Household Functions: A Demographic Study. Bangalore : Sunrise Publications.

Raju, K.N.M. and T.N. Bhat (1994). Son Preference During Fertility Transition in an Agrarian Society. Journal of Institute of Economic Research, 29(1&2): 11- 32.

Raju, K.N.M. and T.N. Bhat (1996). Gender Issues in the Choice and Adoption of Family Planning Methods. Indian Journal of Gender Studies, 3 (1):57-70

Rao, N. B., P.M. Kulkarni and P. H. Rayappa (1986). Determinants of Fertility Decline: A Study of Rural Karnataka. New Delhi: South Asian Publishers Pvt. Ltd.

Rayappa, P.H. (1998). Demographic Transition in Karnataka: A Regional Perspective. Journal of Social and Economic Development, 1(1): 85-106.

Rayappa, P.H. and M. Lingaraju (1996). Demographic Transition in the South: A Regional Perspective. Demography India, 25(2):155- 76.

Rayappa, P.H. and T.V. Sekher (1996). Development and Disparities among Backward and Scheduled Groups in Karnataka. Political Economy Journal of India, 5(1):50-8.

Rayappa, P.H. and T.V. Sekher (1998). Administration of Health Services in Karnataka. In S. Ramanathan (ed.), Landmarks in Karnataka Administration. New Delhi: IIPA and Uppal Publishers.

Saavala, Minna (2001). Fertility and Familial Power Relations: Procreation in South India. Nordic Institute of Asian Studies, Monograph Series No: 87. Richmond: Curzon Press.

Samuel, M. Johnson (1991). Some Aspects of Bangalore's Growth, 1941-1991. Demography India, 20(1):53-62.

Sekher, T.V. (2001). Functional Review of Department of Health and Family Welfare in Karnataka. In Government of Karnataka, Functional Review Reports, Bangalore: KARC.

Sekher, T.V. (2003). Sensitizing Grassroots Leadership on Health Issues through Television: Experiences of a Pilot T.V. Project. Economic and Political Weekly, XXXVIII(46): 4873-9.

Sekher,T.V and K.N.M Raju (2004) Fertility Transition in Karnataka, ISEC Monograph series No: 5,Institute for Social and Economic Change ,Bangalore.

Sekher, T.V., K.N.M.Raju and M.N.Sivakumar (2000). Fertility Transition in South India – Karnataka: A Research Report. Bangalore : Institute for Social and Economic Change, (mimeo).

Sekher, T.V, K.N.M. Raju and M.N. Sivakumar (2001). Fertility Transition in Karnataka: Levels, Trends and Implications, Economic and Political Weekly, XXXVI(51): 4742 - 52

Sekher, T.V. and P.H. Rayappa (1999). Karnataka`s Demography. In M.V.S. Gowda and D.T.N. Gowda (eds.), Economic Development of Karnataka : Leading Issues, 81st Conference Volume of the Indian Economic Association, Bangalore.

Srinivasan, K. (1986). Has Modernization Increased Fertility in Karnataka, India? Demography India, 15(2):281-97.

Srinivasan, K. (1995). Regulating Reproduction in India's Population: Efforts, Results and Recommendations. New Delhi: Sage Publications.

Srinivasan, K., P .H. Reddy and K.N.M. Raju (1978). From One Generation to the Next: Changes in Fertility, Family Size Preferences and Family Planning in an Indian State between 1951 and 1975. Studies in Family Planning, 9(10-11):258-71.

United Nations (1961). The Mysore Population Study (Population Studies, No. 24). New York: United Nations.

Zachariah, K.C. (1983). Anomaly of the Fertility Decline in Kerala. Report No: 1 from RPO 671-70. Washington, D.C: The World Bank.

Zachariah, K.C. and S. Irudaya Rajan (eds.) (1997). Kerala's Demographic Transition: Determinants and Consequences. New Delhi : Sage Publications