

Chapter 9

DEMOGRAPHIC DEVELOPMENT

INTRODUCTION

This chapter deals with the overall demographic situation in Punjab. The scope is rather mixed consisting of demographic history since the state became a separate entity, comparison with other states, coverage of the elements of population change and their determinants, with a focus on the future population perspectives. An overview of demographic issues is absolutely critical for Punjab because development cannot be assessed in terms of generation of economic growth alone. In order to be more meaningful, it has to address the key objective of reduced population growth for human development, social integration, removal of disparities, economic empowerment and also protection of environment. Profiling of population in the state helps to identify areas that need policy and programme interventions, to set near- and far-term goals, and to decide priorities, besides understanding them in an integrated structure. This chapter contains information from several sources for discussing the recent demographic progress in the state and covers a whole range of issues, such as fertility, nuptiality, mortality, family planning, ageing, sex preference, sex-ratio imbalances and others. It summarizes the demographic dynamics in the state at the beginning of the twenty-first century and highlights the demographic dimensions of development, through an independent assessment.

FERTILITY TRANSITION

Limiting population growth in India is at the top of the national agenda. The First Five Year Plan recognized the 'rapid increase in the growth of population', emphasized the need to reduce the birth rate to stabilize the population, and suggested some measures to be taken (Planning Commission 1952). As a result of socio-economic development and family planning intervention, India recorded significant fall in fertility in the post-independence period, fairly widespread across the states. Yet, regional variations have continued in the onset and speed of fertility transition in the country. Initial achievements of Kerala, in leading the fertility decline in India, is being widely replicated elsewhere. In the north, Punjab has undergone substantial transformations in its fertility profile during the last three decades of the twentieth century. Data from well-known sources, notwithstanding the differences they have among themselves about the pace as well as magnitude of the decline, confirm a sustained decline in fertility in the state.

Levels and Trends

Fertility has been falling consistently in Punjab, as indicated by trends in total fertility rates since the beginning of the 1970s for major Indian States (Table 1). Though the southern states are ahead in fertility transition and have total fertility rates lower than Punjab, the fall has been substantial in the state. After Kerala, Punjab is the second state in the country to have reduced the total fertility rate approximately by half, from the early seventies to the late nineties in a totally different socio-cultural environment (Table 1). In fact, there has been a suggestion that Kerala in southern India and parts of erstwhile Punjab, currently in India, experienced simultaneous onset of fertility decline in

the 1940s, though the environment that triggered tapering off of fertility varied considerably from the setting of human development in Kerala to economic development in Punjab (Das Gupta 1997). However, the early declines in fertility in Indian Punjab were not sustained, fluctuating more rapidly in response to immediate conditions of war, health, and famine in the vicinity and in some districts, and recovering thereafter. The origin of the current trends of fertility fall in Indian Punjab can be traced back to the mid-1950s in the post-partition situation (Dyson 2001), though the 1970s signal a secular fall in birth rates according to the sample registration system (SRS).

Table 1
Fertility Decline in Major Indian States (1970-72 to 1996-1998)

State	Total fertility rate (TFR)				Percent decline in TFR				
	1970-72	1980-82	1990-92	1996-98	1971-81	1981-91	1971-91	1991-97	1971-97
A. P.	4.7	3.9	3.0	2.5	17.0	23.1	36.2	20.0	48.9
Assam	5.5	4.1	3.4	3.2	25.5	17.1	38.2	5.9	41.8
Bihar	--	5.7	4.6	4.4	--	19.3	--	6.5	--
Gujarat	5.7	4.4	3.2	3.0	22.8	27.3	43.9	6.3	47.4
Haryana	6.4	5.0	3.9	3.4	21.9	22.0	39.1	12.8	46.9
H. P.	4.7	4.0	3.1	2.4	14.9	22.5	34.0	22.6	48.9
J. & K.	4.8	4.4	3.3	--	8.3	25.0	31.3	--	--
Karnataka	4.4	3.6	3.1	2.5	18.2	13.9	29.5	19.4	43.2
Kerala	4.1	2.9	1.8	1.8	29.3	37.9	56.1	0.0	56.1
M. P.	5.7	5.2	4.6	4.0	8.8	11.5	19.3	13.0	29.8
Maharashtra	4.5	3.7	3.0	2.7	17.8	18.9	33.3	10.0	40.0
Orissa	4.8	4.2	3.3	3.0	12.5	21.4	31.2	9.1	37.5
Punjab	5.3	4.0	3.1	2.7	24.5	22.5	41.5	12.9	49.1
Rajasthan	6.3	5.4	4.5	4.2	14.3	16.7	28.6	6.7	33.3
Tamil Nadu	3.9	3.4	2.2	2.0	12.8	35.3	41.0	9.1	48.7
Uttar Pradesh	6.7	5.8	5.2	4.8	13.4	10.3	22.4	7.7	28.4
West Bengal	--	4.2	3.2	2.6	--	23.8	--	18.8	--
INDIA	5.2	4.5	3.7	3.3	13.5	17.8	28.8	10.8	36.5

Source: Sample Registration System (SRS), Registrar General, India. Various volumes.

Note: '--' Indicates data not available.

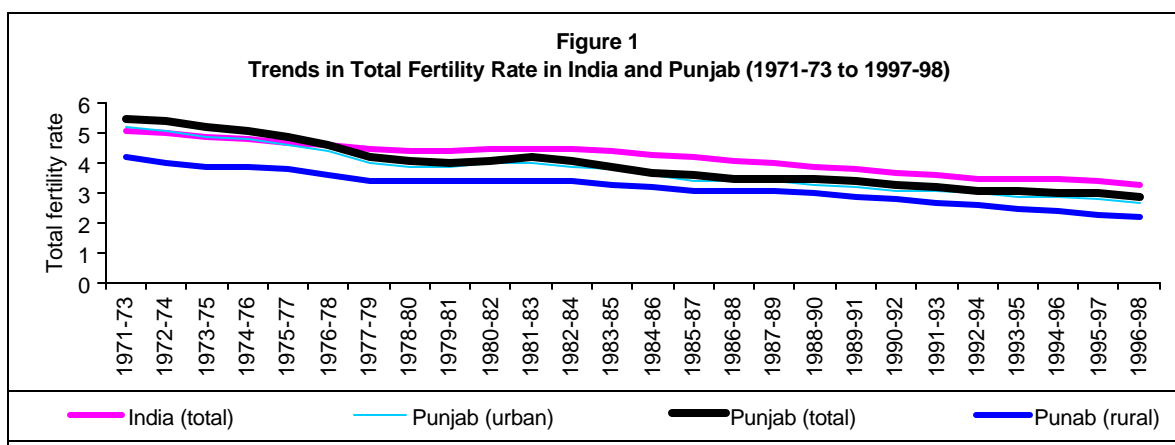
The three-years' moving averages of the SRS are stable enough to describe effectively the shifting pattern of fertility in the state. Except for 1977-79 to 1982-84, during which the decline stalled, the process of fertility transition was reasonably consistent in Punjab (Table 2, Figure 1). Diminishing crude birth rate (CBR) and total fertility rate (TFR) point towards a new environment of reproduction where modifications in the reproductive strategy of couples reflect preference for progressively smaller families. The decline in fertility is extensive in the state, and is not confined to any specific region or community. Rural and urban areas in each district are experiencing transition in fertility in different ways, depending on changes in local conditions, which often act as important inducements for the determination of family size. The substantial decrease in fertility in Punjab, despite some of the key social indicators, such as strong son preference, sizeable presence of a socially backward population and relatively higher infant mortality, being against the decline, is a manifestation of the primacy of intervention by selected development factors, namely, the family planning programme, female literacy and prosperity at the household level. Studies are virtually non-existent to assess the role of economic aspirations, family systems and social status indicators in the fertility transformations in Punjab.

Table 2
Levels and Trends in Crude Birth Rate (CBR)
and Total Fertility Rate (TFR), India and Punjab (1971-73 to 1998-2000)

Period	India		Punjab					
	CBR	TFR	CBR			TFR		
	Total	Total	Total	Rural	Urban	Total	Rural	Urban
1971-73	36.3	5.1	34.1	35.1	30.4	5.2	5.5	4.2
1972-74	35.3	5.0	33.3	34.4	29.3	5.1	5.4	4.0
1973-75	34.8	4.9	32.4	33.3	29.0	4.9	5.2	3.9
1974-76	34.4	4.8	31.8	32.7	28.6	4.8	5.1	3.9
1975-77	34.2	4.7	31.5	32.2	28.6	4.6	4.9	3.8
1976-78	33.3	4.6	30.7	31.5	27.7	4.4	4.6	3.6
1977-79	33.1	4.5	29.9	30.5	27.6	4.0	4.2	3.4
1978-80	33.3	4.4	29.3	29.8	27.7	3.9	4.1	3.4
1979-81	33.8	4.4	29.6	30.0	28.3	3.9	4.0	3.4
1980-82	33.8	4.5	30.2	30.7	28.5	4.0	4.1	3.4
1981-83	33.8	4.5	30.3	30.8	28.7	4.0	4.2	3.4
1982-84	33.8	4.5	30.3	30.9	28.7	3.9	4.1	3.4
1983-85	33.6	4.4	29.7	30.1	28.3	3.8	3.9	3.3
1984-86	33.2	4.3	29.1	29.6	27.9	3.6	3.7	3.2
1985-87	32.6	4.2	28.6	28.9	27.7	3.4	3.6	3.1
1986-88	32.1	4.1	28.6	29.0	27.7	3.4	3.5	3.1
1987-89	31.5	4.0	28.5	28.8	27.6	3.4	3.5	3.1
1988-90	30.8	3.9	28.1	28.6	26.8	3.3	3.5	3.0
1989-91	30.1	3.8	27.9	28.4	26.2	3.2	3.4	2.9
1990-92	29.6	3.7	27.5	28.2	25.1	3.1	3.3	2.8
1991-93	29.1	3.6	27.0	27.4	24.1	3.1	3.2	2.7
1992-94	30.4	3.5	26.1	27.4	22.9	3.0	3.2	2.6
1993-95	29.9	3.5	25.3	26.6	21.8	2.9	3.1	2.5
1994-96	27.4	3.5	24.3	25.8	20.6	2.9	3.0	2.4
1995-97	27.7	3.4	23.9	25.4	19.6	2.8	3.0	2.3
1996-98	27.1	3.3	23.2	24.6	18.9	2.7	2.9	2.2
1997-99	26.6	--	22.4	23.7	18.7	--	--	--
1998-2000	26.1	--	21.8	22.9	18.5	--	--	--

Source: Sample Registration System (SRS), Registrar General, India. Various volumes.

- Note:**
1. Rates for India exclude Mizoram till 1995, and Jammu and Kashmir from 1991 onwards
 2. '--' Indicates data not available.



Source: Sample Registration System (SRS), Registrar General, India. Various volumes.

Replacement Level of Fertility

With fertility falling significantly in Punjab during the past three decades, it is appropriate to look at the long-term prospects of reaching the replacement level. Since achievement of replacement-level fertility is crucial for the long-term objective of a 'Stable Population' by 2045 in India, and the medium-term objective of reducing the total fertility rate (TFR) to replacement level by 2010, as laid down in the National Population Policy 2000 (NPP 2000), it is pertinent to examine the position of Punjab in relation to the national target. Recent indications do not signal the possibility of reaching the replacement level in the state by 2010. While according to SRS estimates, Kerala and Tamil Nadu reached the replacement level by 1998, the recent National Family Health Survey (NFHS) indicates that only Kerala has reached this level by 1998-99. Punjab, according to both, is yet to attain the replacement level of fertility. NFHS estimates the state's fertility to be five per cent above the replacement level as against the SRS estimate of 24 per cent. According to recent NFHS, urban areas have already reached the replacement level of fertility (TFR being 1.79), whereas in the rural areas the fertility (TFR being 2.42) remains 15 per cent higher than the replacement level. With nearly two-thirds of the population still living in villages, the prospects of stabilizing the population in the near future in Punjab depends on the success of the effort in rural areas. This is a task worth considering.

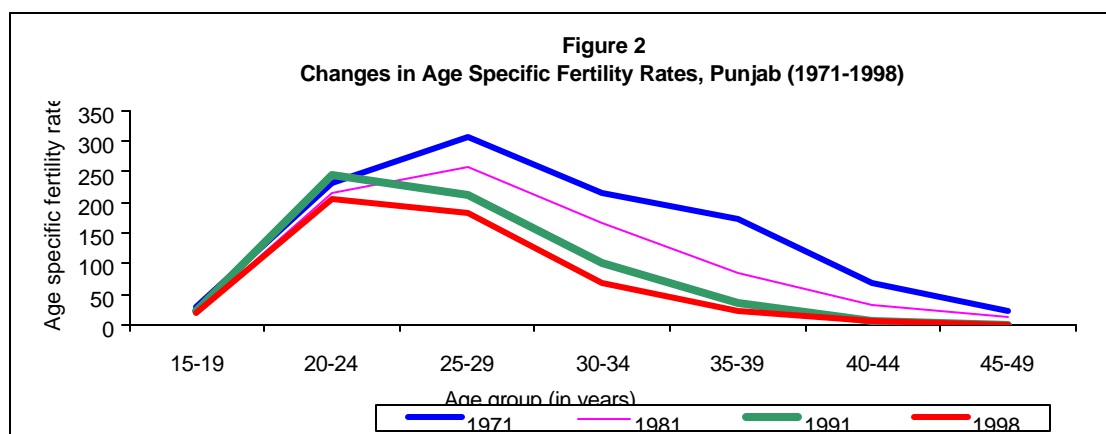
Age Pattern of Fertility

The age pattern of child-bearing in Punjab has undergone a change during the last three decades with fertility limitation being increasingly common at relatively old ages. Though fall in fertility has been observed among women of all ages, the contribution to the fertility decline has been mostly from women in the age 35 years and above, according to the SRS. Two successive rounds of NFHS, recording a rapid fall in fertility, higher than the national standard, in Punjab during the 1990s, also document lesser contribution by younger women (age 15-29) than by older women (age 30-49). Relatively less enthusiasm among younger women in limiting fertility can be attributed to social and cultural reasons that stress the need for child-bearing immediately after marriage. Child-bearing, coming shortly after marriage, is mainly concentrated in 20-24 and 25-29 age groups, which account for 40 and 36 per cent respectively, of the births in the entire reproductive period of women (NFHS 2, 2001). Such concentration of births is more severe among urban than rural women. Between 1991-93 and 1996-98 (the two rounds of NFHS), the contribution of women aged 20-29 years to overall fertility declined from 76 to 72 per cent. Fall of fertility, by this magnitude, may also be regarded as substantial as it is at young age that the pressure to bear children is immense in Punjabi society.

Table 3
Levels and Trends in Age Specific Fertility Rate (ASFR) in Punjab (1971-1998)

Age group (in completed years)	1971	1976	1981	1986	1991	1996	1997	1998	Percent decline in ASFR (1971-98)
15-19	29.9	25.2	18.9	23.2	23.3	14.9	16.4	20.9	30.1
20-24	231.0	244.6	216.7	236.5	244.2	213.8	199.6	205.5	11.0
25-29	306.5	299.6	258.0	234.8	210.8	197.2	204.3	184.2	39.9
30-34	214.3	184.6	166.9	118.2	101.1	86.8	82.5	68.6	68.0
35-39	173.9	134.4	85.5	51.5	34.9	27.3	31.0	24.3	86.0
40-44	68.4	55.3	34.6	16.1	7.5	8.9	9.5	6.9	89.9
45-49	24.7	13.7	12.3	3.9	2.2	4.0	0.5	1.1	95.5

Source: *Sample Registration System (SRS)*, Registrar General, India, New Delhi. Various volumes.



Source: Sample Registration System (SRS), Registrar General, India. Various volumes.

Socio-Economic Differentials

Social and economic conditions considerably determine the course of fertility transition, as fertility varies most according to economic and social backgrounds. In Punjab, fertility differentials are sharp across selected economic and social indicators. As seen from the recent round of NFHS, variations in fertility (measured in terms of differences in total fertility rates, current pregnancy rates, and mean number of children ever born to women in 40-49 age group) by the standard of living, educational attainment, place of residence, religion and caste are striking. For instance, the TFR, of women in households with a low standard of living (3.77) is nearly 2.1 times higher than their counterparts with a high standard of living (1.74), and of illiterate women is 1.8 times higher than that of women with education high school and above (1.71). Women in cities and towns also report lower TFR (1.79) than women in villages (2.42). Since there exists a great degree of concurrence between caste affiliation and economic well-being, inequality in the economic sphere often gets reflected in demographic indicators. In Punjab, Scheduled Caste women and other Backward Caste women record higher levels of TFR (2.93 and 2.55) and percentage of pregnancy rates (6.1 and 5.4) as against women from other castes (1.79 and 3.5). Interestingly, for the two major religious groups that accounted for a little more than 97 per cent of the population in 1991 in the state, differences by religion are narrow. Demographic reflections of social inequalities are clear and still persist, according to the NFHS. Over time, there has been little change in relative positions by social or economic class, in terms of the respective contribution to overall fertility, though the major social and economic groups have shown a decline in current pregnancy rates and fertility.

Age at Marriage, Birth Intervals, Age at First and Last Birth

Marriage patterns are important determinants of fertility and family planning regimes. Traditionally the female age at marriage has been relatively higher in Punjab than the national average (Goyal 1988). The NFHS indicates that in 1998-99, for women aged 25-29, the median age at first marriage was 3.6 years higher in Punjab (20.0 years) than in the nation as a whole (16.4 years). Among the major states, only Kerala had a slightly higher median age at marriage (20.2 years) than Punjab, according to this source. As data from the 1991 Census indicate between 1981-86 and 1986-91, the female mean age at marriage increased by 0.4 years in Punjab as against 0.3 years in the entire

country, excluding Jammu and Kashmir. During 1981-1991, as against 53.3 per cent of currently married women who married before they reached 18 in India, 24.7 married earlier than the legal minimum age in Punjab. Even if the share of such women fell in the state from 21.0 per cent in 1981-86 to 15.7 per cent in 1986-91, there is still need to identify these weaker sections in terms of socio-economic characteristics, and to concentrate on them in order to eliminate the practice of early marriage.

One significant aspect of fertility trends and levels is the frequency of child-bearing, as indicated by the length of birth-intervals. While quick successive pregnancies cause extensive health risks to the mother and the child, those with longer gaps promote child-survival and help in reduction of fertility. Among major states of India, the median interval between two most recent births, according to recent NFHS statistics, is the longest in Kerala (38.1 months) and the shortest in Punjab (28.0 months). In the latter, in nearly six years time, the median birth interval decreased by 1.3 months and the percentage of births occurring within 24 months of previous birth dropped from 35.7 to 33.2, indicating compression of intervals and a move towards bunching of births among the communities. The median birth interval varies substantially by background characteristics and reveals comparatively frequent child-bearing among socially and economically disadvantaged women in Punjab. Rural women, less educated women, women from Scheduled Castes and from households with low standards of living, tend to reproduce faster than others, according to the NFHS. For example, women in low-standard of living households (26.5 months), women with less education (illiterate 27.3 months) and Scheduled Caste women (25.6 months) have shorter birth intervals than women in households with a high standard of living (31.1 months), women having greater education (31.7 months for high school completed and above), and women with non-Scheduled Caste status (30.6 months). Spacing of births is determined by such intervening factors as the practice of contraception, duration of breast-feeding, order as well as sex of the previous birth, in addition to its survival status. The NFHS-2 also reveals that high parity mothers space their last interval longer than the low parity mothers. Similarly, death of the child causes the median birth interval to shrink considerably (from 28.5 months in the case of a surviving child to 24.4 in case of a dead child). The sex of the previous child also affects the frequency of child-bearing through reduction in the median birth interval (by 1.2 months in the case of a daughter). The fact that these birth-interval differentials have persisted for a long time among the ever-married women, as existing studies report (NFHS 1995, 2001 and Abbi et al. 2000), is an indicator of differential approaches to family formation among communities in Punjab.

The age at first birth and the age at last birth are two important indicators that highlight the length of the reproductive period in terms of initiation and cessation of child-bearing. A trend towards shortening of reproductive life in Punjab, in recent times, from 9.0 to 7.4 years has been documented by the NFHS. Between 1992-93 and 1998-99, little change has been observed among women in the state in the onset of fertility, even if the age at which child-bearing is terminated is on the decline. For instance, in both rounds of NFHS, the age at first birth among women aged 25-29, 30-34, 35-39, 40-44, and 45-49 differed little with the median age of first birth, around 21.0-21.5 years. On the contrary, termination of child-bearing earlier is reported in the second survey, with the median age at last birth declining from a little over 30.0 to 28.6 years, for women aged 40-44 years. The data on age at first birth also establish early child-bearing among economically and socially deprived women.

Data on birth-interval, on a long-term perspective, support the idea that strategies of reproduction are changing in Punjab. Couples from diverse backgrounds are giving up the old practice of relatively longer gaps between two successive births or between marriage and the first birth in favour of shorter birth-intervals. Such gradual shortening of birth-intervals, alongside the fertility decline, is in response to a variety of social, economic and other demands, that the society is imposing on the couples for conforming to newer reproductive goals of having fewer children. These aspects are to be factored into population programmes in the state aimed at keeping the birth-intervals longer, more so among weaker sections, so as to delay the first and subsequent births. In other words, further lengthening of intervals is difficult unless female education is increased beyond a threshold level, campaigns are set in motion to increase breast-feeding and programmes are put in the place to reduce infant mortality and substantially eradicate son preference. These are required in addition to addressing economic concerns about raising living standards of households.

Prospects for Further Decline

Pathways to fertility decline are complex, changing and non-universal. As fertility declines in a variety of situations, generalizations about social, cultural and economic causes of fertility decline are not easy and seldom necessary. However, routes to lower fertility in different settings have been historically documented and have extensively improved the understanding of reproduction patterns. In the absence of systematic explorations of receding fertility in Punjab, with a focus on dimensions of development and mechanism of influence, existing evidence point to overall effects of sustained economic prosperity flowing from the green revolution, a well-off rural sector, impact of a strong family planning programme, greater access to health care services, superior infrastructure in terms of housing, roads, transport and basic amenities, improved exposure to education and communication, high female age at marriage, better female literacy as against males, and more recently, induced abortion, etc.

While it is important to acknowledge the fact that fertility has fallen considerably in the state, since the early seventies, despite constraints, it is more useful to explore the prospects of further decline in the near future. The key to this lies in eradicating the existing strong son preference, reduction in the level of infant mortality, augmenting contribution by socially and economically poor sections to lowering of fertility, progress in eliminating the unmet need for contraception, change in reproductive strategies among younger couples and overall advance in living conditions.

MORTALITY CHANGE

Reduction in mortality has been an important goal of planning since the First Five Year Plan. Programmes have been initiated at the national as well as the state level to improve overall survival conditions, as a result of which mortality decline is visible among segments of population in most of India. A dramatic fall in mortality has been also observed in Punjab for last three decades of the twentieth century.

Levels, Trends and Differentials

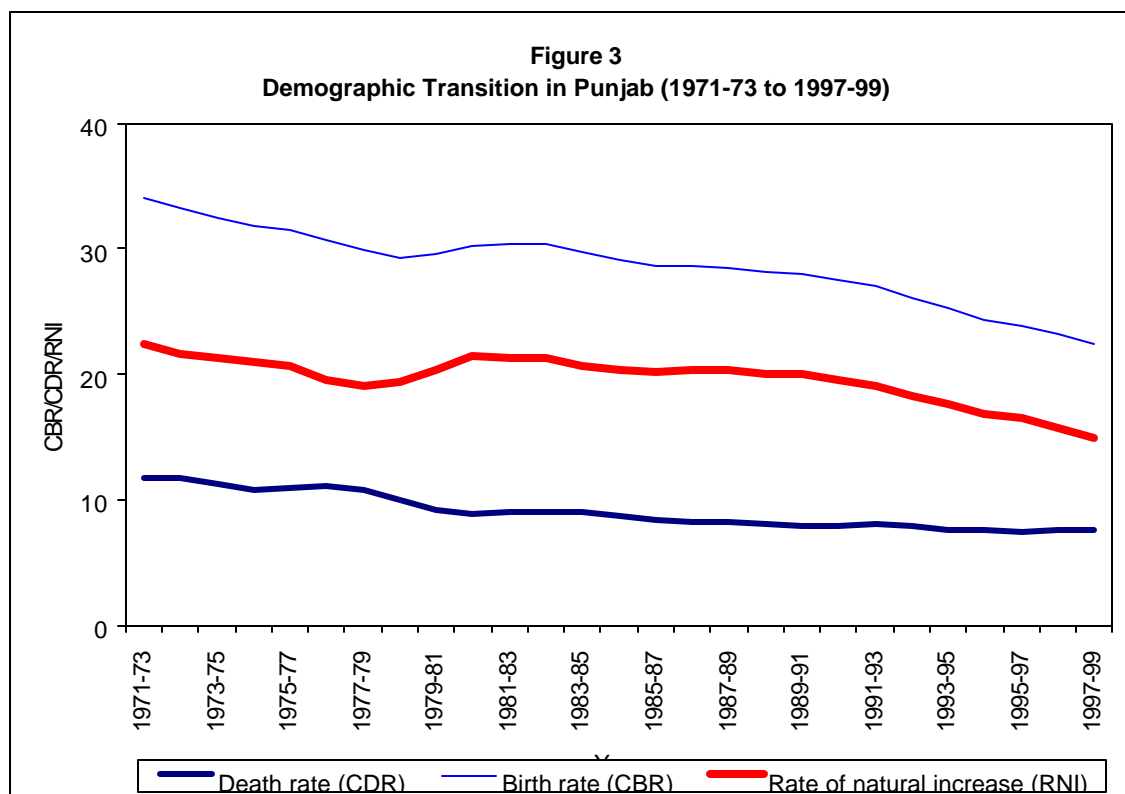
In Punjab, as the time series data based on three-yearly moving average, show, the overall crude death rate (CDR) declined from around 12 per 1,000 in the early seventies,

to around nine per 1,000 in the early eighties, and to eight per 1,000 in the early nineties (Table 4). Reduced mortality has been an integral part of the demographic transition in the state, and has extensively contributed to increased life expectancy at birth and at other ages. Though overall mortality in Punjab has been consistently lower than the national average, yet, over time, the advantage that Punjab initially had, in terms of lower probability of death, has diminished systematically after the mid-eighties. For example, in little less than three decades, the advantage of Punjab over the national mortality situation declined by 12 percentage points, from 26 per cent in 1971-73 to 14 per cent in 1998-2000. This was because the other states had made comparatively faster progress in curbing their respective death rates. Both rural and urban areas have gained consistently from the onset of mortality decline, even if rural death rates continue to exceed urban death rates for a variety of reasons in Punjab, as elsewhere in India. Notwithstanding a marginal rise in the crude death rate in the nineties, as reported by the NFHS, overwhelming evidence shows that overall death rates have decisively fallen in Punjab.

Table 4
Levels and Trends in Crude Death Rate (CDR) in India and Punjab (1971-73 to 1998-2000)

Period	India	Punjab			Comparative advantage of Punjab (in percent)
	Total	Total	Rural	Urban	Total
1971-73	15.9	11.7	12.4	9.1	26.4
1972-74	15.7	11.7	12.5	8.9	25.5
1973-75	15.3	11.2	11.8	8.8	26.8
1974-76	15.0	10.8	11.3	8.9	28.0
1975-77	15.2	10.9	11.4	9.0	28.3
1976-78	14.5	11.1	11.7	9.0	23.4
1977-79	13.9	10.8	11.3	8.6	22.3
1978-80	13.1	9.9	10.5	8.0	24.4
1979-81	12.7	9.2	9.7	7.3	27.6
1980-82	12.3	8.8	9.5	6.7	28.5
1981-83	12.1	9.1	9.8	6.9	24.8
1982-84	12.1	9.0	9.8	6.5	25.6
1983-85	12.1	9.1	10.0	6.6	24.8
1984-86	11.8	8.7	9.5	6.4	26.3
1985-87	11.3	8.4	9.0	6.8	25.7
1986-88	11.0	8.2	8.7	6.9	25.5
1987-89	10.7	8.2	8.7	7.0	23.4
1988-90	10.3	8.1	8.6	6.6	21.4
1989-91	9.9	7.9	8.6	6.1	20.2
1990-92	9.9	7.9	8.7	6.0	20.2
1991-93	9.7	8.0	8.6	5.9	17.5
1992-94	9.5	7.9	8.2	6.1	16.8
1993-95	9.2	7.6	7.9	6.0	17.4
1994-96	9.1	7.5	7.9	6.2	17.6
1995-97	9.0	7.4	7.8	6.1	17.8
1996-98	9.0	7.5	7.9	6.2	16.7
1997-99	8.9	7.5	8.0	6.2	15.7
1998-2000	8.7	7.5	8.0	6.1	13.8

Source: Sample Registration System (SRS), Registrar General, India. Various volumes.



Source: Sample Registration System (SRS), Registrar General, India. Various volumes.

Age- and Sex-specific Death Rate

In addition to rural and urban variations, mortality situation is also better understood through its sex composition and age pattern. Gains to males as well as females from mortality decline are distinct over the years in Punjab (Table 5), with net gain to females, notwithstanding early-age vulnerability surpassing the net gain to males in the process of mortality transition. In fact, a notable feature of mortality transition in Punjab, between 1971 and 1998, has been larger gains for females than for males in general. The narrowing down of sex differential in mortality, characterized by comparatively higher female mortality, as observed in 1971, has yielded to a reverse, yet, more common pattern, as in 1998, where male crude death rate outstripped female crude death rate.

The age-specific mortality curve for Punjab in 1971, as well as 1998, was the usual 'U'-shape, due to relatively higher mortality at young and old ages. Though, for nearly three decades, the mortality pattern by age has remained broadly the same, significant changes seem to have taken place in different segments of the population. Mortality rate at the early age of life (0-4 years) has strikingly plummeted down for males as well as females in urban and rural areas. In the five-to-nine year age group, mortality decline appears to have been confined to males and females only in urban areas, leaving rural female children untouched. Dynamics of mortality change also suggest a trade-off in the mortality of the young and old, between the early seventies and late nineties. For males below 20 years of age, mortality dropped sharply in contrast to a moderate rise for those 20-54 years old, and a substantial rise for those 55 years and above. Similarly, for females, during the same period, the mortality rate fell for those below 45 years and increased for those aged 45 and above. Punjab has recorded gains in the reproductive

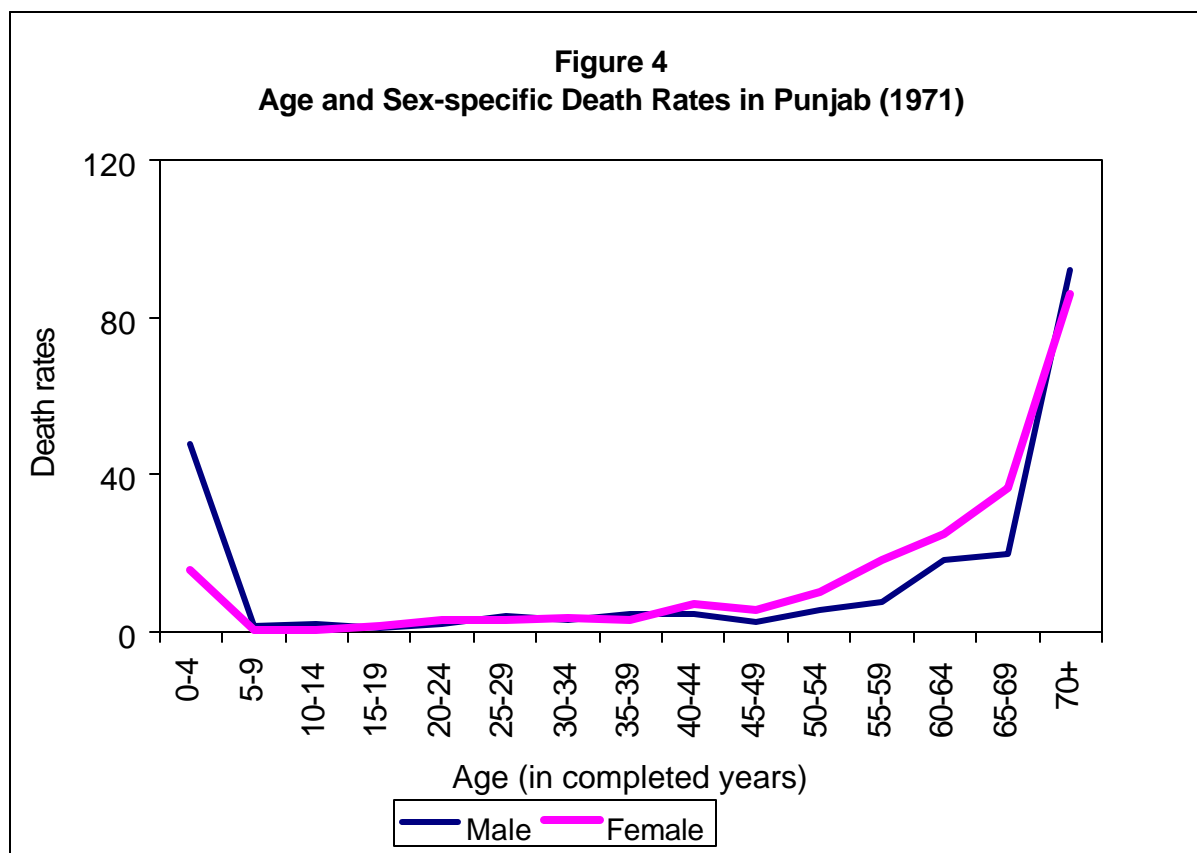
age group (15-44 years) too, where the risks of child-bearing decisively enhances female exposure to death through maternal mortality.

Table 5
Changes in Age-specific Death Rates (ASDR) by Sex in Punjab (1971-98)

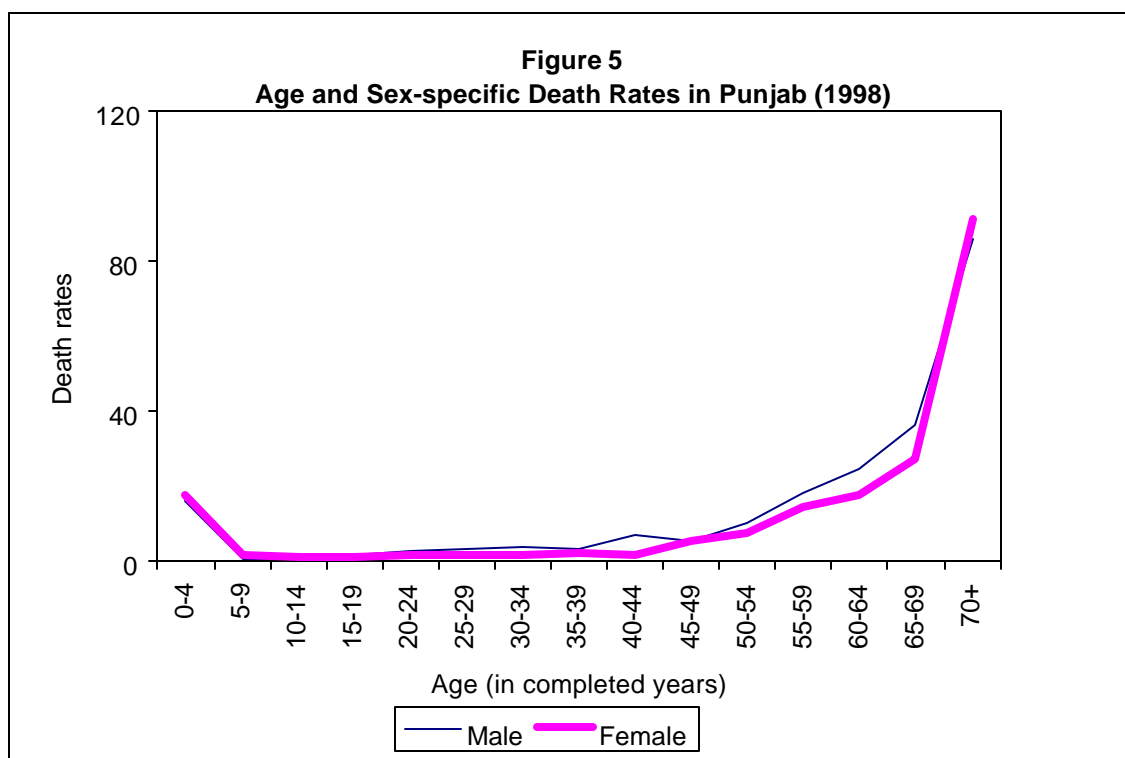
Age (in completed years)	1971						1998					
	Male			Female			Male			Female		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
0-4	32.0	28.4	31.3	52.0	30.8	47.6	16.2	15.0	15.9	20.8	8.6	17.9
5-9	1.6	1.9	1.7	1.0	3.0	1.4	0.8	0.4	0.7	2.2	1.3	2.0
10-14	0.9	--	0.7	2.3	1.2	2.1	0.6	0.7	0.6	0.8	1.6	1.0
15-19	0.8	1.0	0.9	1.2	1.1	1.2	1.5	1.9	1.6	1.4	0.5	1.2
20-24	3.6	0.3	2.8	2.3	1.1	2.0	3.7	1.2	3.1	1.8	0.9	1.6
25-29	2.9	1.2	2.5	4.1	3.5	4.0	4.3	0.4	3.3	2.1	1.9	2.0
30-34	3.8	1.3	3.2	3.7	--	2.9	4.4	2.0	3.7	1.6	2.0	1.7
35-39	3.4	1.4	2.9	4.7	4.7	4.7	3.4	2.8	3.2	1.6	4.2	2.3
40-44	4.4	10.2	5.7	4.8	3.6	4.5	7.7	6.1	7.2	2.3	0.6	1.8
45-49	8.0	3.2	6.9	1.6	5.1	2.7	6.2	3.9	5.5	4.7	8.4	5.7
50-54	8.6	14.9	9.9	3.6	14.8	5.8	10.5	9.2	10.2	6.8	10.6	7.8
55-59	8.5	36.6	13.8	5.9	21.2	7.5	15.5	26.0	18.2	11.3	22.8	14.3
60-64	27.3	24.5	26.7	19.2	14.9	18.2	25.9	20.8	24.8	20.8	5.5	17.5
65-69	24.4	28.6	25.2	17.1	28.8	19.6	35.1	40.7	36.4	25.3	34.4	27.3
70+	80.7	74.7	79.6	95.0	80.5	92.2	89.0	70.6	86.0	74.7	70.8	91.4
All	10.0	8.9	9.8	11.7	8.7	11.1	8.8	6.6	8.2	7.5	6.1	7.1

Source: Sample Registration System (SRS), Registrar General, India.

Note: '--' Indicates data not available.



Source: Sample Registration System (SRS), Registrar General, India.



Source: Sample Registration System (SRS), Registrar General, India.

The improvement in mortality has also brought to the fore some sharp differences in the sex composition of death in Punjab. It is apparent from Table 5 that at some specified ages the sex of the individual is one of the important indicators of exposure to death. While female mortality-disadvantage is greatly pronounced during childhood and adolescence (0-14 years), male vulnerability begins to be high from the age of 20 and onwards.

Infant, Child and Under-five Mortality

Infant and childhood mortality-reduction goals have continued to be national priority since the First Five Year Plan (Planning Commission 1952), as mortality varies with age and children below five years typically have a relatively higher probability of death in Indian circumstance. The situation in Punjab might compare favourably with the national scene, but the overall economic prosperity of the state is not reflected in trends of infant and child survival (Table 6). In spite of lower incidence of poverty, greater agricultural prosperity, attainment of better living standards and access to basic amenities, elevated urbanization, higher female literacy, greater network of transport, increasing private participation in health care services, and less rural and urban gap in provision of health infrastructure, mortality has continued to be high for infants and children. If development means elimination of preventable deaths for human welfare, then higher mortality trends for the children below five years of age should be a major cause for serious concern in Punjab.

Table 6
Infant Mortality Rate (IMR) by Selected Background Characteristics in Major Indian States

State	IMR ¹ (2000)	Percentage of births in medical institutions ² (1998-99)	Percent-age of population poor ³ (2000)	Percent- age of females literate ⁴ (2001)	Percent- age of population living in urban areas ⁵ (2001)	Percent-age of females participating in workforce ⁶ (2001)	Annual rate of growth of SDP in per cent ⁷ (1991-92 to 1997- 98)
A. P.	65	49.8	15.8	51.2	27.1	34.9	5.0
Assam	75	17.6	36.1	56.0	12.7	20.8	--
Bihar	62	14.6	42.6	33.6	10.5	18.8	2.7
Gujarat	62	46.3	14.1	58.6	37.4	28.0	9.6
Haryana	67	22.4	8.7	56.3	29.0	27.3	5.0
H. P.	60	28.9	7.6	68.1	9.8	43.7	--
J & K	NA	35.6	3.5	41.8	24.9	22.0	--
Karnataka	57	51.1	20.0	57.5	34.0	31.9	5.3
Kerala	14	93.0	12.7	87.9	26.0	15.3	5.8
M. P.	87	20.1	37.4	50.3	26.7	33.1	6.2
Maharashtra	48	52.6	25.0	67.5	42.4	32.6	8.0
Orissa	95	22.6	47.2	51.0	15.0	24.6	3.3
Punjab	52	37.5	6.2	63.6	34.0	18.7	4.7
Rajasthan	79	21.5	15.3	44.3	23.4	33.5	6.5
Tamil Nadu	51	79.3	21.1	64.6	43.9	31.3	6.2
Uttar Pradesh	83	15.5	31.2	43.0	20.8	16.3	3.6
West Bengal	51	40.1	27.0	60.2	28.0	18.1	6.9
INDIA	68	33.6	26.1	54.2	27.8	25.7	6.9

- Source:**
1. *Sample Registration System (SRS)*, Registrar General, India.
 2. *National Family Health Survey 2 (1998-99)*, India
 3. *Poverty Estimates for 1999-2000*, Planning Commission, India.
 - 4, 5, and 6. *Provisional Population Totals, Punjab, Papers 1, 2 and 3, Census of India 2001.*
 7. Ahluwalia (2000)

- Note:**
1. The estimates of poverty (percentage of population below poverty line) are based on a 30-day recall period and the state specific poverty lines of 1999-2000.
 2. '--' Indicates data not available.

In spite of a seemingly lower infant mortality rate (IMR) in Punjab than in most of the major states of India, the number of deaths before the first birthday is very high (Table 6). The fact that recent estimates of infant mortality vary somewhat between 52-57 per 1,000 live births, depending on the source (SRS or NFHS), cannot hide the reality that out of total deaths in 1998, the share of infant deaths was 16 per cent in Punjab as against four per cent in Kerala (SRS). Barring Punjab, all the developed states in the Union were able to reduce their infant mortality level substantially between 1981 and 2000. During this period, for instance, the IMR fell by 62 per cent in Kerala, by 47 per cent in Gujarat, by 45 per cent in Tamil Nadu, by 39 per cent in Maharashtra as against only 36 per cent in Punjab (Table 8). Mortality among infants has not been showing signs of real decline since the early nineties, as indicated by the time-trend (Table 7). Reasons for this merit some investigation, in the context of the link between overall economic deceleration in Punjab as reported recently and living standards of households, particularly in the rural sector (Table 6).

For greater success in infant mortality reduction in Punjab, there is need to concentrate on rural areas, where two-thirds of the total population reside. The major States (Kerala, Maharashtra, Tamil Nadu and West Bengal), with mortality among infants before first birthday lower than in Punjab, are those, which were able to reduce infant mortality

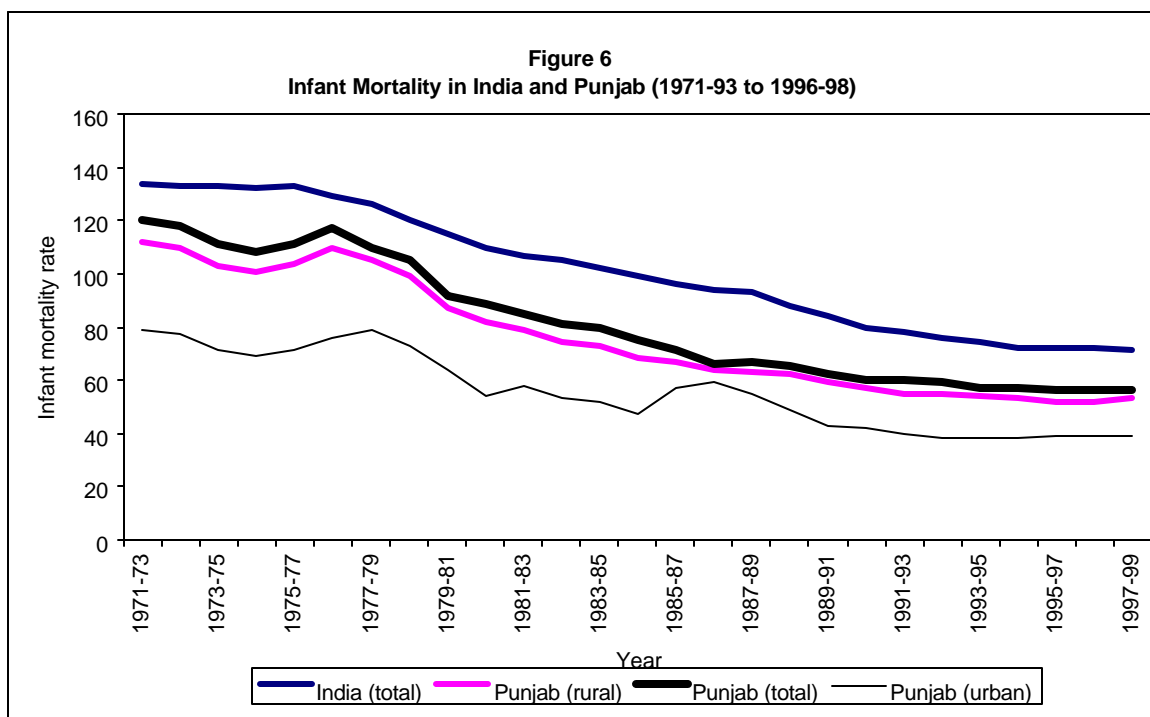
progressively by focusing consistently on rural areas. For instance, decline in rural infant mortality in Kerala (51%), Maharashtra (24%), Tamil Nadu (35%) and West Bengal (30%), during 1986-88 and 2000, far exceeded the decline in Punjab (15%). The fact that rural areas in Punjab require urgent attention in this regard is clear from the latest early-life NFHS mortality statistics. Neo-natal, post-neonatal infant, child and under-five mortality rates are shown as, 69 per cent, 42 per cent, 58 per cent, 96 per cent, and 64 per cent higher respectively in villages than in cities and towns. Lack of rural bias is perhaps one of the reasons why Punjab has had a much slower decline in mortality during one and half decades of the last century, as indicated by the percentage change in the IMR. Any innovative programme-formulation and management must recognize this rural-urban dichotomy.

Table 7
Levels, Trends and Sex Composition
in IMR in India and Punjab (1971-73 to 1998-2000)

Year	Levels and trends in infant mortality				Gender disparity (f/m) in infant mortality [@]	
	India	Punjab			India	Punjab
	Total	Total	Rural	Urban		
1971-73	134	112	120	79	1.05	1.16
1972-74	133	110	118	77	--	--
1973-75	133	103	111	71	--	--
1974-76	132	101	108	69	--	--
1975-77	133	104	111	71	--	--
1976-78	129	110	117	76	1.07	1.10
1977-79	126	105	110	79	1.05	--
1978-80	120	99	105	73	1.03	--
1979-81	115	87	92	64	1.01	--
1980-82	110	82	89	54	1.00	--
1981-83	107	79	85	58	0.99	--
1982-84	105	74	81	53	0.99	0.98
1983-85	102	73	80	52	1.01	1.05
1984-86	99	68	75	47	1.01	1.12
1985-87	96	67	71	57	1.01	1.15
1986-88	94	64	66	59	1.00	1.15
1987-89	93	63	67	55	0.99	0.99
1988-90	88	62	65	49	1.00	1.06
1989-91	84	59	62	43	1.00	0.99
1990-92	80	57	60	42	1.01	1.13
1991-93	78	55	60	40	1.01	1.09
1992-94	76	55	59	38	1.00	1.21
1993-95	74	54	57	38	1.01	1.27
1994-96	72	53	57	38	1.01	1.25
1995-97	72	52	56	39	1.03	1.20
1996-98	72	52	56	39	1.03	1.13
1997-99	71	53	56	39	1.03	1.09
1998-2000	70	53	57	39	--	--

Source: Sample Registration System (SRS), Registrar General, India. Various volumes.

Note: `--` Indicates data not available and [@] based on sex specific moving averages.



Source: Sample Registration System (SRS), Registrar General, India. Various volumes.

The timing of infant death has also far-reaching importance for framing measures that enhance the survival chances of the newborns. Since biological factors are largely decisive in determining chances of survival in the neo-natal period, and environmental and behavioral factors in the post neo-natal period, classification of deaths into such categories also help in understanding their pattern during infancy.

Mortality, at all stages, has declined considerably in Punjab since the early eighties, as in other major states (Table 8). In spite of social, economic and cultural constraints, many states have performed better than Punjab in reducing childhood mortality. For instance, Tamil Nadu and Kerala have been able to reduce mortality among children below five years of age by nearly three-fifths and West Bengal by two-fifths, as against only 23 per cent in Punjab. Such states like Kerala, Tamil Nadu, West Bengal and Maharashtra were also able to lessen substantially the neo-natal, post neo-natal, infant and child deaths. This needs to be emulated in Punjab, which has substantial loss of lives during childhood (0-4 years); 20 per cent of total deaths occur in childhood in Punjab as against five per cent in Kerala, 14 per cent in Tamil Nadu and 18 per cent in Maharashtra. This indicates that with the right kind of intervention, the scope to reduce childhood mortality is immense in Punjab.

Gender Bias in Infant and Child Mortality

Sharp sex-differentials characterize infant and childhood mortality in Punjab. Data from both the SRS and NFHS show comparatively high female mortality in Punjab than in other states of India. In view of considerable gains to both sexes from the onset of mortality decline during last three decades, such male-female divergence is possible, in theory, when female children benefit either equally or less in relation to male children. In

spite of improvements in literacy, expansions in outreach of health-care services and rise in overall living standards in recent times, the sex composition of infant mortality trends in Punjab indicate that greater vulnerability of the girl child has remained virtually unchanged in the long run (Table 9 and Figure 7). On the contrary, more recent data reveal intensification of gender disparity in mortality in Punjab at every stage of childhood, particularly before the fifth birthday (Table 9). Rise in female disadvantage in mortality between 1992-93 and 1998-99 is a worrisome sign, implies preponderance of social, cultural and economic rather than health and medical factors, and reinforces the need for corrective measures.

Table 8
Changing Mortality at Different Stages of Childhood in India and Major States

State	Neo-natal mortality rate			Post neo-natal mortality rate			Infant mortality rate			Child mortality		
	1981	1998	Percent decline during 1981-98	1981	1998	Percent decline during 1981-98	1981	2000	Percent decline during 1981-2000	1981	1998	Percent decline during 1981-91
A P.	60	46	23.3	26	21	19.2	86	65	24.4	30	20	33.3
Assam	67	51	23.9	39	25	35.9	106	75	29.2	40	32	20.0
Bihar	74	44	40.5	44	37	15.9	118	62	47.5	43	33	23.3
Gujarat	75	44	41.3	41	21	48.8	116	62	46.6	41	27	34.1
Haryana	58	41	29.3	44	29	34.1	101	67	33.7	37	33	10.8
H. P.	15	50	-233.3	57	18	68.4	71	60	15.5	19	22	-15.8
J & K	44	--	--	28	--	--	72	50	30.6	26	--	--
Karnataka	49	42	14.3	21	17	19.0	69	57	17.4	24	21	12.5
Kerala	26	11	57.7	12	5	58.3	37	14	62.2	12	5	58.3
M. P.	81	61	24.7	62	37	40.3	142	88	38.0	61	37	39.3
Maharashtra	54	29	46.3	25	19	24.0	79	48	39.2	26	18	30.8
Orissa	80	60	25.0	55	37	32.7	135	96	28.9	42	29	31.0
Punjab	49	33	32.7	32	22	31.3	81	52	35.8	26	20	23.1
Rajasthan	60	50	16.7	49	33	32.7	108	79	26.9	50	40	20.0
Tamil Nadu	63	35	44.4	29	18	37.9	91	51	44.0	35	14	60.0
U. P.	96	52	45.8	54	33	38.9	150	83	44.7	60	38	36.7
West Bengal	64	30	53.1	27	23	14.8	91	51	44.0	34	20	41.2
INDIA	70	45	35.7	41	27	34.1	110	68	38.2	41	29	29.3

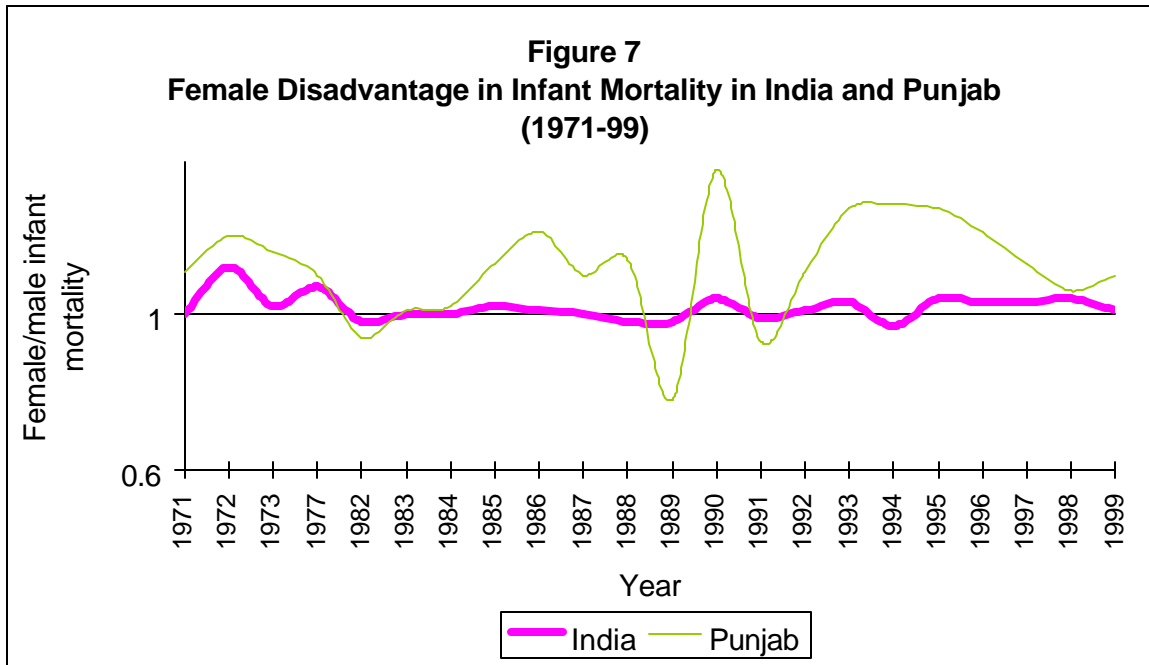
Source : Sample Registration System (SRS), Registrar General, India.

Note: '--' Indicates data not available.

Table 9
Levels and Trends in Neo-natal, Post neo-natal, Infant, Child and Under-five Mortality by Sex Differentials in India and Punjab (1992-93 to 1998-99)

State	Type of mortality									
	Neo-natal mortality		Post neo-natal mortality		Infant mortality		Child mortality		Under-five mortality	
	1992-93	1998-99	1992-93	1998-99	1992-93	1998-99	1992-93	1998-99	1992-93	1998-99
Punjab										
Male	32.9	34.4	22.8	15.3	55.6	49.7	12.7	5.9	67.6	55.4
Female	27.0	37.9	22.1	27.3	49.1	65.2	23.0	23.8	71.0	87.4
Female disadvantage (f/m)	0.8	1.1	1.0	1.8	0.9	1.3	1.8	4.0	1.1	1.6
INDIA										
Male	57.0	50.7	31.7	24.2	88.6	74.8	29.4	24.9	115.4	97.9
Female	48.1	44.6	35.8	26.6	83.9	71.1	42.0	36.7	122.4	105.2
Female disadvantage (f/m)	0.8	0.9	1.1	1.1	0.9	1.0	1.4	1.5	1.1	1.1

Source: National Family Health Survey (1992-93 and 1998-99), India.



Source: Sample Registration System (SRS), Registrar General, India. Various Volumes.

Causes of Death in Infancy and Childhood

Though reliable data on direct causes of death are vital for its assessment in early childhood, such information is rarely available in a format that can be useful for initiating health-assessment and intervention programmes. However, data from *Survey of Causes of Death in Rural Areas* (Registrar General, India) fill the gaps in mortality statistics to some extent and identify the top killer diseases during infancy and childhood. For example, for infants dying before first birthday in rural Punjab in 1998, the causes were premature birth (25%), pneumonia (25%), anaemia (10%), respiratory infections (6%), diarrhoea (6%), congenital malformations (4%) and birth injury (1%). Similarly, major causes of rural-child deaths in Punjab in 1998 were pneumonia, diarrhoea and gastroenteritis, and malaria, which together accounted for 60 per cent of deaths in the 1-4 years age group (Registrar General, India).

Investigation of circumstances that create an environment for higher levels of infant and child mortality in general, and excess female mortality in particular, leads one to a set of factors that are deeply embedded in the socio-economic position of the households. For instance, studies on Punjab have indicated that place of residence, education and work-status of mother, caste affiliation, standard of living and pattern of differential care based on the sex of the child in households, extensively affect the chances of survival of children below five years of age at various stages (Das Gupta 1987, Krishnaji 2002). Demographic determinants, such as order of birth, sex of the child, mother's age at birth, length of the previous birth interval, etc., are also found to be crucial in the levels of neo-natal, post neo-natal, infant, child and under-five mortality (NFHS 1995 and 2001). Studies are required to ascertain the role of a dominant backward population, gender preference, access to and utilization of health-care services particularly during pre-natal, natal and post-natal periods slowing down of economic growth and impact of the current structural adjustment programme on recent trends in infant and childhood mortality in the state.

Further reduction in mortality, due to the above causes, will certainly depend not only on the state of public health programmes in Punjab, but also on overall levels of economic and social development in terms of health, hygiene, environmental sanitation, levels of living, financial capacity to pay for health care and socio-cultural barriers in accessing it. The enormity of the tasks ahead, in relation to infant mortality, can well be visualized from the fact that Punjab has to go a long way, in order to conform to the national goal of bringing down the IMR to 45 by 2007, 30 by 2010, and 28 by 2012, as laid down in the National Population Policy (2000) and the Tenth Five Year Plan (2002-2007). This appears difficult to achieve, as for some time in the recent past, the infant mortality level has been stagnating in the state, with the rates hovering around 53 per 1,000, and not falling as normally expected.

Ways to fight infant mortality would include removal of gender bias, strengthening of the Child Survival and Safe Motherhood (CSSM) Programmes under the RCH umbrella, screening mothers-to-be for ante-natal check-up and nutritional intake, reduction in the share of non-institutional births, adequate provision for emergency obstetrics services, introduction of nutritional programmes especially for anaemic mothers, proper immunization, baby-friendly infant-feeding practices and nourishment for the newborn, strengthening the sub-centres, subsidiary health centres and primary health centres, and making women doctors available for female clients, particularly at selected centres in remote rural areas, and wider community involvement.

Maternal Mortality

Maternal mortality ratio (MMR), as an important indicator of socio-economic development, women's empowerment and access to basic health care, has been recognized by the planning process from the First Five Year Plan (1951-56) onwards (Planning Commission 1952). Yet, in India, more than 1,00,000 women die every year from causes connected with pregnancy, childbirth and related complications (NFHS 2000). This has strong implications for infant survival, family ties and generational well-being, as these deaths not only devastate the families concerned but also lead to unfavourable social and economic relations between generations. Even if, in India, maternal deaths are substantial, precise data on these are rare at the state level. One of the different ways of improving assessment of maternal mortality is to upgrade the data on such deaths through advances in the vital registration system, reporting the exact cause of death, and inclusion of some basic background characteristics of the deceased.

Lack of studies on maternal mortality, particularly in Punjab, hamper efforts to address the problem. Though the SRS provided the MMR for Punjab for the first time in 1998, the rate is far from the reality, as it is based on information collected through the post-death verbal-autopsy method for a small sample of deaths (eight). An MMR of 199 for Punjab as against the national average of 407 seems to be a gross underestimate. Even if the SRS-based MMR is considered correct, it is still far from the National Socio-Demographic Goal for 2010, which aims to bring the MMR below 100 per 1,00,000 live births, as enunciated in the National Population Policy 2000 (NPP 2000). Maternal deaths according to the SRS are due to direct causes, consisting of haemorrhage (88%) and complications predominantly related to puerperium (12%).

According to some hospital- and community-based studies, variations in maternal mortality can be directly related to rural and urban residence, availability and use of health infrastructure for ante-natal, natal and post-natal requirements, conditions of

hygiene and birth-assistance for home deliveries, health awareness and overall levels of living. As one of the priority areas, steps have been recommended by the World Health Organisation for promoting policy action, society and community intervention along with health-sector activation to reduce maternal mortality. In the context of Punjab, this would mean increasing access of women to health-care centres, particularly during odd hours, eliminating unsafe practices during delivery and sensitizing the community on its importance, regular training and equipping female health workers including *dais*, and making the community respond effectively to the needs of socially and economically backward pregnant women. Restoration of public confidence in the public rural health-care centres through revitalizing primary and subsidiary health centres according to peoples' perspectives, designation of certain health centres as nodal units depending on their respective location, infrastructure, habitation, connectivity and availability of health staff, can be of immense help. In addition to putting in place an effective demographic surveillance system, which includes registration and monitoring of pregnancies by local paramedics, measures to meet emergency situations with regard to child-birth and pregnancy complications can also be helpful.

Prospects for Further Decline

Prospects for further drop in mortality is bright in Punjab in the existing situation. Reducing under-five mortality, which has been inordinately high at different stages, can ensure overall decline, and focus on the survival of female children can also tremendously contribute to reduction in overall mortality rates. Similarly, maternal mortality is another area where substantial reductions can be attempted to create a dent in the general mortality level. Tracking down groups who, under a given situation, are more vulnerable to infant, child and maternal mortality, can yield direct results. Concentrating on rural areas is also likely to yield results, as the latest SRS (2000) data indicate that the rural CDR in Punjab is 1.2 times higher than in Kerala, the state with the lowest mortality in India. As one of the few states in India, which are poised for demographic ageing, rise in the proportion of the elderly in Punjab, is likely to inflate the total mortality level, as at old age (from 55 years onwards) the death rate starts rising progressively. Moreover, development-linked epidemiological transition, lifestyles and medical and non-medical intervention programmes are also likely to have a decisive impact on the future mortality regimes. Some basic reflections on causes of death are essential in this context. Unfortunately, no reliable and disaggregated statistics are available about these causes on a wider scale.

CONTRACEPTIVE USE

The First Five Year Plan laid the foundation of a state-sponsored Family Planning Programme to meet the felt-need to reduce the growth of population and to stabilize it at a level consistent with the requirements of the national economy (Planning Commission 1952). The strategy, in this context, was to lower the population growth either through limitation and/or spacing.

Knowledge of Methods

In comparison with other states, Punjab has done extremely well in spreading awareness about contraception and is a leader in India when it comes to knowledge of family planning among currently married women in the age group 15-49 years. Lack of knowledge about contraceptive methods is no more a barrier to spread of family planning, as knowledge about methods of contraception, measured in recent NFHS, is

most widespread (100%) in Punjab. It is interesting to note that different methods of family limitation -- condom, intra-uterine device (IUD) and pill -- are most well known in Punjab than in any other state of India, including Kerala with its highest literacy. In general, modern methods are better known (100%) than the traditional ones (78%) among the eligible women. Each of the modern methods is fairly well known in the state, and among the traditional methods, women are more familiar with the rhythm or safe period (73%) than with withdrawal (63%). Rural areas almost match urban areas in the knowledge of modern contraceptive methods, but the latter have an edge in the awareness of some traditional methods, namely the rhythm or safe period and withdrawal. NFHS-2 has also shown that the social, economic and demographic backgrounds of the couples are no more a determining factor in spreading awareness of methods of family planning, as it varies marginally by caste, education, religion, and age of the woman. This is evidence of the success of IEC campaigns by non-governmental organizations and the government, both at the State and Central levels.

Sources of Availability

With knowledge about family planning being universal in Punjab, availability of methods is critical to raise the promotion of contraception to the desired level among the target groups. Though sources in government and non-government sectors can be approached for obtaining contraceptive services in Punjab, for a variety of reasons couples have been accessing the public sector more than the private sector. Moreover, sourcing of contraception is also method-related in the state, with sources for some methods being more active in the public sector than in the private. According to recent NFHS, male and female sterilizations are conducted exclusively in government health centres, whereas the private sector dominates sources for the oral pill, IUD and condom, though programme-surveys in rural Punjab find greater use of government sources for the IUD (PRC 1999). However, comparison of sources of contraception by current users between 1993 and 1999 point towards the growing role of the private sector in the distribution of such contraceptives as the pill, IUD and condom in both urban as well as rural areas, though it is relatively more active in urban areas for spacing methods. While, in the private sector, pharmacies and drugstores are increasingly becoming major sources and catering to the demands for condom for 88 per cent of the couples, private hospitals and clinics are taking responsibility for implant of the IUDs, and catering to 82 per cent of the couples.

Rural Social Marketing

Social marketing of contraceptives is hailed as an important strategy to improve contraceptive prevalence rate, particularly in rural areas, using oral pills and condoms. High wastage of pills and condoms under free distribution programme, lack of capability on the part of many to buy pills and condoms from commercial outlets and their inability to respond to situations of contraindications and side-effects have been cited as factors that favour instituting social marketing of contraceptives. In Punjab, this system is poor and needs to be activated on a wider scale, following the findings of a recent study (PRC 2000) that indicate virtual non-existence of social marketing outlets in rural areas for the oral pill and condom. Available outlets have meagre stocks of supplies, depend more on government sources for procurement of supplies, and secure better participation of women than men in the majority of the villages. The social marketing network is marked by little segmentation of clients, poor need-based vending, limited access, cultural insensitivity and lack of motivation.

Levels and Trends in Use

The use of contraceptives among Indian couples shot up to a reasonable level in a brief period from virtually no practice at the time of independence. Notwithstanding policy rigidities, socio-cultural barriers, programme deficiencies, etc., contraception today is at the core of the demographic changes that are widely sought, both officially and privately. Discounting the riddles that official service statistics present, some states have done less better than others in programme performance, and hence have contributed to regional disparity in the use of family planning methods.

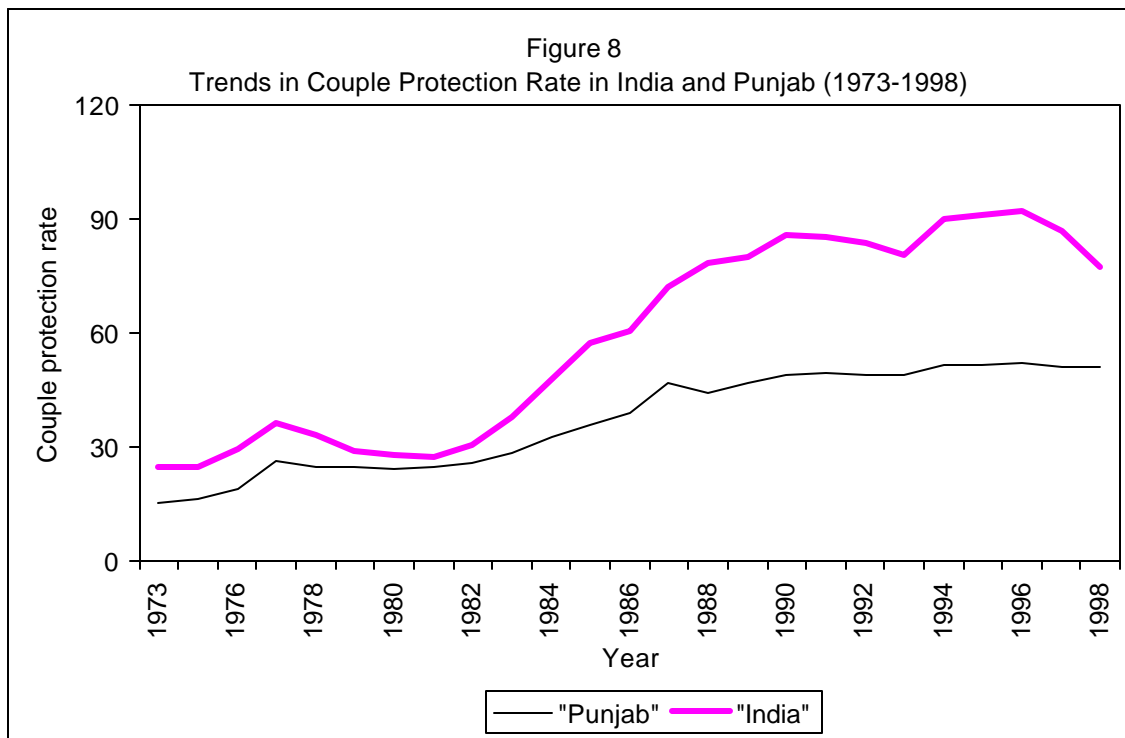
In the north, apart from Himachal Pradesh (61%), Punjab is widely recognized for its good performance in implementing the family planning programme, like Maharashtra (60%) and Gujarat (53%) in the west and Andhra Pradesh (59%), Karnataka (57%), Kerala (56%), and Tamil Nadu (50%) in the south, according to the recent NFHS. Since the inception of the programme, the contraceptive prevalence rate (CPR) has consistently remained higher in Punjab than the national average, notwithstanding the controversies that had dogged the programme, till recently. Apart from awareness, the growth in CPR in the state can be attributed to vigorous programme implementation strategies, mainly tagged to incentives and disincentives to programme-staff and clients. Both official service statistics and independent contraceptive prevalence surveys have consistently established the edge of Punjab over others in making contraception reach the population widely (Table 10, Figure 8). In addition to a real difference in use of methods, the differences between official and non-official figures can also be attributed to methodological differences in the estimation.

Table 10
Levels and Trends in Current Contraceptive Prevalence Rate (CPR) due to All Modern Methods in India and Punjab (1973-99)

Year	MOHFW		NSS/ NFHS/ ORG		Levels and trends in method composition							
	India	Punjab	India	Punjab	Sterilization		IUD		Condom		Oral pill	
					India	Punjab	India	Punjab	India	Punjab	India	Punjab
1973	15.0	24.8	12.2	21.8 [®]	11.3	11.5	1.4	6.0	2.3*	7.3*	--	--
1975	16.3	24.6	--	--	12.4	12.8	1.4	5.1	2.5*	6.8*	--	--
1976	18.9	29.1	--	--	14.1	14.2	1.5	5.2	3.4*	9.7*	--	--
1977	26.1	36.0	--	--	21.1	20.5	1.6	5.6	3.5*	9.8*	--	--
1978	24.4	33.1	--	--	20.4	20.3	0.9	3.5	3.0*	9.3*	--	--
1979	24.4	28.9	--	--	20.2	19.8	1.0	3.3	3.3*	5.9*	--	--
1980	23.9	27.6	--	--	20.2	19.4	1.1	3.3	2.7*	4.9*	--	--
1981	24.3	27.4	--	--	20.0	19.2	1.1	3.6	3.2*	4.6*	--	--
1982	25.6	30.2	--	--	20.7	20.6	1.2	4.4	3.8*	5.1*	--	--
1983	28.4	37.7	--	--	22.0	24.0	1.4	7.9	4.9*	5.8*	--	--
1984	32.4	48.0	--	--	23.7	27.5	2.3	11.1	6.2*	9.4*	--	--
1985	35.8	57.4	--	--	25.0	29.9	3.0	14.3	7.8*	13.1*	--	--
1986	38.7	60.6	--	--	26.5	31.2	3.9	15.8	8.3*	13.6*	--	--
1987	46.7	72.0	--	--	27.9	33.9	4.8	18.9	7.4	17.2	1.3	1.9
1988	44.2	78.3	39.9	65.9 [#]	28.9	36.6	5.5	21.8	8.3	18.0	1.5	1.9
1989	46.7	79.9	--	--	29.8	37.2	6.2	22.4	8.9	18.4	1.7	1.9
1990	48.6	85.5	--	--	30.1	39.3	6.6	23.9	10.0	20.2	1.9	2.1
1991	49.6	85.4	--	--	30.3	41.1	7.0	25.5	10.1	16.6	2.1	2.1
1992	48.6	83.8	--	--	30.3	38.3	6.6	25.3	9.4	17.8	2.2	2.4
1993	48.7	80.2	36.3	51.3 [§]	30.3	37.9	6.6	24.3	9.9	16.1	2.0	1.9
1994	51.3	89.8	--	--	30.3	38.5	7.2	26.3	11.2	22.1	2.7	2.9
1995	51.6	90.8	--	--	30.2	38.9	7.6	28.1	10.8	20.6	3.0	3.3
1996	52.2	91.9	--	--	30.2	38.8	8.2	31.4	10.7	18.3	3.2	3.4
1997	51.0	86.6	--	--	29.6	38.5	7.8	28.8	10.4	16.5	3.1	2.9
1998	50.8	77.5	--	--	29.3	35.5	7.6	24.7	10.1	14.7	3.8	2.7
1999	--	--	42.8	53.8 [§]	--	--	--	--	--	--	--	--

Source: 1. Ministry of Health and Family Welfare, Government of India, *Year Books*. Various volumes.
2. @: *National Sample Survey (NSS)*, 28th Round, 1978.
3. #: *Operations Research Survey III* (1988-89), Operations Research Group (ORG), Baroda.
4. §: *National Family Health Survey (NFHS)*, India, 1992-93 and 1998-99.

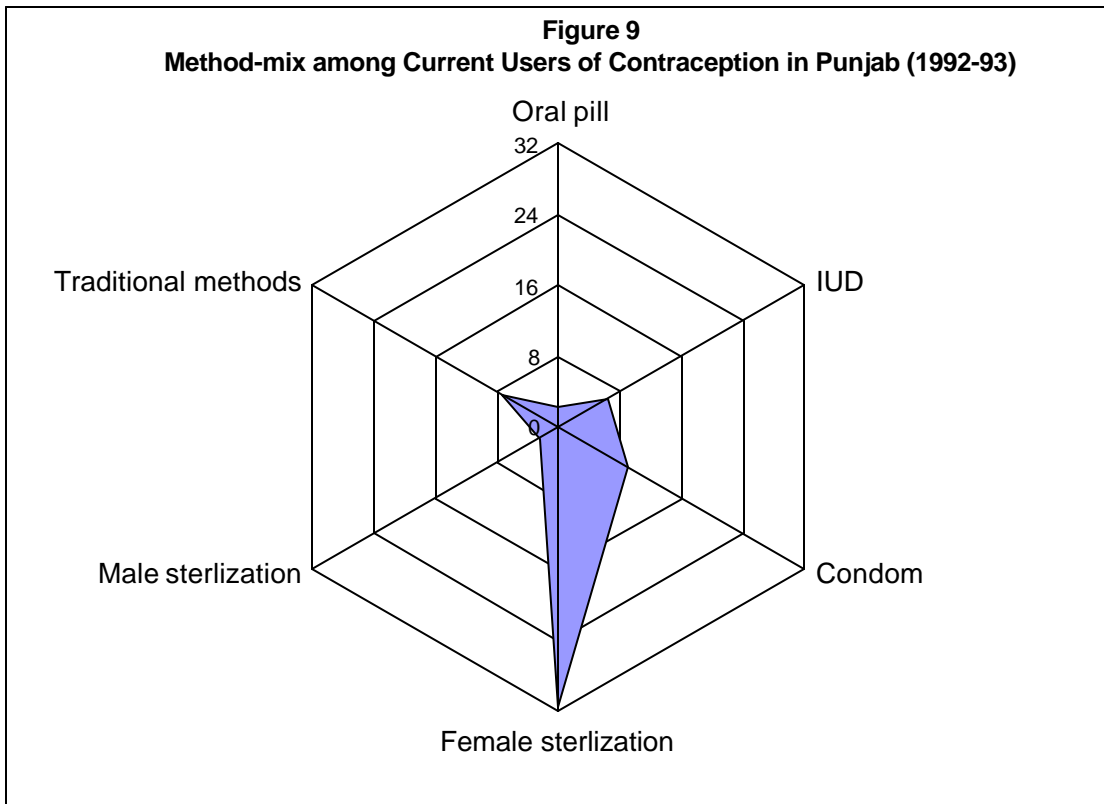
Note: 1. ** Includes use of oral pills also.
2. -- Indicates data not available.
3. Figures are in percentages.



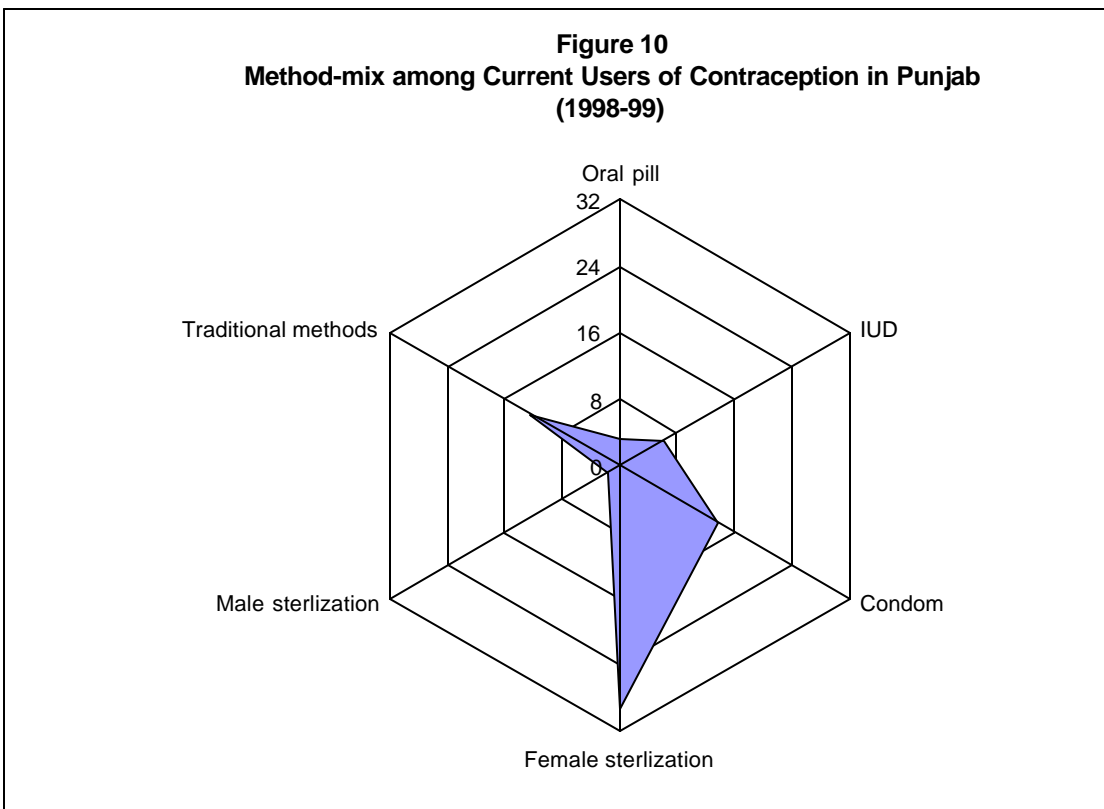
Source: Ministry of Health and Family Welfare, Government of India, *Year Books*. Various volumes.

Method Mix

The three decades of the seventies, eighties and nineties, while recording an impressive rise in contraception prevalence, also witnessed significant changes in method-preference of the couples in Punjab (Figures 9 and 10). Among modern methods, the terminal ones, such as sterilization and spacing methods like the IUD continued to dominate the range of contraceptives offered by the state and registered remarkable growth in acceptance among the couples (Table 10). Comparison of results from two successive rounds of NFHS also point towards a transition in contraception-prevalence in the state in terms of method-mix and preferences, with direct implications for policy planning besides programme implementation. Rapid rise in the share of traditional methods, growth in the popularity of condoms, stagnation in the acceptance of IUD, and reduction in the traditional dominance of sterilization are some of the salient features of this transition. Already, low share of male sterilization in total sterilization has further declined from eight per cent in 1992-93 to five per cent in 1998-99, indicating continuity in male lack of enthusiasm for adoption of terminal methods. Traditional methods are more popular among older than younger women.



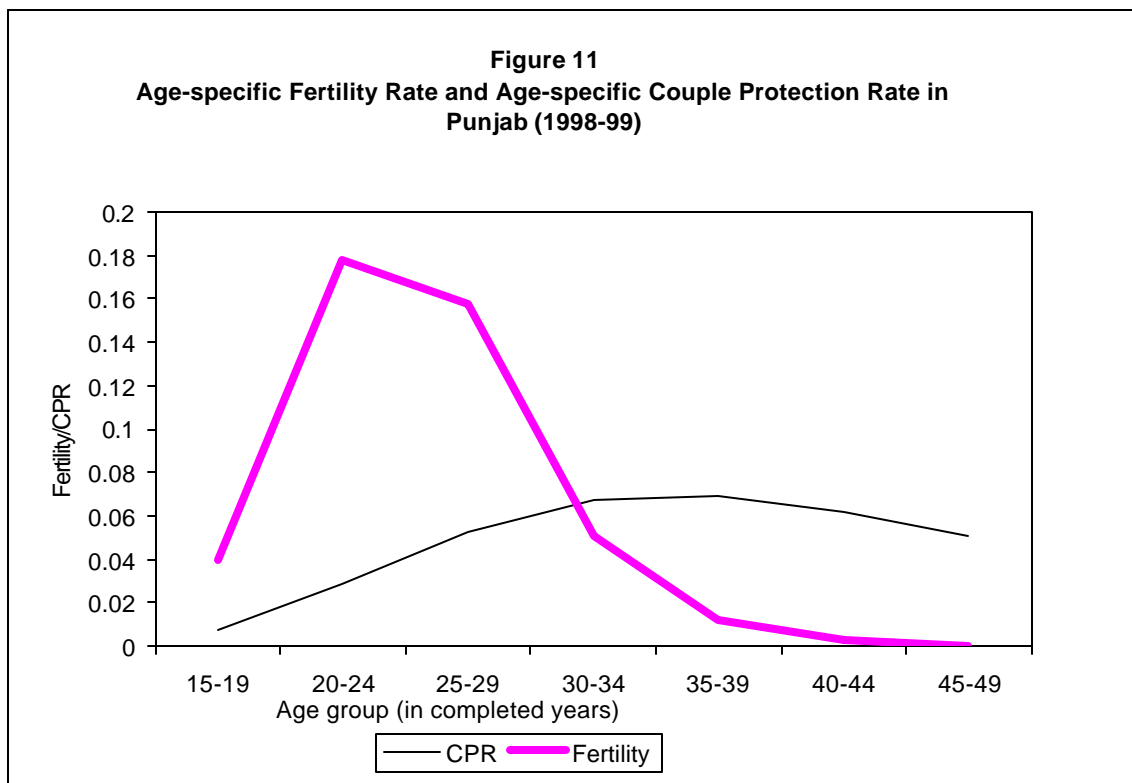
Source: National Family Health Survey 2.



Source: National Family Health Survey 2.

Age Pattern of Use

The age pattern of contraception in Punjab shown in the recent round of NFHS (Figure 11) is interesting. Among the currently married women in 1998-99, the use peaked in the age group 30-34 and 35-39, with 67 per cent and 69 per cent using some modern method of family planning. The young age group reports low use, the rate being 29 per cent for women aged 20-24 years. Contraception among younger women is more popular in urban than in rural areas. When linked to the age pattern of fertility, it is observed that women basically resort to contraception, on a wider scale after their own contribution to fertility at ages 20-24 and 25-29. If contraception is to have a higher impact on fertility, then ways must be found to make it more popular among younger women.



Source: National Family Health Survey 2.

Unmet Need

One of the ways to measure the efficiency of the family planning programme in Punjab is to examine the unmet need for contraception in the state, defined in terms of the needs for spacing and for limiting. NFHS indicates that the level of unmet need in Punjab is the lowest in India and is declining over time, due to increase in acceptance of family planning methods. For example, the estimated level of unmet need declined among currently married women (15-49) in Punjab from 13 per cent in 1993 to seven per cent in 1999. The unmet need for limiting is more than 1.6 times higher than for spacing; 2.8 per cent had unmet need for spacing as opposed to 4.5 per cent for limiting. Unmet need among women varies little by caste status and standard of living in the households. Based on the estimation of the unmet need for family planning, the programme in the

state can currently focus more on women in rural areas, Muslims women, women in the age group 20-29 and those with one child, in order to enhance couple-protection rates. While such target groups express the desire to delay child-bearing through family planning methods, older women, higher parity women, Hindu women and Sikh women are more for termination of child-bearing through contraception. If the family planning programme in the state is to be more result-oriented, then innovative strategies must be put in place to bring in these interested sections of the community. Existence of unmet need also reinforces the argument that fertility in Punjab can be lowered further without any coercive measures to limit the family size.

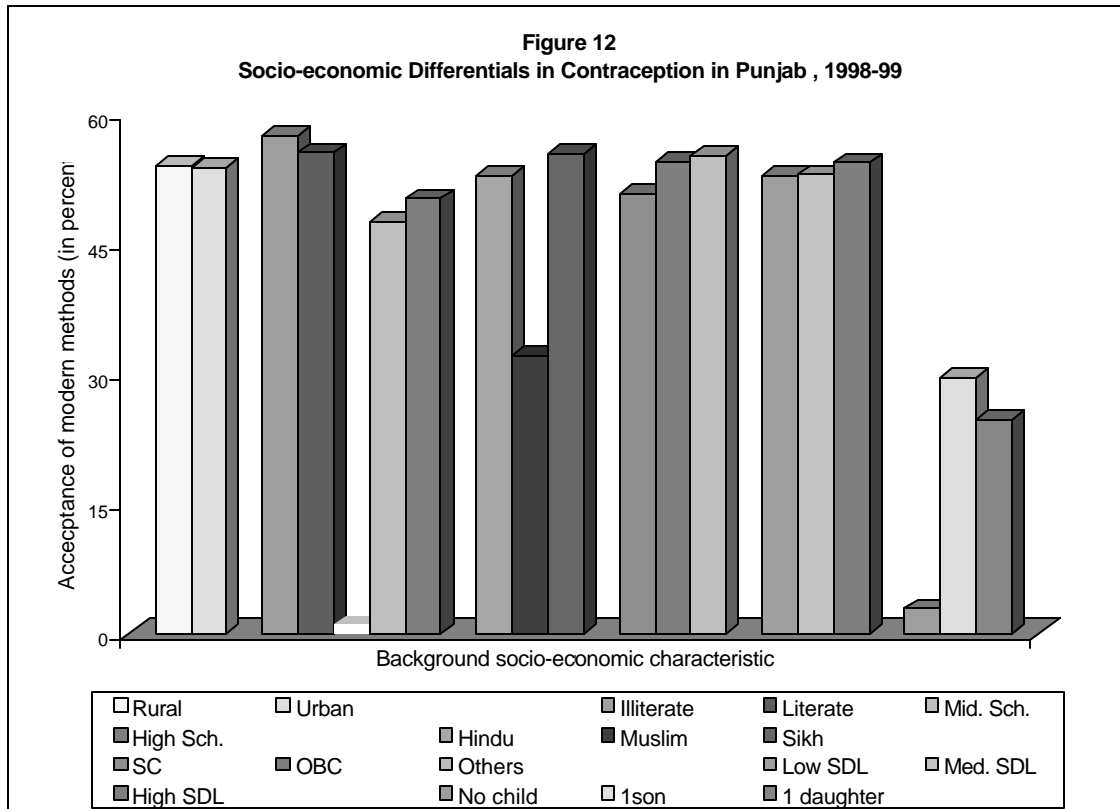
While a lower volume of unmet need for contraception reflects the potential for family planning programme in the state, both by the government and the non-government sector, very high met need for contraception in Punjab, even higher than in Kerala, may not entirely reveal the real scope for intervention. This is so because the definition of unmet need is subjective, grounded on the perception of the individual woman, which could underestimate the actual need for family limitation in dynamic and macro perspectives.

Non-use and Discontinuation

Unmet need for contraception can be better understood, if the reasons for non-use as well as discontinuation of contraception are investigated. The main reasons why couples refrain from currently using contraception in Punjab are the desire for additional children (42%), postpartum amenorrhoea and breast-feeding (32%), menopause and hysterectomy (12%) and health concerns (5%), as suggested by NFHS. Hence, increasing contraception-prevalence rate substantially in Punjab in the near future does not seem easy, without confronting pro-natal norms, particularly son preference, and addressing health concerns including possible side effects. Towns and cities in the state are virtually free from any opposition to family planning methods, reluctance to use them because of side effects and method inconvenience when compared to villages. Avenues for direct action by the state for removing bottlenecks is limited, as, over time, opposition to contraception (by religion, family and husband) and method-inconvenience are on the decline in recent times, as indicated by NFHS. Discontinuation of the used method also throws insight into programme dynamics, and rural as well as urban areas record similar patterns of discontinuation in Punjab. Couples mostly discontinue family planning when they want to have a child (19%) or when the husband is away (16%), though side effect is also a significant factor.

Social, Economic and Demographic Differentials

Socio-economic differentials in family planning practice are distinct in Punjab, as evident from NFHS. Acceptance of traditional methods of family planning, surprisingly, is much higher in urban than in rural areas, whereas in modern methods there is little gap in rural and urban use. While female sterilization is the most popular modern method in rural areas (with 64% of couples using them), in urban areas the condom is used extensively (by 33% of couples). Couple-protection rate through use of modern methods is lowest among Muslim women (32%) and women with middle school education (48%). Women from Scheduled Castes, Other Backward Castes, and households with low standard of living have also been observed to use contraception to a lesser degree than other women in the state.



Source: National Family Health Survey 2.

The family planning programme in Punjab is also influenced by son-preference, as opting for contraception or not by couples depends to a large extent not only on the total number of living children but also on the number of living son(s). As NFHS indicates, a strong correlation also exists between the sex composition of surviving children and methods adopted for family planning (Table 11). Comparison between spacing and terminal methods shows that the acceptance of terminal methods by couples are largely dependent on the needed number of male children in the family. Even such methods as condom and IUD, which often do not finally terminate child-bearing, are used by couples after meeting the targets of family-size in terms of the required number of sons. If the family planning programme in the state has to make further inroads and be sustainable, it must address and confront the gender dimensions.

Both the panels in Table 11 suggest that the 'Two Child Norm' is strongly rooted in the fertility planning of the couples and determines the choice method in Punjab. The idea, highly ingrained in the minds of couples that contraceptives are only meant for use after the birth of at least one child, needs to be changed. It also confirms that there exists vast scope in the state for increased family planning practices among couples. At least, spacing methods, such as the IUD and condom, can be more vigorously promoted in the state, particularly among women with no child, one child and two children. If method-specific concerns are dealt with properly, the pill could also be reasonably promoted among women. This perhaps will have a direct impact on the level of unmet need that has been earlier recorded in the state.

Table 11
Current Acceptors of Modern Methods
by Number of Living Children by Sex in Punjab (1996-97 and 1998-99)

No of living children	NFHS (1998-99)					MOHFW (1996-97)		
	Pill	IUD	Condom	Female sterilization	Male sterilization	IUD	Female sterilization	Male sterilization
No children	0.0	0.0	2.8	0.0	0.0	0.1	0.0	0.0
1 child	3.5	8.2	13.8	1.1	0.8	36.8	0.9	0.7
1 son	4.1	11.8	11.8	1.1	0.9	--	--	--
1 daughter	2.7	3.6	16.4	1.2	0.7	--	--	--
2 children	4.0	11.5	22.6	20.2	1.3	41.2	40.3	39.1
2 sons	2.6	11.7	15.6	37.5	2.0	--	--	--
2 daughters	0.0	4.7	15.8	2.2	0.0	--	--	--
1 son and 1 daughter	5.5	12.7	28.2	12.9	1.1	--	--	--

Source: NFHS: National Family Health Survey, MOHFW: Ministry of Health and Family Welfare, Government of India.

Note: 1. '--' Indicates data not available.
 2. Figures are in per cent.

SEX RATIOS, SEX PREFERENCE AND SEX SELECTIVE ABORTIONS

The sex composition of the population is an important indicator of social development and in most populations females exceed males numerically. But, In India, the sex-ratio (defined as number of females per 1,000 males) has been low consistently for a long time and in some states it continues to be a demographic enigma. For Punjab, the recent census shows declining sex ratios for total as well as the child population (0-6 age group) in contrast to the earlier ones since 1911, which had been consistently indicating a rise in the sex-ratio for the total population. During 1991-2001, while the situation in India was moderately increasing femininity of the total population simultaneously with rising masculinity of the child population, in Punjab it was increasing masculinity for both the groups. From a national perspective decline in the sex-ratio is common in the northwest region, and intense in Punjab and its neighbourhood.

Punjab is conspicuous in the country for a systematic and greater masculinity of the entire population, particularly among children. For example, among the 593 districts India, seven out of ten, with extreme low child sex ratios in 2001, were in Punjab, including the lowest one. Examination of data on sex-ratio trends confirms that the problem of sex-ratio imbalance in Punjab is not a recent one (Table 12). Dynamics of sex ratio are complex and broadly explained in terms of variations in sex composition of births, sex differences in mortality, sex discrepancies in enumeration and sex pattern of net migration. Being proximate, these factors are responses to some ultimate social, economic, cultural and technological changes taking place in the society. In the absence of more recent data on sex-specific coverage in the census, migration trends for both the sexes in the inter-censal period, and detailed age and sex composition of the population, it is difficult to attribute the part played by each of the above factors. However, the emerging pattern of sex-ratio imbalances in Punjab can continue to be comprehended to a large extent by concentrating on trends in child sex ratio.

Though masculinity in child sex ratio has been observed in Punjab since 1961, the situation seems to have worsened faster after 1981, with the femininity level in child population dropping to as low as 793 females per 1,000 males in 2001. Analysis of census-based sex ratio indicates virtually no change in the already high masculine child population between 1961 and 1971 (Table 12). The child sex ratio seems to be stabilizing around 900 except for an upward fluctuation in 1981, after which a drastic increase in the child sex ratio appears to have been taking place in Punjab, leaving behind the 1991 sex ratios, at a much higher level. Since the 1960s, three phases can be sharply identified in the history of child sex ratio in Punjab: i) 1961-81, ii) 1981-91 and iii) 1991-2001. The first phase saw the sex ratio stabilizing somewhat at a higher level. The second phase was when the seeds of the current imbalance were sown with the sex ratio beginning to rise. The third phase was the culmination of the imbalance through accentuation and consolidation. All these phases can be directly related to the emergence and popularity of sex-determination tests in North India in general, and Punjab in particular. For example, in the early 1980s sex-determination tests were just descending upon the region, whereas in the 1990s their popularity was established beyond doubt.

Table 12
Levels and Trends in Sex Ratio in India and Punjab (1961-2001)

Year	India		Punjab	
	All ages	Children (0-6)	All ages	Children (0-6)
1961	941	976	854	901
1971	930	964	865	901
1981	934	962	879	908
1991	927	945	882	875
2001	933	927	874	793

Source: *Provisional Population Totals, Paper 1 of 2001, Census of India 2001, India and Punjab.*

There is no evidence of large-scale selective migration in favour of male children in Punjab, and the gender difference in enumeration is also not considered a significant explanation of child sex ratio imbalance here, like elsewhere (Visaria 1971, Miller 1981, Krishnaji 2001), even if the census-recorded sex ratios often under-report females (Natarajan 1972, Premi 1991), specifically in early age. This leaves the sex ratio at birth (SRB) and excess female childhood mortality as the two main factors influencing child sex ratio in Punjab, their relative contribution varying from one place to the other depending on the local environment.

Sex Ratio at Birth

Data on sex ratio at birth from more than one source, with all the shortcomings taken into account, indicate an overall tilt in favour of males rising faster in the recent period in Punjab (Table 13). In addition to specifying the origin of scarcity of females to the numerical deficiency at birth, they also indicate the changes that are currently under way in the sex composition of births, leading to a rapid decline in the femininity of the child population. For instance, masculinity at birth increased by nine per cent in Punjab as against one per cent in India between 1981-90 and 1996-98, according to SRS. Based on these indications, there is need to reflect, in the first place, on as to why the sex ratio at birth is so much biased in favour of males in Punjab, and what are the reasons for it

being increasingly so in the recent past? There is little evidence, till now, in contemporary demographic literature that suggests a strong deviation in the sex composition of births from the biologically established 'norm' of 105-106 males per 100 females in Punjab. Analysis of historical sex ratios at birth for Punjab, though not conclusive, implies no reason why a surplus of male births was prevalent in colonial Punjab, as some would suggest. Annual fluctuations, coverage-error, recall lapse and classification of births either into live or still, etc., cannot justify the rise of the magnitude of sex ratio at birth (SRB) that is being witnessed since the early 1980s. The cause of this unusual increase in the surplus of male babies at the time of birth can less likely be described in terms of any biological or medical perspective, that would answer why women in Punjab have the higher probability of giving birth to male offspring(s) than their counterparts elsewhere in India.

Table 13
Levels and Trends in Sex Ratio at Birth (SRB) in India and Punjab (1972-81 to 1999)

State	Sample Registration System (SRS)		National Family Health Survey (NFHS)			Civil Registration System (CRS)				
	1981	1996	1972	1982	1993-97	1995	1996	1997	1998	1999
	- 90	- 98	- 81	- 91						
Punjab	113	123	106	118	114	129	132	133	126	128
India	110	111	107	106	107	--	--	--	--	--

Source: 1. *Sample Registration System (SRS)*, Registrar General, India.
2. *National Family Health Survey (NFHS) 1992-93: India and different states.*
3. *National Family Health Survey (NFHS 2) 1998-99: India and different states.*

Note: 1. Sex ratio at birth (SRB) is defined as number of males per 100 females.
2. '--' indicates data not available.

The SRB is a direct manifestation of sex ratio at the time of conception. If social, cultural, environmental and biological factors that selectively affect the conception and carriage of female foetus to full term are absent, then higher than a 'normal' SRB is less probable. Being 'secondary' in nature, SRB is greatly affected by what happens to the 'primary' sex ratio (the ratio of conception) and to pregnancies. With medical evidence that endogenous factors are more hostile to the survival of male babies, not only in pregnancy but also during four weeks after birth, one expects the male (numerical) advantage at the time of conception to prevail, but at a lesser level, conforming to the 'normal' SRB. But the fact that in Punjab the male advantage is more than 'normal' at the time of birth, gives currency to the argument that a significant share of females are lost either at the time of conception or during pregnancy. Widely available sex-selection technologies, at affordable prices, till recently with little social or legal hurdles, seem to have made intervention possible for couples, either at conception or during early pregnancy.

Another route by which SRB affects child sex ratio is through its extended impact on the order of birth. In the absence of any intervention, biological or behavioural, in the process of conception and pregnancy, the sex ratio at the time of birth tends to be less masculine, or at least remains constant with the rise in the order of birth, as the later-borns are more likely to be girls than boys (Klassen 1994). Hence, it may be assumed that in high-fertility populations, more births per woman means a natural cushion against masculinity. With fertility transition under way, higher order births are being stopped

faster in Punjab than in India as a whole, leading to the preponderance of the first- and second-order births, as seen in NFHS. So, on the basis of this biological lead, one would have expected that the fertility decline in these two populations might have had a natural and independent diminution effect on the femininity of the child population, depending on its frequency. It is necessary to verify this possible effect.

Higher Female Childhood Mortality

In addition to the sex ratio at birth, the other distortion in child sex ratio comes from excess female child mortality (discussed earlier in detail). Though young-age children from both the sexes have gained in chances of survival, especially during the past two decades, improvements in mortality conditions have not been able to wipe out the excess female disadvantage that has long characterized mortality in Punjab. The persistent higher death rate for the girl child, relative to the opposite sex, highlights the setback that young female members of households have to face. Shortages of females, at birth and at early age, create numerical disparity in the childhood for each cohort, difficult to alter subsequently.

Sex Preference

Changes in sex ratio are linked to the overall preference for the male child in Punjab. Strong male dominance in mediaeval history, extending up to the modern period, has characterized the state. Regular invasions from across the border, male-oriented agricultural system, presence of sizeable sections of lower-caste population, focus on male-centric rituals and kinship systems, absence of strong social reform movements, etc., have contributed to higher value of the male child in traditional Punjabi society. In modern Punjab, in spite of the rise in female education and legal support, there are many reasons, in popular perception, for not having a female child. Here, the position of the daughter-in-law in the family is defined, on her arrival, to the culturally-sanctioned urgency of producing a child, preferably a son.

In spite of economic progress, institutional arrangements, constitutional support and educational campaigns, preference for a male child among the couples still persists extensively in Punjab. As indicated by two sets of NFHS, for couples in the state, in 1999, the mean ideal number of children, on an average, was 2.3, which consisted of 1.2 sons, 0.8 daughters and 0.3 children of either sex. In 1993, the mean ideal number was 2.6 with 1.5 sons, 0.9 daughters and 0.2 children of either sex. The fact that among ever-married women in 1999, 86.2 per cent of the couples wanted at least a son and 78.0 per cent at least a daughter, 29.1 per cent wanted more sons than daughters and 0.4 per cent more daughters than the sons, highlights how the desire for a male child is endemic in Punjab.

Sex-Selective Abortions

Desire for a male child being strong and the sex ratio at birth increasingly turning masculine in Punjab, it is likely that a sizeable share of female fetuses are terminated during pregnancy. Data on the nature and scale of abortions in Punjab, as revealed by recent surveys, do not indicate such a scale of pregnancy terminations as to result in a highly masculine sex ratio at birth. Recent large-scale surveys data are silent on the sex composition of induced abortions, though they establish a somewhat higher incidence of such abortions in Punjab than the national average. Direct data too suggest acceleration

in induced abortions in Punjab between 1992-93 and 1998-99 (Table 14), in line with the expected impact of the proliferation of sex-determination clinics and their users in the 1990s. However, much depends on the scale of sex-determination tests, on which empirical evidence is hard to come across. The sensitive nature of abortion in Indian society, along with related reporting errors, often makes it difficult to collect meaningful and realistic data on pregnancy histories in large-scale surveys.

Table 14
Levels and Trends in Pregnancy Outcomes
for Ever-married Women in India and Punjab (1992-93 to 1998-99)

Nature of outcome	Punjab	India	Punjab		India	
	Last pregnancy after 1.1.95		1992-93	1998-99	1992-93	1998-99
Spontaneous abortion	4.3	1.9	3.1	4.1	4.5	4.4
Induced abortion	6.0	1.1	1.7	3.0	1.3	1.7
Still birth	1.0	0.8	3.2	2.9	2.3	2.0
Live birth	88.7	96.2	92.0	90.0	92.0	91.9
All	100.0	100.0	100.0	100.0	100.0	100.0

Source: 1. *National Family Health Survey (NFHS) 1992-93 and 1998-99: India and Punjab.*
2. *Rapid Household Survey (RHS), Phase I, India, 1998.*

Note: Figures are in percent.

Notwithstanding the above statistics, most likely underestimates, induced abortion is well accepted in Punjab across major religious communities, castes and economic groups. A recent survey in rural Rupnagar shows that among 1,004 currently married women with youngest child aged two or less, a total of 7.6 per cent had induced abortions, with 78 per cent only once, 13 per cent twice, and 1.3 per cent more than twice up to the time of the survey. Women in socially backward communities and landless households have been observed resorting to voluntary termination of pregnancy frequently (PRC, 1999). The motives, methods and consequences of such sex-selective abortions need to be examined.

AGEING AND ITS IMPLICATIONS

Demographic transition has the inevitable consequence of population ageing. This is because of the absence of substantial in-migration of younger population and falling mortality and fertility. When a society, with a sizeable share of younger population, is transformed into another with a sizeable share of older population, the average age of the entire population rises. In India, high fertility maintains youthfulness of the population. With the onset of fertility and adult mortality decline, the percentage share of the aged, 60 years and above, in the total population increased from 5.63 in 1961 to 6.70 in 1991 and to 7.90 in 1998-99. Punjab has a higher share of the aged in its population (7.84%) after Kerala (8.82%) and Himachal Pradesh (8.12%) among the major states in India as per the 1991 Census. The most recent estimate from NFHS puts the proportion of population in the age group 60 and above in Punjab at 11.2 in 1998-99. Existing projections also indicate a consistent rise in the proportion of elderly population in India and in the states. Notwithstanding the low percentage of the elderly in India at present, the issue of ageing assumes added significance due to their sheer number in

absolute terms, greater incidence of poverty, wider vulnerability and lack of social security in old age in a fast changing social structure and extensive disparity among the regions.

Expectation of Life

Improvements in living conditions and health have continuously led to reduction in overall mortality levels across sections of the society and this has resulted in, on an average, a longer life span of individuals in Punjab. The fact that mortality declines in the state have immensely contributed to population-ageing is clear from the data on rising expectation of life at birth, at ages 60, 65 and 70 and above, between 1970-75 and 1991-95 (Table 15). In the background of national gains in longevity for both sexes, increments in life expectancy have been much higher in Punjab. Females in the state benefited more than males from the increase in life expectancy in tune with the national trend between 1970-75 and 1991-95. In approximately 21 years, addition to female life expectancy has exceeded the addition to male life expectancy at birth and at selected ages. Males and females in Punjab have had their longevity increased by 18 per cent and 24 per cent as against 12 per cent and 20 per cent at the all-India level during this period, making gains of 9.2 and 11.9 years and 7.1 and 11.6 years respectively.

Table 15
Male and Female Life Expectancy (in years) at
Birth and at Selected Ages in India and Punjab (1970-75 to 1991-95)

At age (in years)	Period	India		Punjab	
		Male	Female	Male	Female
0	1970-75	50.5	49.0	59.0	56.8
	1976-80	52.5	52.1	60.9	60.2
	1981-85	55.4	55.7	62.6	63.6
	1986-90	57.7	58.1	64.7	66.9
	1991-95	59.7	60.9	66.1	68.4
	Increase between 1970-75 and 1991-95	9.2	11.9	7.1	11.6
60	1970-75	13.4	14.3	16.6	16.0
	1976-80	14.1	15.9	17.1	19.0
	1981-85	14.6	16.4	16.9	19.3
	1986-90	14.7	16.1	19.0	21.2
	1991-95	15.3	17.1	20.7	20.8
	Increase between 1970-75 and 1991-95	1.9	2.8	4.1	4.8
65	1970-75	10.9	11.6	13.2	12.2
	1976-80	11.7	13.2	13.8	15.5
	1981-85	12.0	13.6	13.6	15.7
	1986-90	11.9	12.9	16.1	17.6
	1991-95	12.5	13.9	18.0	17.5
	Increase between 1970-75 and 1991-95	1.6	2.3	4.8	5.3
70+	1970-75	8.6	9.2	10.4	8.8
	1976-80	9.6	10.9	10.5	11.8
	1981-85	9.7	11.0	10.3	12.3
	1986-90	9.4	10.0	13.2	14.4
	1991-95	10.0	11.0	15.5	14.4
	Increase between 1970-75 and 1991-95	1.4	1.8	5.1	5.6

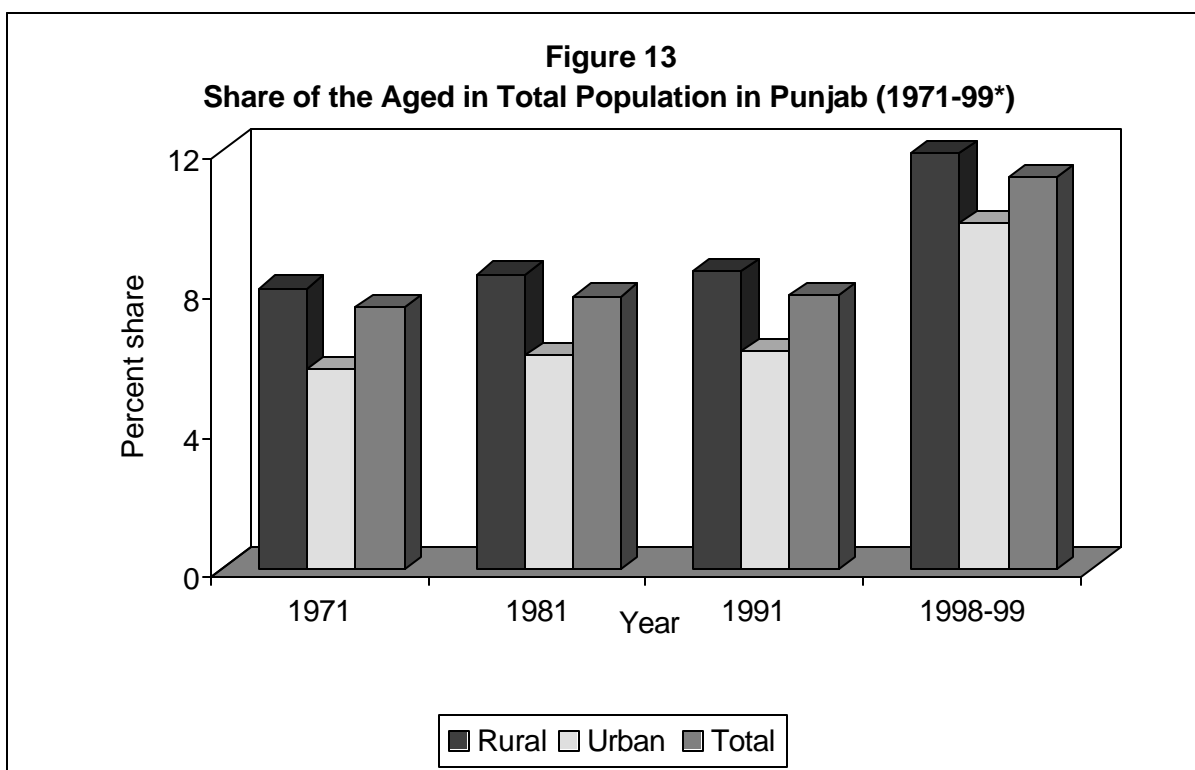
Source: Ageing Population of India: An Analysis of 1991 Census Data, Registrar General, India.

With gains in average life expectancy being substantial in the state as observed, survival to a higher age is increasing and causing a continuous rise in numbers and percentages of persons aged 60 and above in both rural and urban areas (Table 16, Figures 5 and 6). Rise in the share of male and female elderly in Punjab, when considered in the national context, is on the higher side. In 20 years, the old age population has increased by 57 per cent in the state from 1.01 million in 1971 to 1.59 million in 1991.

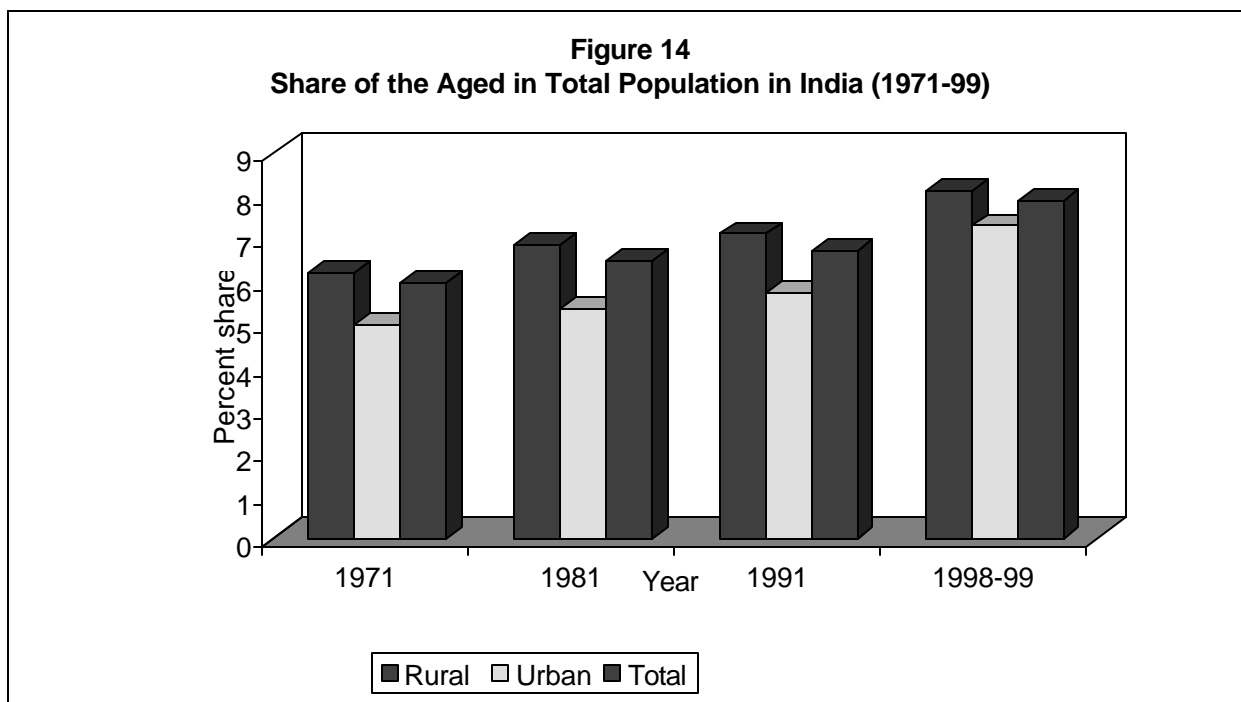
Table 16
Trends in the Percent Share of Persons 60 and
above in Rural and Urban Areas in India and Punjab (1971 to 1998-99)

Year	Punjab			India		
	Rural	Urban	Total	Rural	Urban	Total
1971	8.03	5.72	7.48	6.21	4.98	5.97
1981	8.44	6.12	7.80	6.84	5.36	6.49
1991	8.51	6.25	7.84	7.11	5.75	6.70
1998-99	11.90	9.90	11.20	8.10	7.30	7.90*

Source: 1. *Ageing Population of India: An Analysis of 1991 Census Data*, Registrar General, India.
 2. *National Family Health Survey 2: India and Punjab.*



Source: 1. *Ageing Population of India: An Analysis of 1991 Census Data*, Registrar General, India.
 2. *National Family Health Survey 2: India and Punjab.*



Source: 1. *Ageing Population of India: An Analysis of 1991 Census Data*, Registrar General, India.
2. *National Family Health Survey 2: India and Punjab*.

In 20 years since 1971, the average annual growth rate, among the elderly in Punjab, has changed considerably in terms of both sex and age. Growth in the population of elderly women not only surpassed that of the elderly male but also of the female population of all ages (Table 17). Among both male and female elderly population, growth rates of the 'young-old' population (aged 60-79) exceeded those of the 'old-old' (aged 80 and above).

Table 17
Average Annual Growth Rate of Aged Population in India and Punjab (1971-91)

Age (in completed years)	Punjab		India	
	Male	Female	Male	Female
60+	2.28	3.65	3.70	3.63
All ages	2.42	2.56	2.73	2.70
60-69	2.23	3.75	3.27	3.40
70-79	2.57	3.97	4.12	3.97
80-89	2.04	3.03	5.93	4.54
90-99	1.89	3.07	5.39	4.16
100+	0.12	-1.09	1.25	0.47

Source: *Ageing Population of India: An Analysis of 1991 Census Data*, Registrar General, India.

Note: Figures are in per cent.

Implications of Ageing and Need for Suitable Measures

Rise in the proportion of the elderly in the scale observed and expected in Punjab, has multifaceted consequences that need to be addressed seriously. These broadly relate to continuous social, economic, cultural, technological, and health transformations in the society. Specifically, these implications can be elaborated as changes in marital status, newer living arrangements, widespread age and gender discrimination, ongoing epidemiological transition, frequent loneliness and depression, impairment of functional status leading to disability, lowering of socio-economic status, decline in family support, non-availability of social security, lack of care-giving, vulnerability to natural disasters, etc. Unfortunately, for the population in Punjab, not much is known of these aspects and there is need for more research and documentation in these areas for effective intervention.

While dealing with ageing in Punjab, lessons have to be drawn from other ageing societies, so that the mistakes of treating the problem primarily as an issue of health care and economic empowerment, must not be repeated in policy planning for the elderly. In addition to these two aspects, the social and emotional dimension of ageing must be addressed, if its onslaught is to be effectively dealt with. Foundations for a new philosophy of ageing are essential for a regime of 'productive ageing' where older persons are active contributors rather than mere consumers.

At the national level, the National Policy on Older Persons (NPOP), announced in 1999, recommends a series of steps that help to deal with issues related to ageing. In Punjab, there is need to assess the progress that has been made till date, under NPOP, to encourage individuals to make provision for their own as well as their spouse's old age, and other old family members; ensure primacy of non-institutional care, added protection for vulnerable elderly such as widows, frail, handicapped, abused and destitute, promotion of geriatric health care and services, monitoring, evaluation and up-gradation of services for the elderly, fostering of inter-sectoral partnership and spread of awareness for the elderly. Involvement of the district administration, local self-government, NGOs and *Panchayati Raj* institutions and self-help groups in devising integrated programmes, also need to be examined along with progress in the establishment of old age homes. Such an evaluation will make the initiatives and measures more meaningful and relevant to the needs and welfare of the aged.

REGIONAL DEMOGRAPHIC DISPARITY

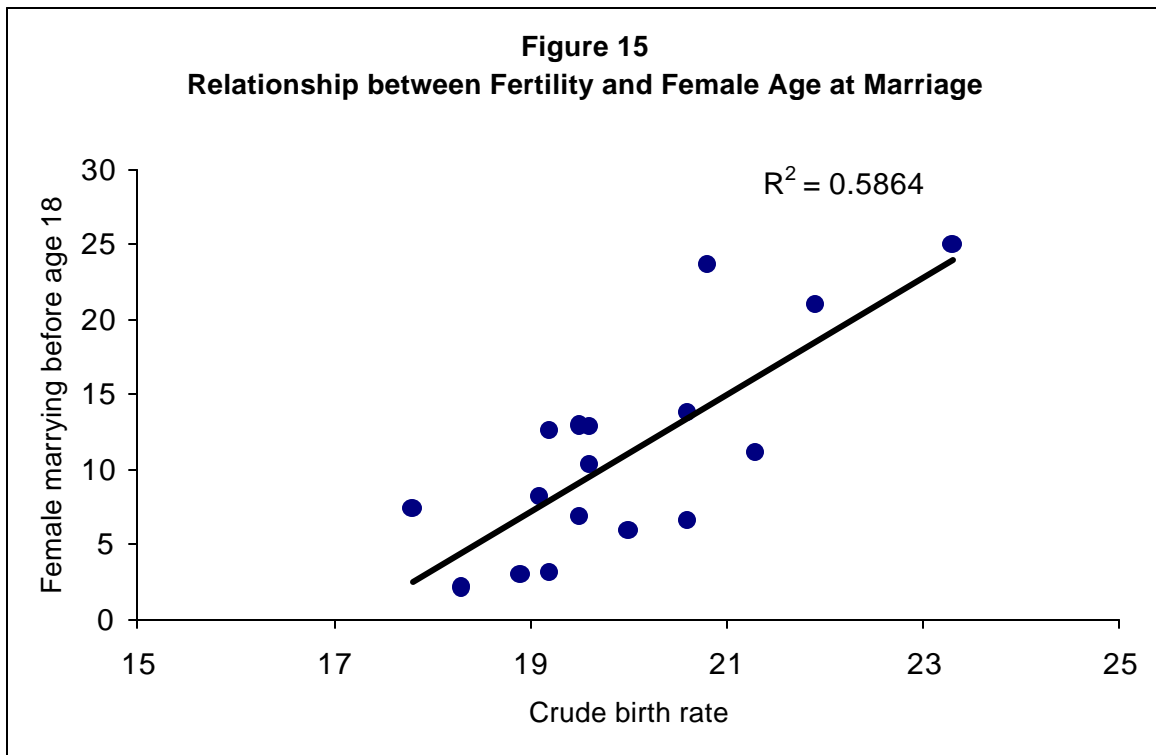
Like every major state in India, the demographic situation in Punjab is very different across communities, rural and urban areas and administrative units. Serious difficulties are encountered while capturing these variations meaningfully, even if they are useful for policy planning and programme implementation. One such constraint is lack of appropriate data for smaller units, particularly for districts that are at the hub of decentralized planning. Selected information from some recent surveys and estimations are by and large meaningful overview the demographic disparity in Punjab, which are manifestations of social, economic, cultural and other diversities.

Data on selected indicators reflect the demographic heterogeneity in Punjab. Lower rates of growth in Nawasahar (1.04%), Hoshiarpur (1.38%) and Moga (1.39%), and

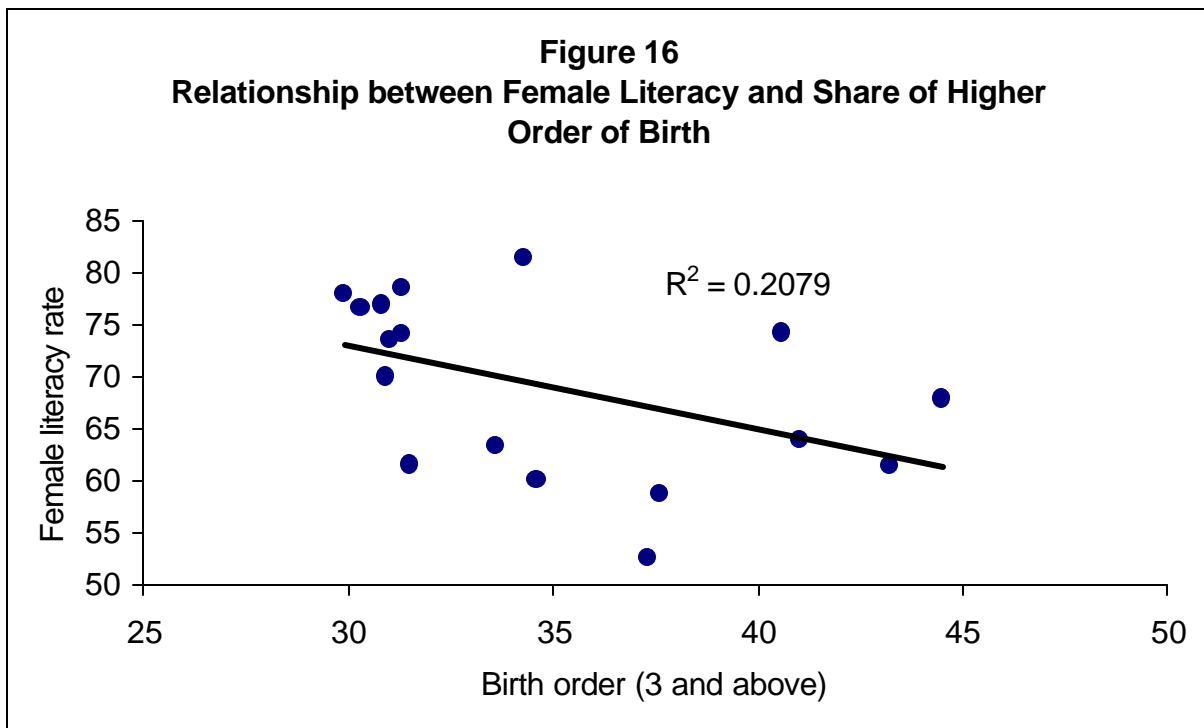
higher rates in Ludhiana (2.45%), Rupnagar (2.34%) and Amritsar (2.27%), as against the state average (1.98%) for the total population during 1991-2001 indicate the varied demographic situation. Even if fertility is declining in Punjab, variations in the fertility are still considerable. Recent indirect estimates (Guilmoto et al. 2002) indicate total fertility to range from as low as 2.1 in Jalandhar to as high as 2.8 in Firozpur in 2001; with districts in central Punjab recording lower TFRs (2.2 in Kapurthala and Nawasahar, and 2.3 in Hoshiarpur, Ludhiana) than their counterparts elsewhere. Data on birth-order indicate that in the high fertility districts a substantial share of women depart from the two-child norm and have more of higher-order births. For example, 45 per cent of births are third and higher order in Amritsar as opposed to 30 per cent in Jalandhar. Other districts where third and higher order births are sizeable in the state (36.0%) are Firozpur (43%), Moga (41%), Gurdaspur (41%), Mansa (37%) and Muktsar (38%), according to data from the 1998 Rapid Household Survey (RHS). District-level regression of fertility on some selected socio-economic variables for 1991 indicate that fertility is significantly correlated with female literacy rate, female mean age at marriage, percentage of married females in the age group 15-19, percentage of households with electricity connections, percentage of households living in *pucca* households (Registrar General, India 1997).

Variations in family planning practice, as a proximate determinant of fertility, can directly account for some inter-district differences. While on the whole Punjab has a higher level of contraception, couples in Rupnagar (71%) and Bhatinda (69%) were greater users of family planning methods than the couples in Mansa (64%), Moga (64%) and Firozpur (62%) in 1998. It is interesting to note that some low-fertility districts, namely, Jalandhar (65.0%), Hoshiarpur (64%), Kapurthala (63%) and Nawansahar (65%) are not at the top of family planning use. Age at marriage, a direct element in demographic change, varies considerably in Punjab. Districts where females marry earlier, before the legal minimum age 18, are mostly confined to the southwest (Firozpur, Mansa, Moga, Bhatinda and Faridkot). District level changes in the child sex ratio in Punjab can be viewed through the sex ratio at birth available from the Civil Registration System (CRS 1999), in spite of its inadequacies. Bhatinda (135), Mansa (135), Sangrur (137) and Patiala (136), all in the west, have very high masculine sex ratio (males per 100 females) at birth. Interestingly, in none of these districts reporting masculine sex ratio at birth, induced abortion is higher than the state average, except for Patiala, according to the 1998 RHS. On the contrary, the percentage of pregnancies deliberately aborted is reported to be high in Kapurthala (5.8), Jalandhar (5.1), Fatehgarh Sahib (5.0), and Amritsar (4.9).

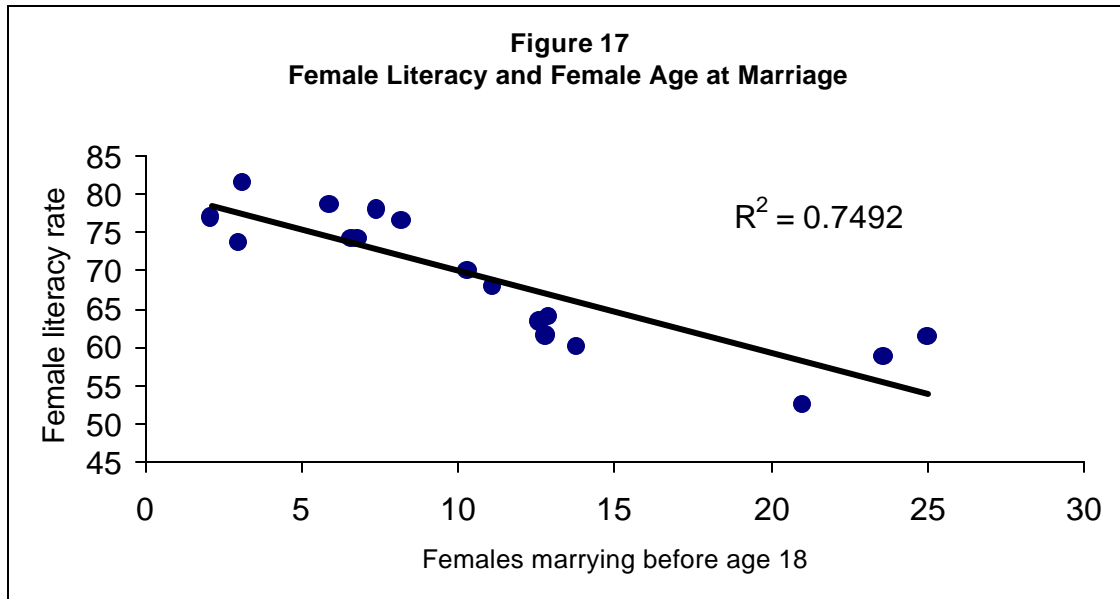
Correlation of some demographic variables with others at the district level reveals deficiencies of the quality of data and establishes the complexity of relationships in Punjab. In some cases the relationship is clear (Figures 15, 16, 17, 18 and 19), whereas in others (between sex ratio at birth and child sex ratio) it is intricate. Such patterns among demographic and socio-economic variables need elaboration and reinforce the need for policy interventions to be specific rather than grossly uniform across the state.



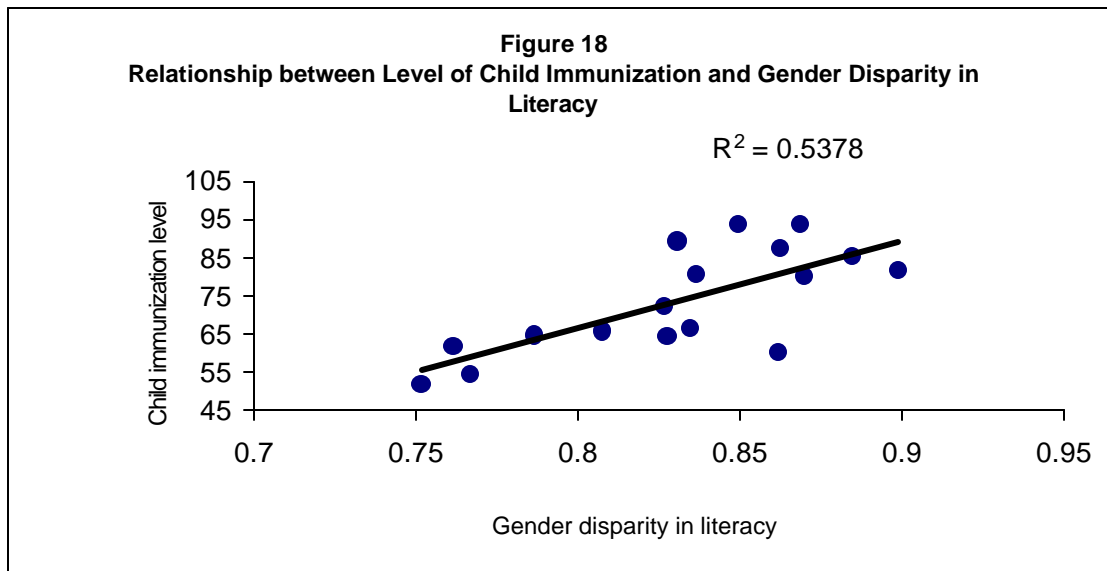
Source: *Rapid Household Survey (RHS), 1998.*



Source: *Rapid Household Survey (RHS), 1998.*



Source: *Rapid Household Survey (RHS), 1998.*



Source: 1. *Rapid Household Survey (RHS), 1998.*
2. *Provisional Population Totals, Paper 1, Punjab, Census of India 2001.*

POPULATION MIGRATION

Migration as an element of population change can play a significant role in social and economic development. For a variety of reasons, the perception about migrants is different across the society leading to debate about their contribution. Assessing the migration pattern in Punjab is difficult at this point of time, partly because the 2001 Census data on migration are not yet available to reflect recent changes in the mobility in the 1990s, and 1991 data on migration seem to be relatively old. However, existing

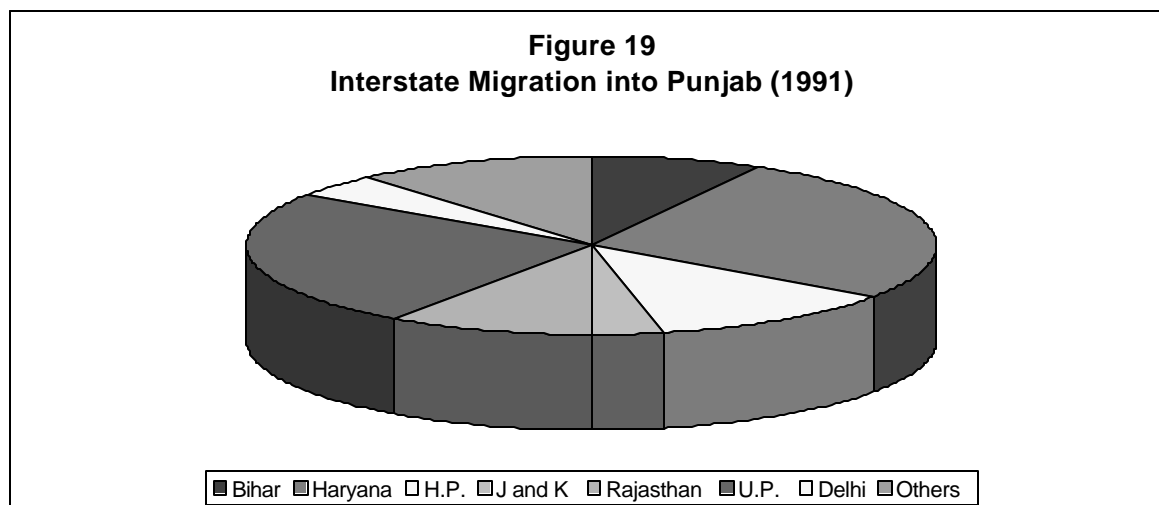
migration statistics may describe some of the patterns that have confronted Punjab till recently.

Migration into Punjab needs to be examined in terms of domestic and international sources. Depending on the definition, based either on place of birth or on place of last residence, used to measure migration in India, the 1991 Census enumerated 1.12-1.13 million interstate migrants into Punjab, who came from other states and Union Territories in India as compared to 0.87-0.89 million in 1981 and 0.58-0.64 million in 1971. Such migrants constituted 5.5 per cent of the total population in the state in 1991, 5.3 per cent in 1981 and 4.3 per cent in 1971. Sources of inflow indicate that the majority of domestic migrants into Punjab are from the adjoining and neighbouring states and Union Territories (Table 18). The only far-away locations from where people move in large numbers into Punjab are either in Bihar and Uttar Pradesh, which, together with the adjoining states and Union Territories, account for a little less than 90 per cent of interstate migrants into Punjab (Figure 19).

Table 18
Trends in Interstate Migration into Punjab (1971-1991)

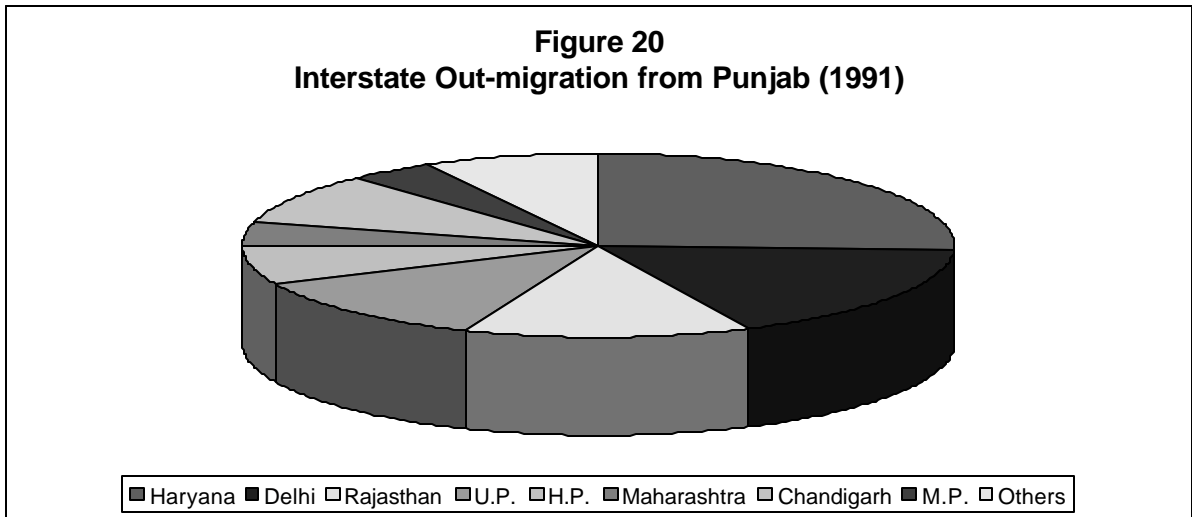
Origin of migration	1971		1981		1991	
	Place of birth	Place of last residence	Place of birth	Place of last residence	Place of birth	Place of last residence
Bihar	1.3	1.3	5.8	5.4	8.1	7.9
Haryana	31.0	32.5	28.4	29.4	26.5	26.6
H. P.	15.4	13.7	12.9	12.1	12.1	11.7
J. & K.	4.5	4.1	3.5	3.4	3.2	3.2
Rajasthan	10.0	11.7	10.5	10.3	9.8	9.7
U. P.	24.0	22.4	25.2	24.0	24.9	24.4
Delhi	4.2	5.7	4.2	4.7	4.1	4.4
Others States and UTs in India	9.6	8.6	9.5	10.7	11.3	12.1
All interstate migrants	100.0 (584853)	100.0 (636230)	100.0 (872377)	100.0 (887492)	100.0 (1126149)	100.0 (1120282)

Source: Census of India 1971, 1981, 1991: Punjab.



Source: Census of India.

Figure 20
Interstate Out-migration from Punjab (1991)



Source: *Census of India.*

Migration from across the border is negligible in Punjab. For 1971, 1981 and 1991, the total immigration (from the countries of Asia, Africa, Americas, Europe and Oceania) into Punjab has been estimated as 1.1 million, 0.87 million and 0.55 million respectively, according to the place-of-birth definition, and 0.81 million, 0.68 million and 0.47 million respectively, according to the place-of-last residence definition. Inflow of such magnitude may appear sizeable in absolute terms, but the reality is that a bulk of such migration is from a single origin and was a one-time affair as part of a tumultuous event in the history of India--partition and creation of the present day Pakistan--in 1947. The share of the movement from Pakistan in the total international immigration into Punjab remained incredibly high in the post-independence period, declining marginally from 98.5-97.9 per cent in 1971, to 98.3-97.9 per cent in 1981, and to 96.8-96.5 per cent in 1991, depending on the method of measurement. Next to Pakistan, the other source from where more than 10,000 international migrants have come to Punjab is Nepal. It is extremely difficult to record out-migration from Punjab to destinations outside the country accurately. Data on international out-migration from Punjab is extremely difficult to compile, making the available estimates inadequate and unreliable. Indirect evidence and periodic reports, other than migration statistics, tend to imply a regular and substantial emigration from Punjab, particularly the *Doaba* region.

Economic and social factors motivate people to leave their homes for new destinations, and this is true for migrants heading towards Punjab. Besides being part of the family movement, search for employment and matrimonial alliance are two major reasons why men and women migrate into Punjab. While male migration is mainly employment-related, female migration is predominantly due to marriage. During 1987-88, according to the National Sample Survey (NSS), nearly two-thirds of the male in-migrants explained their movement as primarily employment- and business-related, and 28 per cent associated the moves with family movement. Among female in-migrants, 76 per cent attributed their movement to marriage, and 16 per cent to migration of the family to which they belonged, in the rural areas of Punjab. Similarly, among all urban male in-migrants, 50 per cent cited (better) job prospects as the main reason for relocation, and 30 per cent said that they accompanied their families, as against 43 per cent and 46 per cent of females who gave the main reason as marriage and accompanying their families into towns and cities.

Even if out-migration is considered to be significant in Punjab, reliable data is available only for those going to other place in the country. According to 1991 migration statistics, based on the place-of-birth definition, 1.38 million interstate migrants from Punjab were found in other States and Union Territories. Within India, outward migration from Punjab is mainly directed towards the neighbouring States and Union Territories, which receive a little more than three-fourths of the interstate outflow from Punjab. For example, the most popular destinations outside the state, for those leaving Punjab, are places in Haryana, Delhi, Rajasthan, Uttar Pradesh, Himachal Pradesh, Maharashtra, and Madhya Pradesh. Out of 100 persons migrating from Punjab to different places in India, 26 go to Haryana, 17 to Delhi, 13 to Rajasthan, 12 to Uttar Pradesh, seven to Himachal Pradesh, and four each to Madhya Pradesh and Maharashtra. In the absence of the 1991 data on population movements towards Jammu and Kashmir, if Chandigarh is added to the list of destinations, the above States and Union Territories together are home to 92 per cent of interstate migrants from Punjab. This indicates that as in other states, domestic migration from Punjab is primarily middle- and short-distanced. Since 1971 there has not been any significant change in the inland destinations of migrants from Punjab. They constitute a sizeable proportion in Himachal Pradesh (43%), Haryana (23%), Rajasthan (14%), Uttar Pradesh (9%) and Delhi (7%), and are significant from the point of view of these States and Union Territory, according to the place-of-birth statistics of 1991.

POPULATION POLICIES AND PROGRAMMES: NEED FOR STATE POPULATION POLICY

In the Indian context, the population policy is basically meant to lower fertility through greater family planning efforts. It covers other areas such as marriage, mortality, migration, reproductive and child health, other health care delivery, gender relations, nutrition, community participation and communication that aid reduction in fertility levels. Institutionalization of demographic and related concerns through setting up long-term and short-term goals, organizational arrangements, outlining frameworks for interventions, specification of operational strategies, provision of monitoring and evaluation, and mechanisms of impact-assessments may also be some other elements of such a policy. Programmes are designed and put into practice, by (with support from) the government, to influence demographic structures and trends with or without explicit policy statements to cover relevant tasks.

Scores of programmes, mostly sponsored by the Union Government, address the demographic and related issues of Punjab; some more directly than others. Infrastructure, transport, community participation, women's involvement, health guides, reproductive and child health, school health check-up, training of health workers, post-partum services, contraception, sterilization beds, social marketing, information, education and communication, etc., are some of the critical areas covered in the state by the department of family welfare under a host of schemes. While some of these schemes are evaluated and feedback made available, others need to be examined for making them more effective for promoting health and population outcomes, with or without a population policy for Punjab.

The National Population Policy 2000 (NPP 2000) is a milestone in dealing with issues related to health and family welfare, and reflects the national demographic concerns of

the country. While the NPP 2000 addresses diverse national issues, there is need to prioritize the concerns and focus on the policy options at the state level, for which the state population policy is an excellent instrument. Moreover, as a step towards grassroots planning, it has the advantage of accommodating the district and community level interests singularly. Perhaps this is the reason why state level population policies are being increasingly formulated in India to focus on specific problems in greater detail. Since health is a state subject, such documents are increasingly seen as documents of decentralization, regional planning, integration with the national scene, local commitment, and desire to deal with the problem differently. Formulated in this background, there is neither disagreement nor duplication between the NPP and the state population policies. In fact, the NPP can provide an important framework for the advocacy and operationalization of state population policies, which can supplement the goals of NPP. This synergy between the two is particularly useful when the states are guided and funded by the Union Ministry of Health and Family Welfare in the matters of its concerns.

The states are realising progressively the role of the state population policy in charting out the course of population growth in the context of the commitment to time-bound benchmarks, decentralized planning and socio-economic development. Hence, such states as Gujarat, Karnataka, Madhya Pradesh, Maharashtra, and Rajasthan have already announced their respective state population policies, whereas Haryana, Kerala, Orissa, and Tamil Nadu, Uttar Pradesh are in the process of drafting them. In the long term, health and demographic programmes, tailored to the goals enunciated in the state population policy, are to provide continuity to population stabilization efforts. Realization of the spirit of the SPP is a step forward in shaping the demographic dimensions in tune with welfare, as well as sustainable development objectives. However, in spite of the centrality of demographic issues in public policy measures, Punjab has not yet come out with a population policy. While initiatives have reportedly been taken in this regard in drafting the policy, the government is yet to adopt it, and the details have not been made public for initiating debates and discussions in relevant circles. Some recent developments, particularly in the field of data availability from the Census of India 2001, National Family Health Survey (NFHS), Rapid Household Survey (RHS) and completion of a set of thematic in-depth studies at the micro-level, perhaps fulfill the primary information needs for such a policy at the state level.

Creation of institutions, such as State Population Commission, not necessarily in the pattern of the National Population Commission, can also help in need-assessment and envisaging near- and far-term objectives for the state. With adequate provision of inter-sectoral co-operation beyond official organs, such a commission can foster and mobilize the desired impact. If needed, a special piece of legislation on the subject can also motivate the government. These steps would presuppose not only a non-traditional approach and strong political commitment, but also critical evaluation of the efforts undertaken till date.

DEMOGRAPHIC CHALLENGES AND OPPORTUNITIES: PERSPECTIVES FOR FUTURE

Attempts at greater economic and social development in Punjab must also include focus on demographic dynamics. The demographic challenges the state faces today are manifold and steps are needed to address these concerns. Demographic goals may be easily articulated, quantified and enunciated in policy documents, but translating them into reality is difficult. Bringing about desired behavioural changes in the target population is complex and time-intensive. This is why demographic programmes have long gestation periods for yielding results. Moreover, unlike other areas, the spillovers are crucial to demographic attainments and there is a great deal of interdependence between population dynamics in the state and events outside. As elsewhere, anchored strongly in the economic and social conditions of the people, the fate of demographic development in the state is going to be profoundly influenced by the strategies of economic development and overall improvement in living standards.

The contours of population planning must go beyond the goals set in the National Population Policy and cover grounds that are central to larger issues of human development. Some of the direct and foreseeable demographic challenges that Punjab faces today can be outlined as attainment of replacement level of fertility, elimination of early-age child-bearing, reducing infant and childhood mortality coupled with excess female disadvantage, getting rid of sex-selection during conception and practice of female foeticides, balancing a skewed sex ratio that is highly masculine among children, eliminating extensive son-preference, raising low hospital delivery rates resulting in undesirable maternal deaths, changing the unfavourable demographic regime among socially and economically weaker sections, meeting the unmet need for contraception, promoting men's participation in family planning, removal of regional demographic disparities, and preparations for dealing with an ageing population. At one level, these thematic areas must be at the core of a series of actions by the state, whereas at the other, some critical areas should be simultaneously considered to make the thematic outcomes successful. There are listed below.

Restoration of public confidence in government's health sector is a daunting task and has implications for achievement of demographic goals in the state. In rural areas, Community Health Centres, Primary Health Centres, Subsidiary Health Centres, and Sub-centres are not fully equipped to respond to people's needs and are known to have constraints that prevent optimum utilization of their services. Since family planning is largely seen as the government's initiative and is implemented through the health department, health sector performance is critical to the success of the family planning programme.

Another area, which merits serious attention, is the need for greater public participation. Broad-basing community participation implies not only greater involvement in programme-implementation but in policy formulation as well. Schemes do not succeed because they do not reflect the needs and concerns of the people with changing times. Programmes are not altered in tune with the changing reality in rural or in urban areas. With the 73rd and 74th Constitutional Amendments providing a framework for grassroots devolution and local participation, efforts to stabilize population can only succeed if the functions, functionaries and funds are used in keeping with expectations of the public at all levels. Related with this is the identification of fringe and vulnerable groups and

ensuring that their legitimate interests are well represented in programme formulation and implementation. Scheduled Caste population, migrant groups, landless households, slum dwellers, etc., constitute such marginalized sections whose demographic profiles might need more attention. Creating adequate opportunities for these groups and safeguarding their interests are also major tasks of the future for achieving demographic goals. The current programme interventions do not address gender disparities adequately. Much of the success in population and related programmes depends on how the issues that confront women and children are reflected in the policy and programme priorities. Since women are at the centre of demographic change, creating a mechanism that is sensitized towards their position in society, will also determine the success of initiatives by the government.

Reliable, long-term and cross-sectional data aid demographic assessments, make policy formulations and programme interventions accurate as well as focused. In Punjab, there is need to encourage indigenous data generation, particularly in the course of programme intervention. Overhauling present data collection, compilation, management and use-systems, is long overdue, as the current management information system does not keep pace with the rapid and ongoing changes in the society. Useful data have to be regularly collected, rigorously tested, systematically compiled, and made accessible to the public. Demographic publications are not many, not updated regularly, and are not widely available, leading to poor public perception of the issues involved. The focus on segmentation at various levels is lacking, with maintenance of records in most of the health institutions deficient and unreliable. Utility of data management is yet to be fully understood and the meagre networking with nodal centres yields fewer inputs to field staff. There is need to examine the constraints and provide strong support to such endeavors, in terms of allocation of funds, qualified personnel and infrastructure. Efforts of Punjab Health Systems Corporation (PHSC) in compiling and analysing data from 154 hospitals and community health centers (CHCs), to identify areas of intervention and bring about improvements, are a step forward.

Turning the demographic tide is not difficult in Punjab, with higher ranking in human development being its great asset. The state has some inherent healthy features that are the source of enormous advantage in population planning and weigh heavily in favour of attempts to define and shape demographic attributes. Provision of a wide rural infrastructure, wider access to basic amenities, high and balanced urbanization pattern, low incidence of poverty, less rural-urban gap in the provision of health services, an innovative and spread-out private sector, household prosperity, regular media exposure, greater female literacy, traditions of religious philanthropy, etc., act as force-multipliers in intervention activities and hold out great promise for efforts to change the population profile.

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