The Growth and Development of Scheduled Caste and Scheduled Tribe Population in Gujarat and Future Prospects

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The welfare of vulnerable population groups has always featured prominently in India's plans and policies. Such welfare, it has been recognised, needs to be with respect to programmes that are geared for developing human resources. Nowhere is this more evident than in programmes that have been formulated for the two most disadvantaged groups viz. the scheduled tribes and scheduled caste population. While tribal populations are universal, the scheduled caste population is unique to India and is characterised by untouchability.

Along with the scheduled castes (SC) population, the tribal population (including denotified and nomadic tribes) represent the most backward and disadvantaged group in the highly stratified caste ridden Indian society. While the social, economic and educational deprivation of these groups is a common and unifying characteristic, each group also has its own particular problem that distinguishes it from the other. The scheduled castes are the victims of social ostracism due to the practice of untouchability, whereas the tribal population remains isolated from mainstream development as they lead a primarily nomadic life, wandering from place to place.

The development of these disadvantaged groups and their assimilation with the larger society has therefore been a matter of great concern for the government and other public bodies, both at the Centre and in the states. In fact, these concerns are woven into the very fabric of the country's constitution and are contained in the Directive Principles of the State Policy laid down in article 46 which calls for the promotion of the educational and economic interests of the weaker sections of the people, and in particular, of the Scheduled Castes and Scheduled Tribes and to protect them from social injustice and all forms of exploitation (Dubey, 1973). Specific provisions have been made in several articles of the constitution for the realisation of the promise made in the Directive Principle so as to improve the social and economic status of these two groups. The reservation of seats for SCs and STs in the legislative assemblies of the states and in the Parliament is a case in point. Under article 17 of the Constitution, untouchability has been abolished and its practice in any form has been forbidden. Land reforms have also been enacted to revert back land to the tribals and to allot land to the scheduled caste population.

In a bid to increase literacy and education among the SCs and STs students from these groups are provided stipends, scholarships, free tuition, monetory aid for books, stationery and free accommodation in hostels. Certain percentage of seats is also reserved in educational

institutions as are jobs in government and public sector. Members of both groups also enjoy relaxation of qualification and age norms while seeking government or public sector employment. In the pursuance of these privileges, appropriate funds have been provided in the various Five Year Plans for welfare programmes of these populations (Govt. of India, 1996).

As we approach the completion of five decades of planning, it therefore becomes pertinent to assess the impact of these policies and programmes on the socio-economic development of these marginalised groups as well as to understand the resultant changes in their quality of life and demographic behaviour. Such assessments, so far, have remained adhoc and localised due to small sample size, with no comprehensive study available covering the varied and multiple aspects of development.

The present study therefore attempts to fill some of the gaps in information related to these two disadvantaged communities i.e. the Scheduled Castes and Scheduled Tribes, in Gujarat, using census as well as large scale survey data for the state. The study takes advantage of the two rounds of the National Family Health Survey, NFHS-1 and NFHS-2, conducted during 1993 and 1998-99 respectively in Gujarat, along with the national and other state level surveys.

The study analyzes several parameters to understand the developments that have occurred among the scheduled caste and scheduled tribe populations in Gujarat. It specifically focusses on the composition and growth of these two population groups, their socio-economic development i.e. urbanisation and literacy and education, their health, nutritional and contraceptive status and the level and trends in their fertility and mortality. The later part of the study presents the likely future population growth pattern of these two communities and discusses the implications for policy for the continued welfare of these vulnerable communities.

COMPOSITION AND GROWTH OF SC AND ST POPULATION

According to the 1991 census, the country's population was enumerated to be 846 million, of which SCs constituted 16 percent of the total population, that is, 138 million, and STs accounted for another 8 percent or 68 million. While the SCs are scattered in almost all the states in varying proportions, a majority of the ST population (83 percent) is concentrated in the so-called central tribal belt running through the hilly terrain of Maharashtra, Gujarat, Rajasthan, Madhya Pradesh, Bihar, West Bengal, Orissa and Andhra Pradesh (Ghosh and Chakraborty, 1999). Although the north eastern states have a high concentration of tribals, in absolute terms they account for only 9 percent of the total ST population in the country.

In Gujarat, out of the state's population of 41.3 million, SCs constitute 7.4 percent or 3.06 million and STs account for another 15.0 percent or 6.16 million. An overwhelming majority of the SCs and STs still live in rural areas of the state, as is the pattern in the country as a whole. The distribution of SC and ST population in the districts of Gujarat by rural and urban areas is presented in Table 1. It can be seen from this table that the SCs are scattered in almost all the districts in varying proportions, while a majority of the ST

Table 1: Percent of SCs and STs in Districts of Gujarat in 1991

District	All areas		Rural areas		Urban areas	
	SCs	STs	SCs	STs	SCs	STs
Ahmedabad	11.53	0.89	10.69	1.17	11.82	0.79
Amreli	9.12	0.16	9.72	0.13	6.93	0.27
Kachchh	11.90	6.95	12.06	7.75	11.53	5.14
Kheda	5.91	1.19	5.86	1.01	6.10	1.79
Jamnagar	7.93	0.46	7.87	0.53	8.02	0.35
Junagadh	8.91	0.46	9.96	0.56	6.74	0.25
The Dangs	0.73	93.96	0.18	98.29	5.18	59.07
Panchmahals	3.67	47.19	3.41	51.22	5.81	13.23
Banaskantha	10.63	6.91	10.55	7.28	11.41	3.67
Bharuch	4.27	45.53	3.74	54.14	6.23	13.67
Bhavnagar	6.04	0.15	5.87	0.06	6.35	0.30
Mahesana	8.97	0.37	8.80	0.15	9.60	1.15
Rajkot	7.31	0.19	8.45	0.18	6.04	0.31
Vadodara	6.21	26.6	5.40	43.00	7.28	4.84
Valsad	3.03	54.35	2.61	64.79	4.32	22.14
Sabarkantha	8.65	18.41	8.79	20.22	7.47	3.00
Surat	3.66	36.05	2.81	65.77	4.50	7.01
Surendranagar	11.29	0.78	11.64	1.01	10.49	0.25
Gandhinagar	9.43	1.37	5.85	0.24	14.81	3.01
Total	7.41	14.97	7.02	20.93	8.15	3.52

Source: Census of India, 1991

population is concentrated in certain districts like The Dangs, Panchmahals, Bharuch, Valsad, Surat, Vadodara and Sabarkantha, particularly in the rural areas.

Both the SCs and STs have a faster rate of population growth than other sections of the population. This is reflected in their rising proportions in the total population (Table 2). In 1961, the SCs constituted 6.6 percent of the state's population which increased to 7.4 percent in 1991. Likewise, during the same period, the proportion of the ST population rose from 13.4 percent to 14.9 percent. The rising proportions in the total population in case of SCs and STs are also observed in the country as a whole.

Table 2: Proportion of SC and ST Population in Gujarat and All-India, 1961-91

Year	Population (in million)		Percent of SCs+		Percent of STs+	
	Gujarat	India	Gujarat	India	Gujarat	India
1961	20.63	439.23	6.6	14.7	13.4	6.9
1971	26.70	548.16	6.8	14.6	14.0	6.9
1981	34.09	683.33	7.2	15.8	14.2	7.8
1991	41.31	846.30	7.4	16.5	15.0	8.1

Source: Census of India, 1961-91 + Out of total population (all castes)

An examination of the annual growth of the SC and ST population vis a vis the other communities for the state as well as the country since 1961, reveals a decline in growth of these two populations in the state over time, whereas such a pattern is not evident for the country as a whole, indicating a greater response to population and developmental programmes among the SCs and STs in Gujarat (Table 3). For example, the annual rate of increase among the SCs and STs declined from about 3.4 to 3.6 percent during 1961-71 to about 2.6 to 2.7 during 1981-91 in Gujarat. However, these rates are still higher compared to those of other caste and community groups in the state. The overall pattern of growth among SCs and STs shows a faster decline since 1981, which suggests that these communities along with other communities have entered the third stage of demographic transition wherein fertility which

Table 3: Annual Rate of Growth Among SC and ST Population in Gujarat and All India, 1961-91

Decade	Annual rate of increase (in percent)			
	Gujarat			
	SC	Non-SC	ST	Non-ST
1961-71	3.4	2.9	3.6	2.8
1971-81	3.4	2.7	3.0	2.7
1981-91	2.6	2.1	2.7	2.0
	India			
1961-71	2.4	2.5	2.7	2.5
1971-81	3.1	2.0	3.6	2.0
1981-91	3.2	2.6	3.1	2.7

Source: Census of India, 1961-91

was less responsive to the process of modernization before 1981, started declining under the impact of overall development as well as better health, education and spread of small family norm. Evidence of such social change is discussed in detail in the following sections.

SOCIO-ECONOMIC CONDITION

Since the demographic changes are largely contingent on the socio-economic development, it is pertinent to understand the impact of various policies and programmes on the socio-economic condition of the SC/ST communities after almost five decades of planning. Unfortunately, no comprehensive study based on primary data and covering various aspects of development is available for these communities. Most of the studies are either adhoc or localized and no meaningful conclusions can be drawn. For such assessments, one has to largely depend on census data and an attempt has been made to use the available indicators to study socio-economic changes among these communities.

Urbanization

In the country as a whole, an overwhelming majority of the SCs (81 percent) and STs (93 percent) still live in rural areas, as against 74 percent overall in India. The corresponding figures for the state of Gujarat are 62 percent for SCs, 92 percent for STs and 65 percent for the general population. However, there is a trend towards increasing urbanization among the SCs and STs in the state of Gujarat (Table 4). While only 24 percent of the SCs lived in urban areas in 1961, the figure had increased to 38 percent by 1991. Similarly, the proportion of urban population among STs increased from 5 percent in 1961 to 8 percent by 1991. The

corresponding figures for the non-SC/ST population increased from 29 percent in 1961 to 39 percent in 1991 (Table 4). The rising levels of education and diversification of occupations may have resulted in improved lifestyles for many SCs and STs.

Table 4: Urbanisation Among SC and ST Population in Gujarat, 1961-91

Year	Percent of population in the urban areas			
	SC	ST	Other than SC/ST	General population
1961	24.4	5.0	29.3	25.8
1971	27.3	6.1	32.0	28.1
1981	32.7	7.0	35.3	31.1
1991	37.9	7.9	39.2	34.5

Source: Computed from Census of India, 1961-91

Education

As a foremost indicator of social change, we analyze the literacy trends by caste/tribe for Gujarat, with breakdowns by sex. Literacy greatly expands the range of human potentialities and is a worthwhile goal in its own right. Literacy is considered to be an important driving force behind economic and social development and it has a powerful influence on the men's and women's status in the family and society. The goal of free and compulsory education through the age of 14 is enshrined as a Directive Principle of India's constitution. Over the years a great deal of thinking has gone into how to achieve this goal. Despite the government's continued concerns in this area, particularly for the weaker sections of the population, and a substantial increase of resources devoted to education, the current rate of improvement in education even amongst the non-SC/ST population is yet insufficient to meet the state's as well as the country's needs.

In India, only about two-fifths (39 percent) of females aged 7 years and above were found literate at the time of the 1991 census, as against 64 percent of males aged 7 years and above. Thus, overall about half (52 percent) of the Indian population (aged 7 years and above) are literate. The state of Gujarat, however, scores much higher than that of the national average. Almost half of the females aged 7 years and above in Gujarat were found literate at the time of the 1991 census, as against 73 percent of males aged 7 years and above, indicating that about three-fifths of the state's population are literate. It is however satisfying to note that the level of literacy has also improved amongst the SC and ST population. The improvement in male and female literacy rate by

caste/tribe since 1961 can be assessed from Table 5 which reveals that the gap in the literacy by caste/tribe has narrowed down over time as a result of relatively faster improvements in literacy among SCs and STs although the level of literacy is still very low, particularly amongst ST population. According to the last (1991) census, about 61 percent of the SC population aged 7 years and above were found literate, as against 37 percent of the ST population aged 7 years and above. However, about 46 percent of females aged 7 years and above among SC population and only one-fourth of the females aged 7 years and above among ST population were reported to be literate, as against about half of the females aged 7 years and above among the general population in Gujarat. Despite a two-three fold increase in literacy rate among the SC and ST population during the last three decades, disparities between the SC/ST population persist. The literacy rates for scheduled tribes continued to be much lower than those for scheduled castes for both males and females but for females, the rates were even lower. Thus the policies and programmes of the country since its independence have not been very effective as borne out by the fact that majority of the women among the disadvantaged classes in Gujarat are not yet literate. Articles 341 and 342 of India's constitution lay down guidelines for identifying castes and tribes at the lowest range of the social and economic ladders which are in need of special attention for improving their lot. The list of SCs and STs which were initially issued under the constitution (scheduled castes) order 1950, have been amended or supplemented from time to time and have grown larger over the years. The recent NFHS (1995) data reveal that the school attendance is not yet cent percent for boys and girls even among the general population. About 18 percent of males and 32 percent of females age 6-14 years were found not attending school in Gujarat. The school attendance rates for rural areas as well as for the depressed sections of the population are much lower, despite substantial educational advances that have been made over time in Gujarat. It is therefore important to examine the policies and programmes being followed and their effective implementation in the state, as well as to undertake special studies to identify the socio-cultural factors inhibiting faster progress in literacy and education among the laggard communities and groups and constraints relating to infrastructure and funds on education, to make satisfactory progress in increasing literacy among these population groups.

Table 5: Levels and Trends in General Literacy Rate Among SC and ST Population in Gujarat, 1961-91

Year	Percent of literates*								
	SC			ST			Non-SC/ST population		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
1961	33.9	10.7	22.5	19.1	4.1	11.7	45.3	22.4	34.2
1971	39.9	15.0	27.7	21.8	6.2	14.1	51.3	29.0	40.5
1981	53.1	25.6	39.8	30.4	11.6	21.1	63.9	38.2	51.5
1991	62.3	37.7	50.5	39.4	19.7	29.7	64.8	45.0	55.2
	(75.5)+	(45.5)	(61.1)	(48.3)	(24.2)	(36.5)	(73.1)a	(48.6)a	(61.3)a

* Based on population of all ages

\+ Figures within parentheses are based on population age 7 years and above

a For general population

Source: Census of India, 1961-91

Work Participation and Occupational Structure

The economic situation of these population groups can partly be judged by their participation in mainstream development and nature of occupation pursued by them. Tables 6 and 7 present the work participation rate and occupational structure by caste/tribe and sex in Gujarat during the period 1961-91. It is obvious from these tables that the data do not show a clear trend. The main reason is the change in the definition of "worker" in different censuses. For example, the decline in work participation rate from 1961 to 1971 was mainly because of the change in definition of workers between the two censuses. Nevertheless, the overall trend seems to suggest that in the post-independence period, the participation rate continued to be low and lower than before (data before 1961 not shown), reflecting the under-developed character of the economy. Compared to developed countries and many developing countries, the proportion of economically active population in

Table 6: Work Participation Rate by Caste/Tribe in Gujarat, 1961-91

Year	Percent of main workers to total population								
	SC			ST			Non-SC/ST population		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
1961	51.2	33.6	42.6	58.2	49.1	53.7	52.8	23.8	38.8
1971	48.3	16.8	32.9	55.6	24.5	40.4	50.7	7.1	29.7
1981	46.9	15.0	31.4	56.8	23.9	40.6	51.8	8.3	30.8
1991	43.5	16.2	32.7	55.8	25.5	40.9	53.2	11.2	34.1

Source: Computed from Census of India, 1961-91

Table 7: Distribution of Workers by Broad Occupational Categories, According to Caste/Tribe, Gujarat, 1961-91

Year	Percent of workers					
	Primary		Secondary		Tertiary	
	Male	Female	Male	Female	Male	Female
			Scheduled Castes			
1961	51.4	63.1	26.2	17.4	22.3	19.5
1971	63.5	74.2	20.1	12.7	16.6	13.0
1981	54.6	71.4	24.3	13.5	21.1	15.2
1991	50.8	71.7	20.1	10.9	26.0	17.4
			Scheduled Tribes			
1961	88.9	94.4	4.2	2.0	6.8	3.6
1971	90.4	95.2	4.4	2.4	5.2	2.3
1981	85.7	92.3	7.5	4.0	6.7	3.7
1991	83.9	92.7	8.0	3.1	8.0	4.2
			Non-SC/ST Population			
1961	59.0	80.1	17.5	11.2	23.5	8.0
1971	60.1	77.9	16.4	7.4	23.1	14.8
1981	54.4	76.7	20.6	7.4	25.0	15.9
1991	48.9	78.2	23.1	6.3	28.0	15.5

Note: Primary Sector: (i) Cultivators, (ii) Agricultural Labourers, and (iii) Livestock, forestry, fishing, hunting, plantations, orchards and allied activities.
Secondary Sector: (iv) Mining and quarrying, (v) Manufacturing, processing, servicing and repairs (household industry and other than household industry) and (vi) Constructions
Tertiary Sector: (vii) Trade and commerce, (viii) Transport, storage and communications and (ix) other services.

Source: Computed from various reports of Census of India, 1961-91 (Office of the Registrar General, India).

Gujarat is rather low. Among the main reasons are low participation rate of females among all sections of the population, less availability of work etc. It, otherwise, also shows the heavy dependency on the work force. A study of Table 6 further reveals the continuation of the lower ratio of females in the work force, although work participation rate for females shows a marginal increase, particularly after 1981. This is true for all the sections of the population. The low work participation among women lies in the fact that most of the women are housewives or work on family farm, whose work is not counted as part of production work.

The effect of improvement in education and development on occupational structure of the country is evident in the decennial census data presented in Table 7, although the pattern is typical of the developing countries where a large proportion of work force is engaged in

agriculture, followed by the service sector and then the industrial sector, among all the sections of population in Gujarat. Notwithstanding the problem of comparability because of the change in the definition of worker in various censuses, a study of Table 7 reveals that agriculture and related work is the major economic activity for a very large proportion of the working population. Industries and services provide work to a very small proportion of the labour force. This is more so particularly among STs although there is an improvement in participation in these sectors over time, particularly during the last two decades. As can be seen from Table 7, there is a slight decline in the proportion engaged in agriculture, and a small rise in those engaged in industries and services in all the sections of the population. But the pace of this change is undoubtedly very slow. It is because of the inadequate development of industries and services that a substantial part of the labour force is compelled to remain in the agricultural sector. The marginal increases in the service sector are indicative of the fact that the process of modernization of the economy is underway. In this regard, the scheduled caste population has shown significant improvements compared to the scheduled tribes. A more or less static occupational structure of the STs and slow modernization of the agricultural sector are indicative of least economic development among them. The occupational structure by sex reveals a similar pattern. However, a relatively larger proportion of females compared to males in all the sections of the population are engaged in agriculture, while it is the reverse in the secondary and tertiary sectors. A striking feature is the marginal increase in female participation in the tertiary sector during the last two decades, particularly among SCs and non-SC/ST population. There is no doubt about the desirability of bringing about change in the state's occupational structure for the development of the depressed sections of the population including women. These changes are, in reality, associated with the spread of education and economic development in the state.

Material Well Being

While the relative position of the SCs and STs in terms of education and occupation status has been discussed in the earlier sections, many other important aspects of well being could not be included in this study due to non-availability of information on such aspects. Most deprivations however can be traced to inadequate income and wealth. An adequate level of income and wealth would indicate the feasibility of leading a decent life and, therefore, a higher level of well being, while conversely a lower level of income and wealth would lead to the non-fulfillment of many of these aspirations and hence to lower levels of well being. The data on household income and the ownership, assets for population groups like SCs and STs are rare. Some studies such as those based on the 28 and 32 rounds of the NSS data on consumption patterns of the SCs and STs found that these groups were generally poorer during the late seventies and early eighties. While compiling a Human Development Profile of India and the different states, based on a large scale survey conducted by

NCAER, New Delhi, a recent report analyses rural household income among the SCs, STs and other groups and notes that inequality in the distribution of income among the poor is much lower than that among the whole population in each of the states (Chakraborty and Ghosh, 1999). Further, the study based on estimated poverty parameters across communities also confirms the pattern observed earlier that the SCs and STs are generally poorer than other communities. For example, about 47 percent of the SCs and 54 percent of the STs were found to be below the poverty line as against 30 percent for others in Gujarat.

Sex Ratio

Another indicator viz. sex ratio of the population can overall reflect the absolute level of well being of the women vis-à-vis men in a population. An attempt has therefore been made in this section to study the trend in sex ratio by various caste/tribe groups. It may however be noted that sex ratio in Gujarat as well as in the country as a whole has been adverse to females in all the censuses since 1901. The sustained decline in the sex ratio in the state is noticed till 1971 (data before 1961 not shown in Table 8). It declined from 954 females per 1000 males in 1901 to 934 in 1971. The sex ratio in the state has, however, shown a slight improvement in 1981. During that year, the sex ratio was recorded at 942 which declined to 934 in 1991 (Table 8). The overall masculinity in the state and in India's population is largely attributable to

Table 8: Sex Ratio Among SC and ST Population in Gujarat, 1961-91

Year	Sex Ratio (Number of females per 1000 males)			
	SC	ST	Non-SC/ST Population	Total
1961	972	970	933	940
1971	950	968	927	934
1981	942	976	936	942
1991	925	967	929	934

Source: Computed from Census of India, 1961-91.

mortality differences by sex. An examination of the sex ratio by caste/tribe also reveals that there is a consistent decline over time, particularly among the SCs
and non-SC/ST population. The sex ratio among the STs has remained more or less same during the last three decades and is relatively much higher compared to SCs and non-SC/ST population. It was about 967 among STs, as against 925 among SCs and 929 among non-SC/ST population in 1991. This seems to imply that mortality differences by sex are relatively much less among the ST population, compared to other sections of the population. Women's position on the health aspects as well

as their overall well being can best, however, be measured through various mortality indices. Some of the mortality indicators and other health aspects of women and children are discussed in the later sections of this paper.

NUTRITION, HEALTH AND CONTRACEPTIVE STATUS

Among any marginalised section of the population, the women and children are particularly vulnerable, especially in terms of their overall health and physical well being. The importance of safe motherhood and child care services therefore cannot be over-emphasized in view of high infant and child mortality and maternal mortality in the country. In an attempt to ameliorate the health of women and children, therefore, the Ministry of Health and Family Welfare, Government of India, has taken concrete steps to strengthen maternal and child health services during the First and Second Five Year Plans (1951-56 and 1956-61). Since then, in the subsequent five year plans, special schemes have been added to the basic health services, particularly to combat childhood diseases and maternal morbidity and the detrimental effects of poverty and nutritional deprivation among women and children. Notable among these are the Universal Immunization Programme, the Child Survival and Safe Motherhood programme, the oral rehydration therapy, the Integrated Child Development Services (ICDS) scheme and the ante-natal, natal and post-natal care services for providing essential care to pregnant and lactating women. In addition to various health services, the Government sponsored programme also provides family planning and contraceptive services, including educational and promotional services for fertility control.

The recent period has witnessed a major ideological shift in programme emphasis from the earlier greater focus on women's health during the childbearing years and fertility control measures, to include all stages of women's lives i.e. from birth, through childhood and adolescence to adulthood and old age. This newly formulated Reproductive and Child Health Programme aim at improving the outreach of services particularly for the vulnerable sections of the population who till date had been left out of the planning process. To this end it is envisaged that ---- "Special Programmes will be taken up for urban slums, tribal populations and adolescents" (GOI, n.d.). This new philosophy in policy and programme which emphasizes a focus on all vulnerable groups and all stages of the life cycle of women is indeed a long awaited and welcome move.

The provision of maternal and child health and family planning services in the rural areas is made through a well placed organized network of government run primary health centres and by government or municipal hospital or nursing homes in the urban areas. These are in addition to the numerous private doctors, hospitals and nursing homes, in both rural and urban areas.

This section examines the nutritional and health status of women and children belonging to the scheduled castes and tribes vis-à-vis other caste and community groups. It also looks at the contraceptive prevalence among these populations, using data from the two rounds of the National Family and Health Surveys, NFHS-1 (1993) and NFHS-2 (1998-99) of Gujarat.

Nutritional and Health Status

The nutritional and health status of women and children reflects their physical well being as well as helps to understand the degree of care (or neglect) accorded to these two groups. Table 9 presents the nutritional and health status of women and children among the SCs and STs vis a vis the other community groups. The nutritional status of women and children is measured by the prevalence of anemia among them (haemoglobin levels less than 11.0 grams per deciliter for children and pregnant women and less than 12.0 grams per deciliter for non pregnant women and the degree of under-nourishment (as measured by weight for age) among children. Anemia usually results from a nutritional deficiency of iron and causes low haemoglobin levels, which, in turn impair the effective functioning of various organs and tissues in the body. Anemia has serious consequences on the health of women, and proves particularly debilitating during pregnancy. Among children, it is known to impair their cognitive and motor development and performance as well as renders them susceptible to various infections. It is therefore discouraging to note that anemia was found highest among the women belonging to the scheduled tribes (56 percent) followed by SCs (49 percent), other backward castes (45) and lowest (42 percent) among other than these caste groups. The pattern is identical in case of anemia among children age 6-35 months also although here the percentage of children with anemia is much higher. More than four fifths (82 percent) of tribal children and a little over three fourths (76 percent) of children belonging to the scheduled castes were found anemic.

The other index to assess the nutritional status of children is undernourishment, as measured through weight for age, also reveals the disadvantage faced by children belonging to the scheduled castes and tribes. As can be seen from the data of the most recent period (1998-99) given in Table 9, the percent of children who are below two standard deviations from the median for weight is highest among the scheduled tribes (57 percent) followed by those from scheduled caste and other backward castes (45-49 percent) while it is lowest (36 percent) among castes other than SCs, STs and OBCs. In fact on all the above three nutritional status indicators for women

Table 9: Nutritional and Health Status Among Women and Children and Contraceptive Prevalence Rate by Caste/Tribe in Gujarat, 1993-99

Indicator	Percent distribution				
	SC	ST	OBC	Others	Total
1	2	3	4	5	6
Nutritional Status of Women and Children					
* Anemia[1] among ever married women					
NFHS-1(1993)	-	-	-	-	-
NFHS-2(1998-99)	48.4	55.5	45.0	42.1	46.3
Anemia[1] among children age 6-35 months					
NFHS-1(1993)	-	-	-	-	-
NFHS-2(1998-99)	76.2	82.4	72.0	71.1	74.5
Under nourishment[2] among children					
NFHS-1(1993)	59.4	54.2	-	41.0+	44.1
NFHS-2(1998-99)	45.4	56.6	49.0	36.3	55.1
Maternal and Child Health Care					
Antenatal[3] check up received during pregnancy					
NFHS-1(1993)	85.0	68.5	-	77.4+	76.2
NFHS-2(1998-99)	-	-	-	-	-
Iron folic[3] acid tablets received during pregnancy					
NFHS-1(1993)	78.0	62.4	-	70.3+	69.3
NFHS-2(1998-99)	-	-	-	-	-
Two or more doses[3] of tetanus toxid injections received during pregnancy					
NFHS-1(1993)	76.0	48.1	-	65.1+	62.7
NFHS-2(1998-99)	-	-	-	-	-
Medical or paramedical[3] attendance at delivery					
NFHS-1(1993)	49.0	16.0	-	48.2+	42.6

NFHS-2(1998-99)	-	-	-	-	-

1	2	3	4	5	6
Children fully[4] immunized					
NFHS-1(1993)	-	35.7	-	52.0[+]	49.8
NFHS-2(1998-99)	52.8	40.6	50.1	61.6	53.0
Contraceptive Prevalence Rate					
Current use of any method					
NFHS-1(1993)	53.5 (47.0)*	47.3 (45.4)	-	49.4[+] (39.9)	49.3 (41.0)
NFHS-2(1998-99)	54.5 (45.3)	57.1 (51.7)	59.7 (46.6)	61.2 (41.5)	59.0 (45.3)

[1] Anemia was estimated based on direct haemoglobin levels obtained in the field using the Hemocue system.

[2] Based on weight for age. Refers to children who were found below 2 standard deviation (SD units from the International Reference Population Median. For NFHS-2, the figures are for children born 1-47 months prior to the survey, whereas for NFHS-2 it refers to children born 1-36 months prior to the survey.

[3] Based on the live births in the period 1-47 months prior to the survey

[4] Refers to those who have received BCG, measles and three doses each of DPT and oral polio vaccines (excluding Polio 0). In NFHS-1 figures refer to children 12-23 months and for NFHS-2, figures refer to children under 36 months.

[+] Includes other backward castes (OBCs)

[*] Figures within parentheses indicate the adoption of male and female sterilization.

and children, data for the scheduled castes approximate that of the total population of Gujarat whereas the scheduled tribe population lags further behind, which reveals the still greater vulnerability and isolation of the latter community.

Maternal and Child Health Care

Maternal health care is evaluated through women's utilization of antenatal and natal health services during pregnancy since this period necessitates the use of particular services to safeguard the health of the mother and child. Data on four indicators of antenatal and natal care given in Table 9, reveal not only the low use of the required services by women, in general in Gujarat, but also the greater vulnerability of scheduled tribe women since the utilization is still lower among them. For example, availing tetanus toxoid injections to prevent tetanus, unmasks the greatest risk to the life of women belong to the scheduled tribes since only 48 percent of them had received two or more doses of the injection, compared to 76 percent of scheduled caste women. The indicator of

maternal care viz. medical or para medical assistance during delivery reveals a particularly dismal picture. The percent of all women who received such an assistance in Gujarat is only 43 percent which drops to 16 percent for women of the scheduled tribe (Table 9).

Children's immunization against six debilitating but preventable diseases viz. diptheria, tuberculosis, pertussis, tetanus, polio and measles, has been critical to the child health care system in India. Children who receive the full schedule of immunizations i.e. three doses each of DPT and oral polio vaccine and a single dose each of BCG and measles vaccine are considered fully immunized and protected against these six childhood diseases. To this end, the percent of children fully immunized during the most recent period i.e. 1998-99 reveals that only a little over half (55 percent) of all children in Gujarat have received the requisite schedule of immunizations (Table 9). The picture worsens for children belonging to the scheduled tribes wherein only a little over two fifths (41 percent) are fully immunized. Here, too, the children of the scheduled castes have a definite edge over tribal children since 53 percent of the former group (similar to general population) is fully immunized.

These measures of antenatal, natal and child health care, highlight the unique vulnerability of the women and children of the tribal population, which continues to remain isolated possibly because of the geographical remoteness and cultural character of this community, from the necessary information and reach of health services. On the other hand the scheduled caste population in Gujarat, who is also lagging behind and who is otherwise socially ostracised, is aware of and is found using the needed services indicating that probably they are not physically distanced from the reach of health services.

Contraceptive Status

Finally, the current contraceptive status is examined since appropriate use of family planning methods (either for spacing or limiting births) not only controls fertility but also safeguards the health of women and children. Data on current use of any method (which happens to be sterilization primarily), given in Table 9, reveals that about 55 percent of scheduled caste women were using a method at the time of the interview which is not too low from the other caste groups. It is of interest to note a 10 percent point increase in current use among the tribal population, from 47 percent in the earlier period (1993) to 57 percent in the more recent period (1998-99) which brings them at par with other caste and community groups. This indicates the greater reach of the family planning programme, especially the sterilization programme, among the tribal and other backward castes of the population. The low use of spacing methods is disturbing, since frequent and poorly spaced pregnancies may cause unwanted fertility as well as can prove detrimental to the health of women and children.

To further increase the contraceptive use, greater efforts are therefore needed to promote the use of spacing methods which will not only reduce fertility but will also improve maternal and child health. Improvements in provision of various maternal and child health services are also necessary to further promote the health of these vulnerable groups.

MARRIAGE PATTERN AND FERTILITY

Traditionally social and cultural factors have tended to support early as well as universal marriage for girls in India. The average age at marriage of females was too low (less than 13 years) in most of the states in India during 1921-31 (Agarwala, 1985). After the Child Marriage Act in 1928, although there had been a slow upward shift in female age at marriage, it was not until after 1951 that marriage age of females began to show a steady but moderate rise. The singulate mean age at marriage for females increased by three years during the last three decades in Gujarat. It was about 17.1 years in 1961 which increased to 20.2 years in 1993 (NFHS, 1995). However, age at marriage for females among the SCs and STs is much lower than the state average. According to the Child Marriage Restraint Act of 1978, the minimum legal age at marriage in India is 18 years for females and 21 years for males. The recently concluded NFHS-2 (1998-99) data indicate that median age at first marriage among married women age 20-49 years is 17.9 years and median age at first cohabitation with husband is about 18.4 years, indicating that half of the women marry and consummate their marriage much before attaining the age of 19 years. As expected, the lowest median age at first cohabitation with husband (effective marriage) among women age 20-49 years is recorded for scheduled tribes (17.3 years) followed by scheduled caste (17.8 years) and other backward class groups (18.1 years), while it is highest (19.4 years) for other caste groups.

In the absence of other reliable fertility data by caste/tribe, various summary measures of fertility have been obtained from the recent state level surveys (NFHS-1, 1993 and NFHS-2, 1998-99) to provide a complete picture of emerging fertility among various caste groups in Gujarat. Table 10 shows current and cohort fertility by SC, ST, OBC and other caste groups in Gujarat. Current fertility is measured by the total fertility rate (TFR) and general fertility rate (GFR) for the three years prior to the survey. Percentage of births of order 4 and above for the three years preceding the survey are also included as an indicator of fertility. Cohort fertility is measured by the mean number of children ever born to women age 40-49 at the point of the survey as well as by age standardized mean number of children ever born among currently married women age 15-49 years to study fertility differentials by caste. It is evident from Table 10 that fertility, as measured through various indicators, has declined during the last six years between the two survey points in Gujarat. Further, the gap between the TFR and the mean number of children ever born to women age 40-49 at both surveys suggest that a substantial fertility

decline has taken place in Gujarat. If there had been no change in fertility during the decades prior to the survey, the current and cohort indicators would be nearly identical, differences being due solely to the slightly incomplete fertility of women age 40-49 years. Since current fertility (TFR) is much lower than cohort fertility (mean number of children ever born among women age 40-49), it implies that fertility has declined substantially in the state.

Table 10: Total Fertility Rate, General Fertility Rate, Birth Order and Mean Number of Children Ever Born to Women Age 15-49 and 40-49 Years, by Caste/Tribe, Gujarat, 1993-99

Fertility Indicators	NFHS-1 (1993)				NFHS-2 (1998-99)				
	SC	ST	OBC & Other castes	Total	SC	ST	OBC	Other	Total
Total fertility rate[1]	2.98	3.34	3.93	2.99	3.02	2.95	2.77	2.45	2.72
General fertility rate[1]	-	-	-	-	116.4	112.4	105.6	87.5	101.7
Percent of births of order 4 and above[1]	-	-	-	-	26.0	24.9	17.8	18.3	20.8
Age standardized mean number of children ever born for currently married women age 15-49 years	3.50	3.00	2.90	2.90	-	-	-	-	-
Mean number of children ever born to women age 40-49 years	5.21	4.27	4.40	4.42	4.52	4.63	4.10	3.50	3.99

[1]Rates are based on births during three years preceding the survey to women age 15-49 years

Source: (1) NFHS-1 (1993), Gujarat (NFHS, 1995)
(2) NFHS-2 (1998-99), Gujarat (NFHS, 1999)

- Not available

A similar pattern is observed among each caste/tribe group, with larger differences between current and cohort fertility in a group generally indicating more rapid decline. In other wards, the data seem to suggest that fertility has been declining simultaneously among various sections of the population. However, current fertility among SCs and STs, is still higher than among other caste groups (Table 10). Further as expected, the proportion of birth of order 4 and above among the SCs and STs is much higher (25-26 percent), compared to other caste groups (18 percent). The cohort fertility differential by caste/tribe is similar, with women belonging to SC and ST having an average of one child more than

women belonging to the other caste groups (other than SC/ST and OBC). It is further interesting to note that fertility decline is relatively faster among STs than among SCs during the recent period. The current fertility (TFR and GFR) is relatively lower among STs than among SCs. Similarly, the mean number of children ever born among currently married women age 15-49 years is also found to be lower (3.0) among the STs than among the SCs (3.5). The decline in fertility among these sections of the population is consistent with the increase in contraceptive use among them, as evident from the data presented earlier in the relevant section.

LEVEL AND TRENDS IN MORTALITY

As mentioned earlier, the data on fertility and mortality by specific caste/tribe groups are scanty. A few state level studies on these aspects are available. Here again, the same National Family Health Surveys (NFHS-1 and NFHS-2) conducted in the state of Gujarat are used to obtain infant and child mortality indicators to study mortality differentials by caste/tribe in Gujarat. In addition, census data are also used to obtain expectation of life at birth by caste/tribe to examine the overall mortality pattern among SCs and STs vis-à-vis other caste groups in Gujarat. The level and trend of mortality as measured through various indicators, among these population groups are summarised in Table 11. It can be seen from this table which shows infant mortality rate and under-five mortality rate for the 10 year period preceding the survey at two points of time (when these surveys were conducted), that infant and child mortality declined but not substantially in Gujarat during the recent period. However, decline in infant and child mortality is relatively much less among SCs than among STs and other caste groups. In fact, infant and child mortality has shown a marginal increase, during the recent period although this may partly be attributed to sampling error. As a result, the highest infant and child mortality of any group is exhibited by scheduled castes, while it is least among castes other than SC/ST and OBC. Table 11, which also shows expectation of life at birth (e_o^o) by sex, also confirms that mortality level among SCs is relatively higher than among STs, although e_o^o for males and females among SCs and STs is lower than that for males and females among the general population. It is however interesting to note from Table 11 that mortality differentials by sex are not apparent among the STs, e_o^o for males (57.1 years) and females (57.2 years) being almost the same, while e_o^o for females (55.6) is much lower than for males (58.4)among the SCs. This is contrary to the pattern observed in the general population, where e_o^o for females is relatively higher than for males. In other words, the data seem to suggest that there is enough scope for further decline in mortality, particularly among the scheduled caste population.

Table 11: Level of Mortality by Caste/Tribe in Gujarat,1991-99

Mortality Indicator/Year	SC	ST	OBC	Other	Total
Infant Mortality Rate (Per 1000 live births)					
NFHS-1(1993)[1]	69.9	91.5	-	69.9	73.5
NFHS-2(1998-99)[1]	80.1	60.3	74.2	53.7	64.4
Under Five Mortality (Per 1000 live births)					
NFHS-1(1993)[1]	119.3	126.7	-	97.7	103.8
NFHS-2(1998-99)[1]	123.0	94.6	96.0	70.3	90.7
Expectation of Life at Birth During 1981-91 (in years)[2]					
Male	58.4	57.1	-	-	58.3
Female	55.6	57.2	-	-	61.5

[1]Rates are for the 10 year period preceding the survey

[2]Estimated by the method of stable population analysis based on 1981-91 census data for SCs and STs. Figures for Gujarat are based on estimates by the expert committee for Gujarat (Registrar General, India, 1996)

Note: The data for NFHS-1 and NFHS-2 are obtained from respective reports (NFHS, 1995, Gujarat; NFHS, 1999, Gujarat).

FUTURE POPULATION GROWTH

The formulation of policy for socio-economic development and health care and its effective implementation for any region or ethnic group depends to a large extent on the rate of growth of the population as well as the distribution of the population by age and sex in the future among such regions or ethnic groups. Social scientists, especially anthropologists, have extensively studied the social, cultural and economic life of the tribals, and other depressed class of the population. But little attempt has been made to study the demographic situation among these communities. Census data were mostly used to study the country's or state's demographic situation as a whole and not its special categories. In recent years, however, there is a growing stress on studying India's population by regions, ethnic groups etc. Such studies, as mentioned earlier, would no doubt help the researchers and the policy makers in formulating various development programmes to improve the quality of life of the people, especially of communities which are at the lower stage of development. The objectives of this section are therefore to study the future trends in fertility and mortality, which are the main components of the growth of population, and to project the future size

and age-sex structure of the scheduled caste and scheduled tribe population of Gujarat by 2021.

The 1991 census age and sex returns of the scheduled caste and scheduled tribe population of Gujarat is taken as the base population and the level of fertility and mortality are derived from the recently conducted surveys (NFHS-1 and NFHS-2) in Gujarat as well as from census data by the method of stable population analysis for the inter-censal period of 1981-91. Since the component of migration is not likely to make any significant impact in the growth and size of the SC and ST population at the state level in Gujarat, under the assumption that in-migration to and out-migration of these communities from Gujarat may be balancing each other, and that demographic characteristics of in-migrants and out-migrants may not be varying significantly from each other, this component is thus not considered in the analysis while projecting the population of SCs and STs of Gujarat. The forecast for these population groups upto 2021 is then made by using component method of population projection, which takes into consideration the future course of fertility and mortality which are discussed later in the sections. The size of SC and ST population is also projected by the mathematical method, viz. ratio method, and is compared with that obtained from the component method.

Base Level Population

The age-sex distribution of population of SCs and STs for Gujarat from the 1991 census has been taken as the initial base population. The census age returns often contain errors because some people do not know or remember their true age and others also do not report their age accurately. Before the 1991 census age returns were used as the initial base level population for the present projection exercise, they were smoothed. Several methods of age smoothing were applied to the census age returns, following mainly the United Nations Method of age smoothing (United Nations, 1956; 1957). At the first place, the first two groups were adjusted and the last group was broken into quinquennial age groups of 80-84 and 85+ by using the United Nations Stable Population Model for both the male and female population. The population age 10 years and above for both sexes were adjusted by using five-point smoothing formula provided by the United Nations. The smoothed population of the SCs and STs of Gujarat by age and sex at the base year 1991 is presented in Table 12.

Table 12 : Smoothed Population of Scheduled Castes and Scheduled Tribes by Age and Sex, Gujarat, 1991

Age	Percent distribution of population					
	Scheduled Caste			Scheduled Tribe		
	Total	Male	Female	Total	Male	Female
0-4	12.02	12.00	12.03	12.98	12.75	13.22
5-9	13.05	13.17	12.92	13.35	13.37	13.33
10-14	12.19	12.61	11.72	11.47	11.80	11.13
15-19	10.83	11.28	10.34	9.53	9.65	9.41
20-24	9.57	9.58	9.56	8.92	8.55	9.29
25-29	8.19	7.87	8.54	8.55	8.16	8.95
30-34	7.04	6.87	7.23	7.57	7.53	7.62
35-39	6.03	6.09	5.96	6.28	6.48	6.07
40-44	5.02	5.05	4.99	5.20	5.35	5.05
45-49	4.29	4.28	4.29	4.43	4.58	4.27
50-54	3.43	3.48	3.38	3.46	3.64	3.28
55-59	2.60	2.55	2.66	2.65	2.68	2.62
60-64	2.06	1.90	2.23	2.13	2.11	2.16
65-69	1.47	1.30	1.65	1.50	1.46	1.54
70-74	1.27	1.13	1.41	1.14	1.11	1.18
75-79	0.64	0.57	0.73	0.57	0.55	0.60
80+	0.30	0.25	0.36	0.26	0.24	0.28
All ages	100.00	100.00	100.00	100.00	100.00	100.00
Total Population	**3060358**	**1589686**	**1470672**	**6161775**	**3131947**	**3029828**

Future Course of Mortality

The present level of mortality, including infant and child mortality, and the recent changes therein have already been discussed in the earlier sections. Considering the recent decline in mortality including infant and child mortality, which largely determines the future course of mortality, as well as the potentiality of decline in mortality among SCs and STs, the future levels of expectation of life at birth (e_o^o) for males and females are projected upto 2021 for the SC and ST population of Gujarat. The level of e_o^o for males and females for SCs and STs for the period 1991-2021 for every 5-year period is presented in Table 13. It can be seen from the table that the decline in mortality, i.e., increase in e_o^o has been assumed to be slightly faster for females as noted in the state as a whole. Moreover, the pace of increase in e_o^o for females is considered to be slightly more during 1991-2001 (0.5 year per year) than during 2001-2011 (0.4 year per year) and during 2011-21 (0.3 year per year) among SCs and STs, while the pace of increase in e_o^o for males among SCs and STs during the corresponding period differs, considering the potentiality of decline in

mortality among these groups. As can be seen from Table 13, the increase in e_o^o for males is expected to be slightly faster among STs than among SCs. However, the level of e_o^o for males would be almost the same for SCs and STs (67-68 years) by 2021. Similarly, the e_o^o for females among the SCs and STs would be closer to each other, although its level would be higher (69-71 years) than that of males, as observed in the general population by 2021.

Table 13 : Projected Expectation of Life at Birth (e_o^o) by Sex for Scheduled Caste and Scheduled Tribe Population in Gujarat, 1991-2021

Year	Expectation of Life at Birth (e_o^o)			
	Scheduled Caste		Scheduled Tribe	
	Male	Female	Male	Female
1991-1996	60.7	59.4	60.9	61.0
1996-2001	62.2	61.9	62.9	63.5
2001-2006	63.4	63.9	64.4	65.5
2006-2011	64.7	65.9	65.9	67.5
2011-2016	65.7	67.4	66.9	69.0
2016-2021	66.7	68.9	67.9	70.5

Future Course of Fertility

The future course of fertility in a population depends on a number of factors such as socio-economic changes, women's status, marriage pattern, values and attitudes towards small family norm, and most importantly, contraceptive practices and access to such services among various communities under the national family welfare programme.

We have already examined the socio-demographic profile of the SCs and STs, which clearly show improvements in the socio-economic status and quality of life as well as increase in age at marriage of females and contraceptive use overtime. In fact, the impact of the national family welfare programme is clearly visible through promotion of the most suited one time family planning method (male and female sterilization) among these sections of the population, as a very large percent of the couples are already practicing family planning. As a result, as discussed earlier, there has been a substantial decline in fertility in these depressed sections of the population. Considering the current level of fertility and contraceptive behaviour by age, it is expected that the fertility decline would slow down in the future. Nevertheless, in view of the unpredictable nature of change

in the pattern of fertility, two sets of assumptions are made for the future course of fertility. Both the sets of assumptions made here however envisage a decline in fertility in the future. In the first set of assumptions, a relatively slow decline in fertility in the future has been assumed. The population projection based on this set of assumptions is termed as High Fertility Projection, while the second set of projection which assumes a faster decline in fertility in the future, is termed as Low Fertility Projection. The specific assumptions and level of fertility derived for the period of projection under the two sets are discussed in the following sections.

Set-I (High Fertility Assumptions)

The study of the fertility pattern of the SCs and STs vis-à-vis other caste groups, based on two sets of the NFHS data, reveals that while the general fertility rate declined substantially among the STs, it remained more or less the same among the SCs during 1991-99 in the state of Gujarat. The rate of decline was thus assumed to be higher among the STs than among the SCs for projection of these two population groups, under both the sets of projections. The assumed values of GFR and CBR under high fertility projection are shown in Table 14. It is evident from this table that replacement level of fertility (TFR of 2.1) under this set of assumption may not be achieved by 2021. As can be seen from Table 14, the level of CBR which was about 30 during 1991-96 is likely decline to about 24 during 2016-2021 in case of SC population, while the level of CBR is expected to decline from 32 during 1991-96 to about 22 during 2016-2021 in the case of the ST population.

Table 14 : Projected General Fertility Rate (GFR) and Crude Birth Rate (CBR) for Scheduled Caste and Scheduled Tribe Population in Gujarat, 1991-2021

Year	Scheduled Caste		Scheduled Tribe	
	GFR[1]	CBR[2]	GFR	CBR
	High fertility assumptions			
1991-1996	122.5	30.3	127.3	31.8
1996-2001	116.4	29.2	112.4	28.4
2001-2006	110.6	27.6	105.0	26.8
2006-2011	105.1	26.0	98.1	25.1
2011-2016	99.8	24.8	91.6	23.5
2016-2021	94.9	23.6	85.6	22.0
	Low fertility assumptions			
1991-1996	122.5	30.3	127.3	31.8
1996-2001	116.4	29.2	112.4	28.4
2001-2006	107.4	26.9	104.3	26.6
2006-2011	99.0	24.7	96.2	24.7
2011-2016	91.1	23.0	88.1	22.7
2016-2021	83.6	21.3	80.0	20.7

[1] Rate per 1000 women age 15 – 49 years

[2] Rate per 1000 population

Set-II (Low Fertility Assumptions)

Under this set of projection, it is assumed that fertility would decline at a relatively faster rate after 2001. Under the revamped family welfare programme, the use of spacing methods is also increasing among the SC population while sterilization had always been popular among the tribals and as noted earlier, the use of this method may increase further among them. The assumed level of GFR and the corresponding level of CBR under the low fertility projection during 1991-2021 are also shown in Table 14. Under this set of assumption, it may however be possible for both the SC and ST populations of Gujarat to achieve replacement level of fertility by 2021. The level of CBR is expected to decline from 30 during 1991-96 to about 21 during 2016-2021 in case of the scheduled caste population, while the level of CBR which was about 32 during 1991-96, is likely to reduce to less than 21 during 2016-2021 in case of scheduled tribe population in Gujarat.

Population Projection, 1991-2021

To understand future population growth of the SCs and STs and its implications, the population projection, based on various assumptions discussed earlier, for the period 1991-2021 are discussed in this section. Table 15 shows the projected total population of SCs and STs in Gujarat for the period 1991-2021, while Table 16 provides the projected proportion of the SCs and STs to total population of Gujarat during that period. It is evident from Table 15 that the population of SCs in Gujarat would increase from 30.60 lacs in 1991 to 54.06 lacs under the high fertility assumption and to 52.40 lacs, assuming a low fertility pattern, by 2021. Similarly the ST population in Gujarat is projected to increase from 61.62 lacs during 1991 to 106.64 lacs and 105.25 lacs under the high and low fertility assumptions respectively, by 2021 (Table 15). This suggests that the SC population would add about 22-23 lacs to its base population, while the corresponding increase among the ST population would be about 44-45 lacs, by 2021, depending on the changes in the socio-cultural norms and practices related to marriage and childbearing as well contraceptive use among these groups which will dictate their future course of fertility. As regards the current situation, the population of SCs and STs in Gujarat is likely to reach 38 lacs and about 76 lacs respectively, by 2001. The growth of the SC and ST population vis-à-vis that of the state of Gujarat as a whole, during 1961 to 2021, is depicted in Figure 1 which once again reveals a higher rate of growth of the SCs and STs compared to other sections of the population in Gujarat.

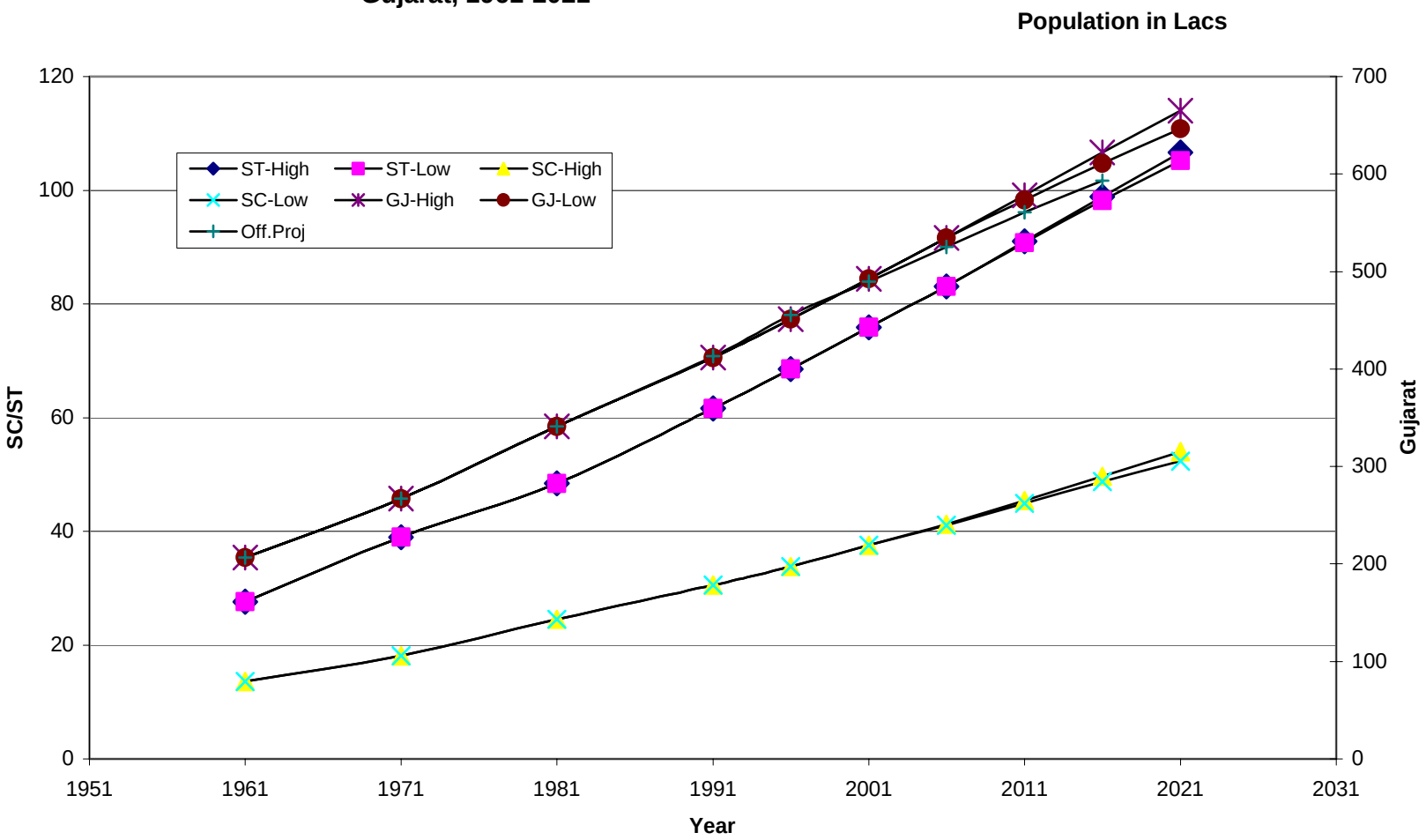
Table 15: Projected Population of Scheduled Castes and Scheduled Tribes of Gujarat, 1991-2021

Year	Projected population (in lacs)			
	High Fertility Assumption		Low Fertility Assumption	
	SC	ST	SC	ST
1991 (Base)	30.60	61.62	30.60	61.62
1996	33.81	68.58	33.81	68.58
2001	37.55	75.90	37.55	75.90
2006	41.27	83.11	41.12	83.05
2011	45.42	91.02	44.96	90.75
2016	49.67	98.87	48.73	98.20
2021	54.06	106.64	52.40	105.25

Source: Appendix Tables 2-5

Table 16, which shows the projected proportion of the SC and ST population to total population in Gujarat during 1991-2021, reveals that proportions of these population groups increase overtime as a result of relatively higher rate of population growth among SCs and STs, compared to

Figure 1 : Population Trand of SCs and STs Via-a-Vis the General Population of Gujarat, 1961-2021



other population groups. The proportion of SCs increases from 7.4 percent in 1991 to about 7.9-8.1 percent, while the proportion of STs increases from 15 percent in 1991 to about 15.8-16.0 percent by 2021, under the two sets of fertility assumptions. In other words, the representation of these sections of the population in Gujarat is expected to increase by about 0.7 to 1.0 percent of
the total population during the period of 30 years. It may be noted that these proportions are derived based on the population projections of SCs and STs as well as of Gujarat state by component method. The projection of the proportion of SCs and STs in Gujarat was also done by ratio method (a mathematical method) based on the past trend of these proportions in Gujarat. It is evident from Table 16 that the estimates obtained by the ratio method are in close agreement with those obtained by the component method, particularly under the low fertility projection, and these results further confirm that the population of SCs and STs is likely to grow relatively faster compared to other sections of the population in Gujarat during the next 30 years.

Table 16: Projected Proportion of Scheduled Castes and Scheduled Tribes to Total Population of Gujarat, 1991-2021

Year	Percent of population+			
	High Fertility Assumption		Low Fertility Assumption	
	SC	ST	SC	ST
1991 (Base)	7.4	15.0	7.4	15.0
1996	7.5 (7.6)[1]	15.2 (15.1)[1]	7.5 (7.6)[1]	15.2 (15.1)[1]
2001	7.6 (7.7)	15.4 (15.3)	7.6 (7.7)	15.4 (15.3)
2006	7.7 (7.8)	15.6 (15.4)	7.7 (7.8)	15.5 (15.4)
2011	7.9 (7.9)	15.7 (15.5)	7.8 (7.9)	15.6 (15.5)
2016	8.0 (8.0)	15.9 (15.6)	7.8 (8.0)	15.8 (15.6)
2021	8.1 (8.0)	16.0 (15.7)	7.9 (8.0)	15.8 (15.7)

+ Percent of SCs and STs in Gujarat for specified year is computed based on present projected population of SC/ST (Table 15) to projected population of Gujarat done by Gandotra (2000) and by Office of RG (1996).

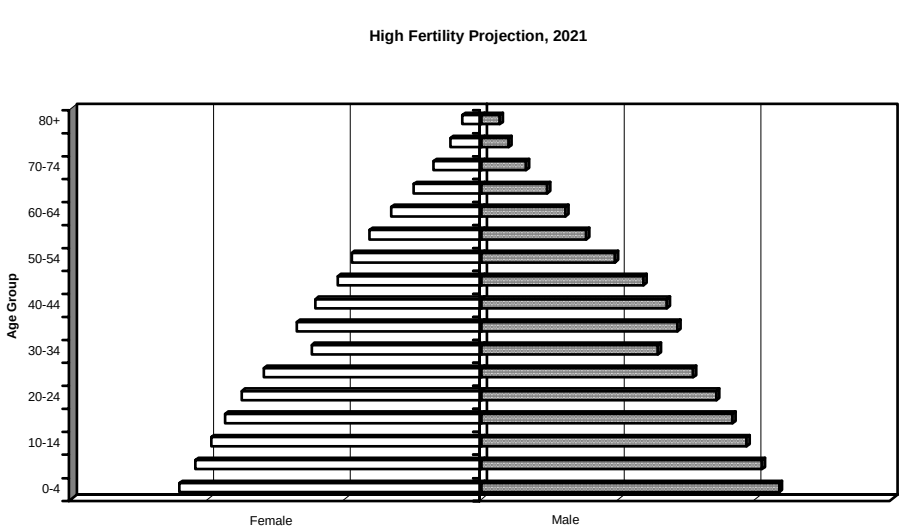
[1] Figures within parentheses indicate the projected proportion of the SCs/STs to total population based on ratio method (a mathematical method to project ratios based on past trend).

Age-Sex Composition of the Population

The detailed projections of the SC and ST population by age and sex in Gujarat during the period 1991-2021 are not presented here but are summarised in Figures 2 & 3 which indicate the age pyramids of the two populations in 1991 and 2021 under both sets of projections (High Fertility and Low Fertility). It is obvious from the age pyramids of the SC and ST population in 1991 and 2021 that the base of the pyramids in both the sets of projection shrinks, whereas the top of the pyramids broadens as do the middle age groups as compared to 1991. This is true for both males and females. Thus, as a result of the decline in fertility the population of the SCs and STs are aging. This is also clearly evident from Table 17 which shows the trend of age distribution of the SCs and STs in broad age groups under both high fertility and low fertility projections during 1991-2021. The table reveals that the percent of SC population age 0-14 years reduces from 37 percent in 1991 to about 29-31 percent by 2021, depending on the fertility assumption, while the corresponding figure for the ST population reduces from 38 percent in 1991 to about 29-30 percent in 2021. On the other hand, the proportion of 60 and over population is expected to increase over a period of time under both the sets of projections. In case of the SC population, the percent of those 60 and above increases from 6 percent in 1991 to about 9 percent in 2021, while the corresponding figures for STs increases from 6 percent in 1991 to 10 percent in 2021. Similarly, the proportion of 15-59 population is likely to increase under both the sets of projections for the SCs and STs (Table 17). Like the pattern in the general population of Gujarat, the aging of SC and ST population seems to have set in as a result of the increase in life expectancy and decline in fertility. The rise in 60 and above population implies that there is a need for formulating suitable welfare programme for elderly persons, while the rise in 15-59 population in future indicates the need for creating enough job opportunities for meeting the demands of the labour force population. A positive aspect of the changing age pattern of the population over time is that the dependency (young and old) on the working age population 15-59 is likely to decline in future, resulting in an improvement in the socio-economic development of these sections of the population.

It is also evident from Table 17 that the proportion of females in the reproductive age group (15-49 years) is likely to increase over a period of time under both the sets of projections for the SCs and STs. As a result, even if the fertility remains constant for these sections of the population in the future, the birth rate will have a tendency to increase because of the increase in the number of females in the reproductive age groups. Thus, there is need for an additional efforts under the family welfare programme to compensate the effects of increasing number of females in the reproductive age group to reduce the birth rate further.

Figure 2 : Age Pyramid of Scheduled Caste Population in 1991 and 2021



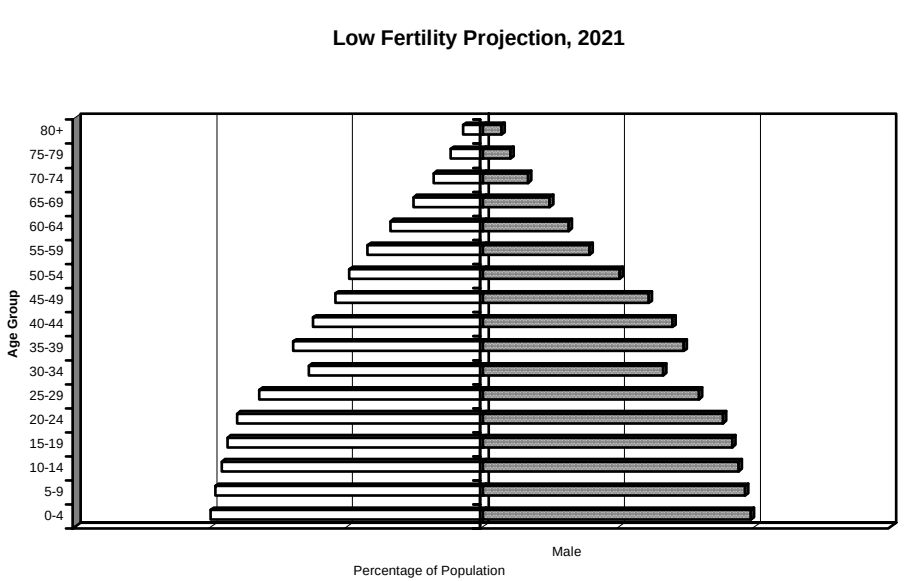


Figure 3 : Age Pyramids of Scheduled Tribe Population of Gujarat in 1991 and 2021

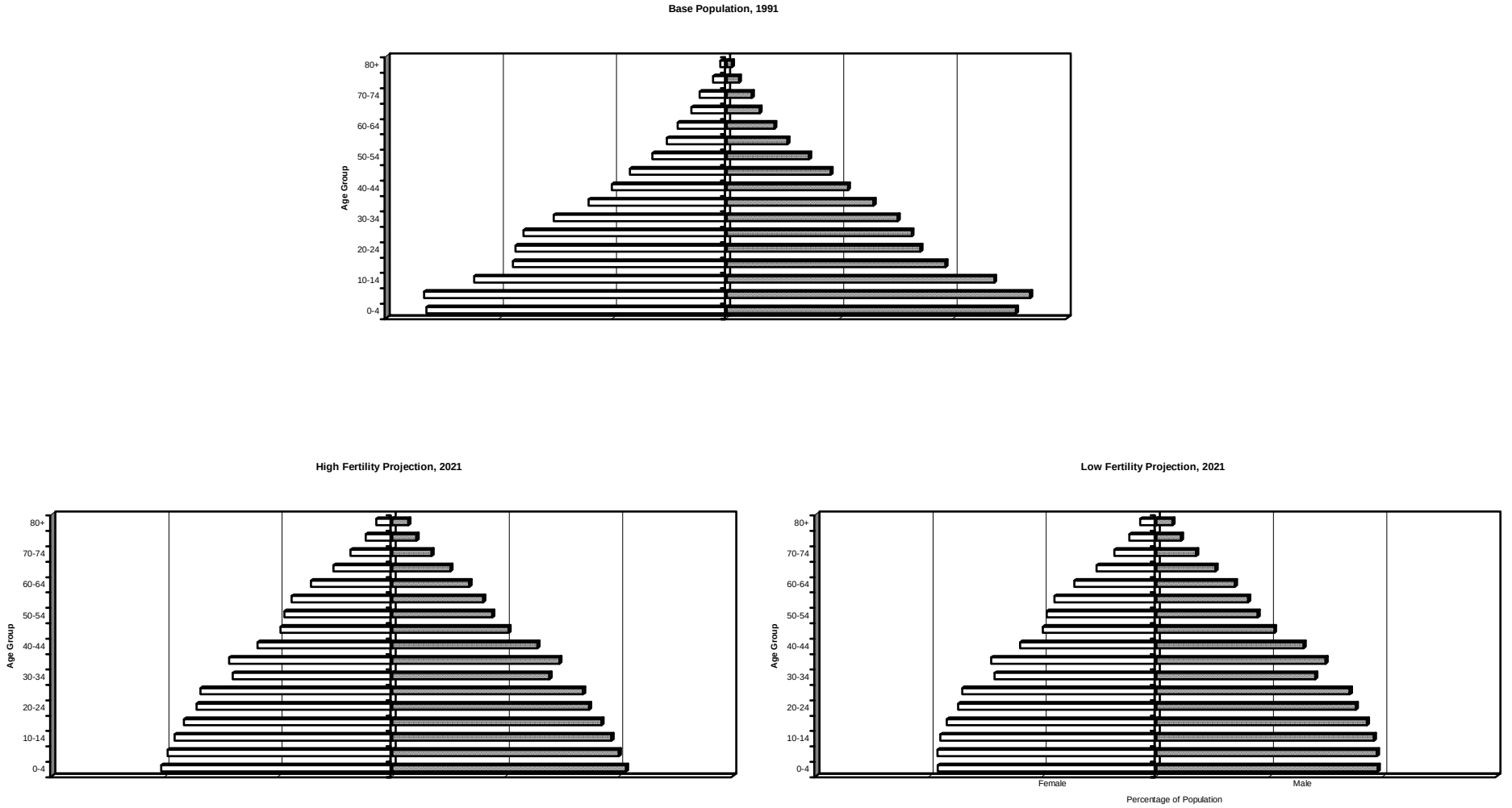


Table 17 : Percent Distribution of Scheduled Caste and Scheduled Tribe Population by Broad Age Groups Under High Fertility and Low Fertility Projections, Gujarat, 1991 - 2021

Year	Percent of population by age							
	High Fertility Projection				Low Fertility Projection			
	0-14	15-49	50-59	60+	0-14	15-49	50-59	60+
	Scheduled Caste Population							
1991	37.25	50.97	6.04	5.74	37.25	50.97	6.04	5.74
1996	35.53	52.38	6.64	5.45	35.53	52.38	6.64	5.45
2001	34.06	52.94	6.97	6.03	34.06	52.94	6.97	6.03
2006	34.54	51.74	7.32	6.40	34.30	51.93	7.35	6.43
2011	33.41	51.54	7.78	7.27	32.73	52.06	7.86	7.34
2016	32.20	51.41	8.23	8.15	30.88	52.41	8.39	8.31
2021	31.10	51.08	8.77	9.04	29.20	52.42	9.05	9.33
	Scheduled Tribe Population							
1991	37.80	50.47	6.11	5.61	37.80	50.47	6.11	5.61
1996	37.08	50.79	6.73	5.39	37.08	50.79	6.73	5.39
2001	35.01	51.76	7.18	6.05	35.01	51.76	7.18	6.05
2006	34.49	51.36	7.60	6.55	34.43	51.40	7.61	6.55
2011	32.58	51.62	8.29	7.50	32.38	51.78	8.32	7.53
2016	31.20	51.47	8.81	8.52	30.73	51.82	8.87	8.58
2021	29.80	51.72	8.80	9.68	28.93	52.34	8.92	9.81

Source : Computed from the detailed projections of the SC and ST population by age and sex in Gujarat by component method.

In view of the government's commitment to provide free and compulsory education upto the age of 14, particularly for the weaker sections of the population, the future population growth among the SCs and STs has important implications for the education policy to meet the rising infrastructural needs of these sections of the population in the state. In this context, the additional need to provide primary education, can partly be assessed from the projected school age population of the SCs and STs in Gujarat. Based on the projected population of the SCs and STs by age and sex, Table 18 provides sex-wise school age population (6-11 years) of the SCs and STs in Gujarat during 1991-2021 under both the sets of projections. Under the high fertility projection, the total school age population in case of the SCs is expected to increase from 4.71 lacs in

1991 to 6.60 lacs in 2021, while the corresponding figures for the STs is likely to increase from 9.46 lacs in 1991 to 12.61 lacs in 2021. Under the low fertility projection, as expected, the burden is likely to be slightly lower, as school age population will be about 6.08 lacs for SCs and 12.20 lacs for STs by 2021 (Table 18). In other words, by 2021 the state will need to plan for the education and welfare services for an additional 1.4-1.9 lacs school age children of the SC community and about 2.7-3.2 lacs children belonging to ST population in Gujarat.

Table 18 : Projected School Age Population of Scheduled Caste and Scheduled Tribe Population Under High Fertility and Low Fertility Projections, Gujarat, 1991 - 2021

Year	School age population+ (in Lacs)					
	High Fertility Projection			Low Fertility Projection		
	Male	Female	Total	Male	Female	Total
			Scheduled Caste			
1991	2.49	2.22	4.71	2.49	2.22	4.71
1996	2.34	2.16	4.50	2.34	2.16	4.50
2001	2.45	2.38	4.83	2.45	2.38	4.83
2006	2.81	2.80	5.62	2.81	2.80	5.62
2011	2.99	2.97	5.96	2.94	2.92	5.86
2016	3.14	3.13	6.28	2.99	2.98	5.97
2021	3.30	3.30	6.60	3.04	3.04	6.08
			Scheduled Tribe			
1991	4.87	4.59	9.46	4.87	4.59	9.46
1996	4.83	4.80	9.63	4.83	4.80	9.63
2001	5.19	5.18	10.37	5.19	5.18	10.37
2006	5.70	5.65	11.35	5.70	5.65	11.35
2011	5.84	5.80	11.63	5.81	5.77	11.58
2016	6.11	6.09	12.21	6.02	6.00	12.02
2021	6.31	6.30	12.61	6.10	6.10	12.20

+ It is estimated by using United Nations' formula :
$P_{6-11} = 0.736*P_{5-9} + 0.568*P_{10-14} - 0.104*P_{15-19}$
where P is the population in the specified age group

Source : Computed from the projected population by age and sex

Concluding Remarks

The foregoing analyses of the SC and ST population as well as the emerging issues regarding these two groups highlight that there have been improvements in the socio-economic conditions, particularly among the schedule castes, over the various plan periods. Such improvements, however, are not adequate to offset the marginalisation of these two disadvantaged groups, for their assimilation with the community at large.

Consistent with their improvements in overall development, declines in their fertility and mortality have been noted which also show the potential of further decrease in their population growth. However, there is no place for complacency if the state is to continue in its endeavour for the welfare and uplift of these population groups.

Apart from the provision of the basic needs for their survival, the state needs to make concerted efforts to improve the social and economic conditions of the SCs and STs by increasing the level of literacy among them, giving alternative job opportunities and making improved farm technologies accessible to those primarily engaged in agrarian occupations, as has been noted among the tribal population. To further improve the overall well being and quality of life of these two disadvantaged groups, the reach of the various health services, especially for the women and children, needs to be increased, particularly for the tribal community so as to compensate for their geographical and cultural isolation.

Simultaneously, there is a need to change certain prevailing socio-cultural norms that have hampered women's development. These pertain to early marriage and childbearing which deny women their right to education and literacy and which are also known to have harmful health effects on their own lives as well as on that of their children. The benefits of delaying teen marriages and avoiding early and frequent childbearing, therefore, need to be communicated among these groups.

Finally, the promotion and use of various contraceptive methods for birth spacing and fertility control cannot be overlooked. While the use of spacing methods has been noted to be low, it does need to be promoted in view of its gradual acceptance especially among the scheduled caste population. In view of the extreme popularity of the one time terminal methods among the tribals, which are also probably more suited to their life style, their promotion needs to be continued and vasectomy, which was once very popular among them, needs to be reinstated.

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