

Health Attainments & Demographic Concerns

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For most individuals the choice to live a healthy life — free from illness and ailments — and a reasonable life span, are crucial attributes in the notion of personal well-being. Similarly, for a society, a transition from high incidence of morbidity and mortality to a state where people generally enjoy long and disease free lives is considered a desirable and valued social change. It is only natural, then, that indicators on health and longevity, as well as indicators that variously capture demographic concerns of a society are important constituents in the framework for evaluating the development process under the human development approach.

Good health and a long life is a valued attainment in itself, but living a long and a healthy life may not be the only objective in life. Yet, for most people, the realisation of other goals and ambitions would very much depend on having a reasonable life span and robust health. It would provide opportunity to develop abilities and use the innate potential in pursuit of personal goals. Being healthy and being able to live long also brings some indirect benefits to individuals or to the society as a whole. It enables release of resources that, otherwise, would be spent on treatment of ill health and ailments, at least, at household level and, perhaps, also at the level of public provisioning for some health care services. In the process, it influences distribution of resources and equity in well-being among people. Apart from the possibility of deploying

such resources to meet other personal needs and pursuing development in other areas at a collective level, being healthy gives a head start to a person's well-being. Individuals suffering from ill health or ailments may have to devote a part of their resources to mitigate their suffering and only then may have well-being levels that can be compared with attainments and well-being of healthy persons. Better health, also contributes directly to economic growth as it reduces production losses on account of illness of workers or, potentially, also in terms of higher work productivity for healthy workers. Thus, besides its intrinsic value, a healthy and long life has an

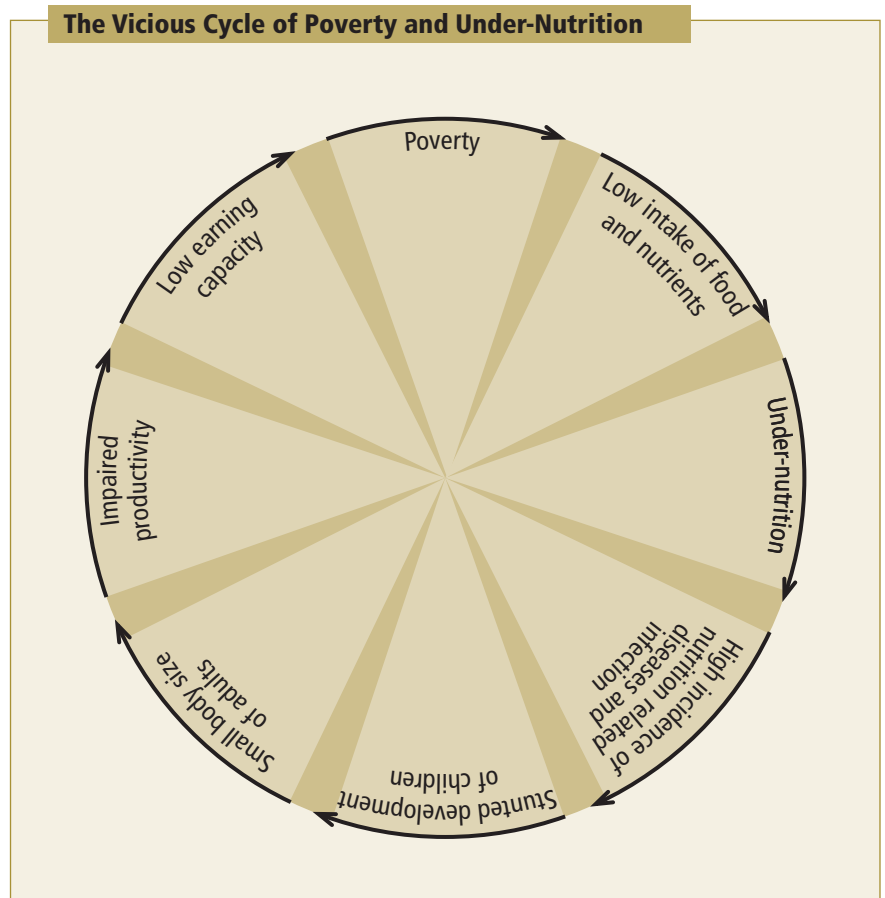


instrumental value in attainment of other valued goals in enhancing personal and social well-being.

The relationship between health and poverty or health and development is complex, multi-faceted and multidirectional. Poverty in its various dimensions could be a manifestation, as well as a determinant of an individual's health. In its most basic form — as a state of food deprivation and nutritional inadequacy — poverty has a direct bearing on the morbidity and longevity of people. Starvation deaths are a stark example of this reality. Similarly, nutritional deficiencies have been observed to affect physical and mental development of children, impairing health and productivity of work. Data on 'wasting' and 'stunting' as well on other nutritional deficiencies disorders such as those related to vitamin-A deficiency (nutritional blindness), iron deficiency (anaemia), iodine deficiency (goitre) or other micro nutrient deficiencies capture some of these aspects of poverty-health linkages. The other aspects of deprivation such as lack of access to critical amenities including safe water, sanitation, non-polluting domestic fuels, connectivity to life support services and most importantly to education and general awareness, contribute to reinforcing ill health and morbidity even leading to higher mortality levels. High child mortality levels on account of supervening infections, particularly diarrhoea and respiratory infections, are fairly widespread among people deprived of these basic amenities of life. These commonly seen childhood infections often exacerbate malnourishment and at the same time prevalence of under nourishment in children reinforces the consequences of such infections. Adequate nutrition is thus critical for child health and survival, as well as for overcoming the potential vicious cycle of poverty and under-nutrition.

Attainments on other dimensions of human development, especially educational and economic well-being, reinforce the transition towards better health and longevity. Better purchasing power through a more equitable distribution of employment opportunities and resources can help bring about nutritional adequacy and food security for the poor. This, coupled with public provisioning of basic amenities including water, sanitation, shelter and access to education and life support services can ensure significant improvement in health and longevity of the population.

Historically, it has been observed that in response to socio-economic development, high birth and death rates in the early stages of development, yield ultimately to low levels of births and deaths, thereby stabilising the population growth. This has been postulated as the theory of demographic transition.



The transition is, however, not simultaneous in the sense that in the early stages a more rapid decline in mortality is accompanied by a gradual decline in fertility. As a result, in the initial stages of development there is a rapid population growth. The decline in population growth comes only when the fertility rates decline appreciably. The demographic transition is, often, growth mediated, as the outcome depends on utilisation of improved economic prosperity in expanding social services including those related to nutritional security for the population, spread of education, availability of community and public health, advancement in medical services, improvement in sanitation and availability of safe drinking water. It also depends on social factors such as those that influence average age at marriage, acceptability of family planning practices, work participation rates for women, family structures, urbanisation, religious consideration, etc. The demographic transition is generally accompanied by an epidemiologic transition. The latter relates to the changing mortality and morbidity characteristics of the population. As a society develops and undergoes demographic transition there is a shift in distribution of major causes of death. It has been observed that population with high mortality rates suffers predominantly from infectious diseases, malnourishment and reproductive

health hazards. On the other hand, populations where the mortality is low, experience health problems of affluence and urbanisation such as chronic cardio-vascular diseases, cancer and diabetes. The outbreak of AIDS has lately broken this categorisation somewhat. It has affected the poorest in Sub-Saharan Africa, as well as the more affluent in the developed countries.

In mapping these transitions to ascertain the health status of individuals and societies, at any point of time, it becomes necessary to look at the relevant health and demographic indicators. The data on mortality, hence, longevity and other demographic characteristics of the population are, by and large, free of conceptual ambiguities, relatively easily quantifiable, as well as available. The same cannot be said of the information, for example, on nutrition and morbidity indicators, particularly in the Indian context. The data on nutritional status of the population is quite inadequate in coverage and comparability over time. Even when some data is available, one has to also reckon with the issue of nutrition adaptation and inter-individual

Correlates of Health Attainments — Some Evidence

The importance of health and longevity in the well-being of an individual and their instrumental significance in attaining other personal and socially valued outcomes is not always easy to present. Often the outcomes and efforts involved may not be quantifiable. For instance, healthy children are more easily able to attend school, pursue education and are likely to be better learners. Healthy adults are, perhaps, more likely to find work and be productively engaged in economic activity. As a result, they are likely to be better off than those who suffer from ill health. There is, however, ample quantitative evidence on the importance of attainments in other aspects of development in improving health sector indicators.

The data collected for this Report shows that adult literacy, particularly adult female literacy, as well as average consumption levels are significantly correlated with life expectancy at age one, the correlation increasing between 1981 and 1991. Infant mortality rate is also correlated with adult female literacy rate, though not as significantly as in case of life expectancy at age one. It is also observed that adult literacy has a strong positive correlation with the kind of medical attention that is sought at the time of delivery.

Based on analysis of data from 115 low and middle-income countries, it turns out that educational level of adult females as well as generation and utilisation of new knowledge has a significant impact on improving health, longevity and demographic indicators. For instance, in explaining the reduction in under-5 mortality rate, improvement in female life expectancy at birth and reduction in total fertility rate (TFR), the percentage contribution of gain in income levels is less than 20 per cent, whereas improvement in educational levels accounts for more than 30 per cent in case of first two indicators and nearly 60 per cent in case of TFR. The contribution of generation and utilisation of new knowledge is 45 per cent or above in case of the first two indicators and just under 30 per cent in case of TFR.

Source Estimates made for the Report and Wang et. al, the World Bank, 1999.

variability, which brings out the complexities involved in the measurement of under-nutrition. It is, in fact, even argued that a person's capacity for work and productivity is not determined by his/her intake of nutrients but by efficiency with which the food energy is converted into metabolisable energy over the person's homeostatic range of intake. Similarly, in case of morbidity data, the primary source, namely, the records maintained by medical institutions and public health agencies is practically non-existent and, if available, for limited urban pockets or for some specific public health initiatives are inadequate in coverage and quality. Most of the available information on morbidity in India is based on surveys that rely on recall factor of the sample households. For rural backward areas and among illiterate households, it may not always be the best mechanism to collect information. Moreover, to the extent morbidity in the population gets reflected in mortality and longevity outcomes for people, from the point of a country still in the middle of its demographic transition — with mortality rates quite high vis-à-vis the prevalent rates in developed countries — the exclusion of morbidity indicators from composite indices on health attainments may at best make only a limited qualitative difference. It is possible though, and there is cross-country evidence to support, that low mortality rates and, hence, higher longevity may co-exist with higher levels of morbidity for countries and regions that have completed their demographic transition or are in the midst of it but have already attained low mortality levels. In such cases, morbidity indicators may have to be necessarily incorporated in composite indices on health attainments. The direct relevance of morbidity indicators lies more in policy planning, programme designs, and in provisioning of public resources to support the transition towards better health indicators in the society. To that end it is imperative to track the morbidity indicators.

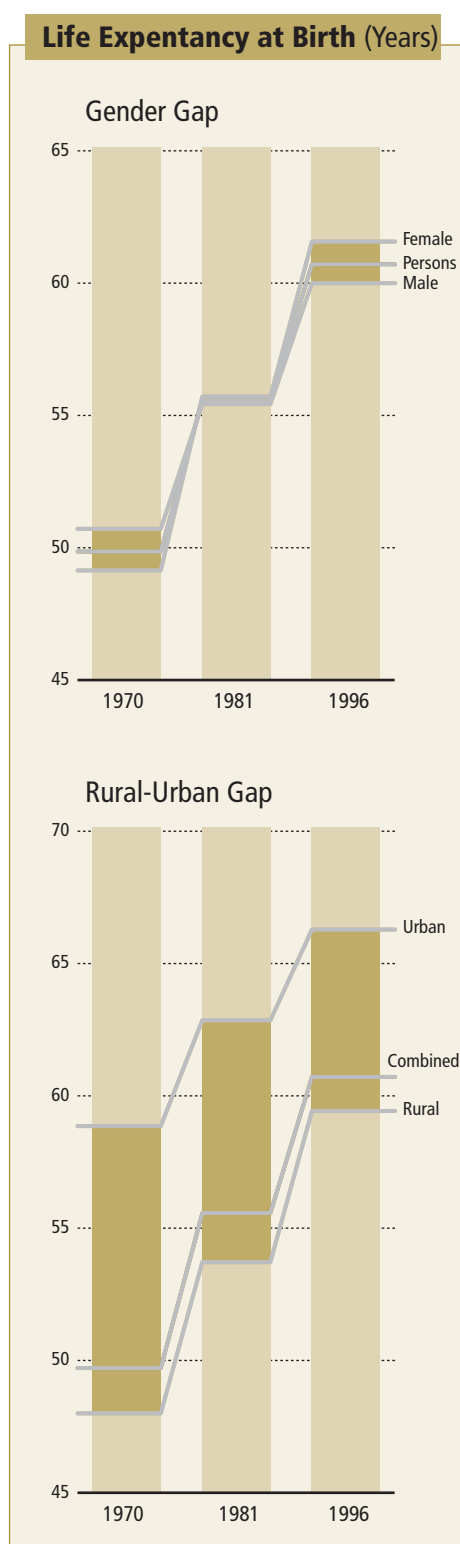
In the Report, a range of health indicators covering longevity, mortality — including age specific mortality rates for children, maternal mortality ratio, sex ratio, anthropometric measures, coverage of immunisation, health care infrastructure and some indicators on population characteristic have been presented. From among these, expectancy of life at age one along with normalised infant mortality rate (q1) have been used in building the index for health attainments for use in the HDI. Life expectancy is an indicator of general mortality. In using life expectancy at age one, the influence of infant mortality rates and their trends, which may often be at variance with the trends in adult mortality rates, is being separated. This is important in the Indian context, as the prevalent infant mortality rates are fairly high by international standards across most States. More importantly, by using life expectancy at age one (which is more sensitive to adult mortality rates and reflects cumulated attainments of the population), in conjunction with the infant mortality rates (which is perhaps a better indicator of the momentary changes in the overall health attainment of any population) an index is generated that balances, some what different aspects of health attainments for a population. For the HPI, the indicator 'persons not expected to survive beyond age 40 years' has been used to reflect the deprivational aspect in longevity. In addition, some of the correlates of ill health namely, proportion of population below poverty line, proportion of population without access to safe drinking water/sanitation/electricity, immunisation coverage/medical attention at birth have also been used in the HPI. Some of these indicators, reflecting longevity and health status of the

Life expectancy at birth has more than doubled in the last fifty years.

population have been discussed here, followed by a brief analysis of India's demographic transition and some concerns thereof.

Mortality and Health Indicators — Magnitude and Pattern

Much like its educational development, India's post-independence achievement in longevity and health of the population is a story of some successes and some embarrassments — perhaps in equal measures. For an average Indian the life expectancy at birth, in the last five decades, has more than doubled to over 60 years. Yet the pace of improvement does not compare favourably with most developing countries in East Asia and Latin America, where life expectancy are approaching levels of the developed world. Moreover, morbidity due to common communicable and nutrition deficiency diseases continue to be high and morbidity due to non-communicable diseases is showing a progressive increase as a result of improving longevity and changes in life styles. The national level health attainments hide the large inter and intra-State differences, as well as persisting vulnerabilities of some segments of the population. For some States, indicators on health attainments are comparable with the middle-income countries, and in parts of others mortality levels are as high as in poorest regions of sub-Saharan Africa. The differences across the rural — urban areas and the gender divide, as well as across population segments on caste and class lines are quite striking. There are some aspects of the development process that reflect poorly on the health of country's population. Despite mounting publicly held food stocks, food and nutritional security at the household level continues to be a distant dream for a substantial section of population. With all the resources, trained manpower and even a reasonable health infrastructure at its command, a large part of the country continues to suffer from disease burden, morbidity, as well as high mortality reflective of early stages of epidemiological transition.



Life Expectancy

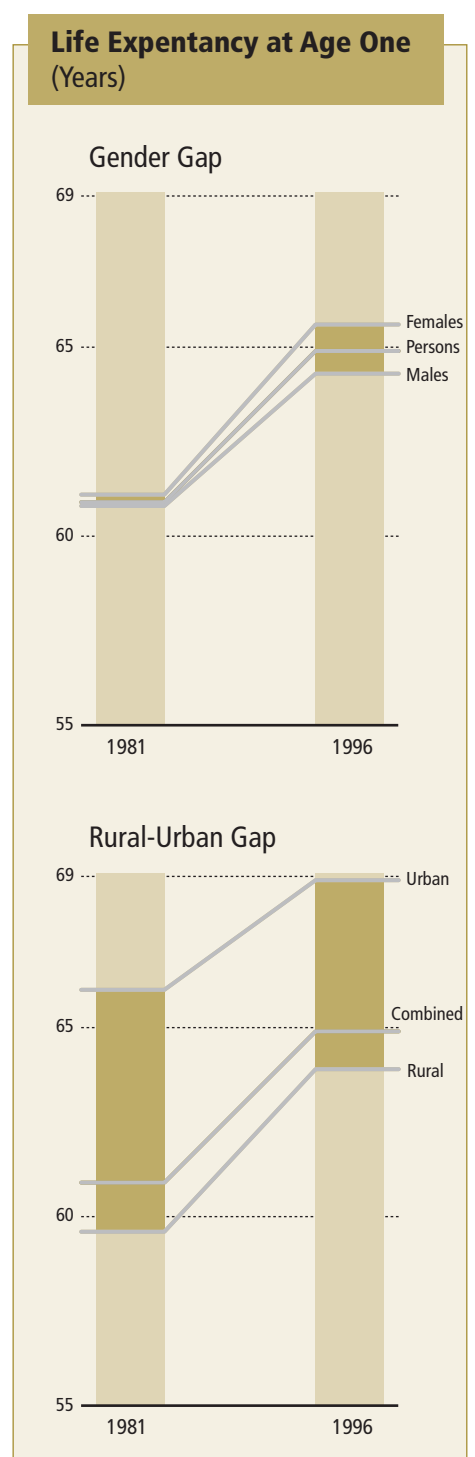
Life expectancy of an individual (at any age) is the number of years the person is expected to live given the prevailing age specific mortality rates of the population to which he/she belongs. It is a general measure of mortality that captures prevailing mortality rates of a population at different age groups. The need to have a measure like life expectancy arises because often the age specific mortality rates are not well correlated. This is particularly true of the infant mortality/child mortality rates and other age specific mortality rates. Besides there is a conceptual appeal in having a summary measure that provides some indication on the longevity that a person is likely to enjoy in any society. It has an intrinsic value for people and its value also lies in its instrumental attribute of enabling the pursuit of other valued personal and social goals. Moreover, the indicator life expectancy is closely related with other aspects of health attainments namely nutrition adequacy and a relative lack of morbidity.

Besides the more commonly used life expectancy at birth, in this Report, life expectancy has also been presented at age one. Often, when the infant mortality rates are comparatively high, life expectancy at birth is influenced by that. As a result it may not adequately reflect the trends in adult mortality rates which may, in fact, run counter to the pattern of infant/child mortality. Moreover, with the success of immunisation programmes and rehydration therapy for diarrhoea in the developing countries, the link between child mortality and mortality at other ages may have been further weakened. In addition, the indicator persons not expected to survive beyond age 40 years, based on the life tables, has been presented to reflect the deprivation aspect of longevity for use in the HPI.

Life expectancy at birth has more than doubled in the last fifty years. It increased from around 30 years at the time of independence to over 60 years in 1992-96. In the period 1970 to 1996, the life expectancy at birth, at the national level improved from 49.7 years to 60.7 years as per the estimates based on the Sample Registration System (SRS), Registrar General of India. The increase in rural areas of 11.4 years outstripping the improvement in urban areas by 7.4 years. As a result, the rural-urban gap declined from 10.9 years to 6.9 years. During the period life expectancy at birth for males increased from 50.5 years to 60.1 years, whereas in case of females it was from 49 years to 61.4 years. Till about 1970s males, at the time of birth, were expected to live longer than the females. The trend has reversed since then. Though, the females outlived males in urban areas even in early 1970s, in rural areas this has happened only in 1990s.

There are significant differences in life expectancy at birth across States. In Kerala, a person at birth is expected to live for over 73 years (70 years for males and 76 years for females), followed by Punjab at 67.4 years (66.4 years for males and 68.4 years for the females). On the other hand, life expectancy at birth in Assam, Bihar, Madhya Pradesh, Orissa, Rajasthan and Uttar Pradesh has been in the range of 55-60 years. Among the larger States, males are still expected to outlive the females in Bihar, Madhya Pradesh, Orissa and Uttar Pradesh. The rural-urban difference in life expectancy at birth is less than a year in Kerala whereas, in Assam, Bihar, Madhya Pradesh and Orissa this difference is around 8-10 years. For males it varies from 0.8 year and 1.7 years for Kerala and Punjab respectively, at one end, to 8-9 years for Assam and Madhya Pradesh on other. For females this difference is 1 and 4 years respectively for Kerala and Punjab, whereas it is nearly 10 years for Assam, Bihar, Madhya Pradesh and Orissa in the upper end.

Life Expectancy at age one, at the national level has improved from 60.9 years to 64.9 years over the period 1981-85 and 1992-96. The increase in case of females was marginally more than that for males. In case of rural areas this increase was from 59.6 years to 63.9 years, whereas for the urban areas it was from 66.0 years to 68.9 years. Thus, there has been a decline in the rural-urban gap in life expectancy at age one from 6.4 years to 5.0 years during this period. At the State level, Kerala and Punjab have a life expectancy at age one of over 70 years, while Assam, Madhya Pradesh, Uttar Pradesh and Orissa have less than 63 years. In comparison to life expectancy at birth, where the difference between the best and the worst performing States namely, Kerala and Madhya Pradesh was 15.1 years and 21.1 years for males and females, respectively in 1992-96, the difference in case of life expectancy at age one is considerably less. In 1992-96, for life expectancy at age one, the difference between the best and the worst



There are far too many 'premature' deaths of children, expectant mothers and young adults in the country.

performing States namely, Kerala and Assam was 9.7 years and 14.8 years for males and females, respectively.

Persons not expected to survive beyond age 40 years reflect the deprivational aspect of longevity in population as it presents the proportion of population that is not likely to live even to an age which is just about half the expected life span of people in developed world. The choice of age 40 is, however, arbitrary and is governed more by the functional convenience of using the available data, as well as the consideration that this is the break-off age in most international studies, including the UNDP's HDRs that use such an indicator. The proportion of persons not expected to survive beyond age 40 years, at the national level, was 23 per cent in 1981. It declined to 18 per cent in 1991. In both the years proportionately more females than males were expected not to survive beyond age 40 years. The gender gap, though, declined from 3 per cent in 1981 to 2.2 per cent in 1991. Among the persons not expected to survive beyond age 40 years, higher proportion are from rural areas in both the years. However, the rural-urban gap declined from 11.1 per cent in 1981 to 8.2 per cent in 1991. At State level the differences are striking. In case of Kerala the proportion of persons not expected to survive beyond age 40 years in 1991 was about 5 per cent; it was more than twice as much at over 13 per cent in Himachal Pradesh, Tamil Nadu and Punjab; nearly four times in Bihar and Rajasthan; more than four times at over 20 per cent in Assam, Uttar Pradesh and Orissa; and over five times in Madhya Pradesh at 25.3 per cent.

Infant and Other Mortality Indicators

There are various indicators of infant and child mortality. Among the more commonly used, infant mortality rate [IMR or $q(1)$] refers to the number of deaths per thousand live births in the first year of a child's life. It reflects the probability of a child dying before attaining the age one year. Similarly, under five mortality rate [$q(5)$] refers to the probability of child dying before the fifth birthday. Unlike the indicators on life expectancy that are relatively stable and slow moving, the infant and child mortality indicators are likely to be more sensitive to changes that have a bearing on the quality of life, particularly, to the health and longevity of people. These could be sudden adversities or non-availability of critical public health and life support services. They are, thus, more useful from the point of policy targeting and tracking changes in health attainments of a population at more frequent intervals, particularly when the population is yet to complete its demographic transition.

As per the 1981 Census, IMR is estimated at 115 per thousand live births. It was 122 for males and 108 for females. The IMR declined to 77 infants per thousand live births by 1991. While there was an absolute decline in the IMR in 1991 as compared to 1981, unlike 1991 the infant mortality for females was lower than for males in 1981. Under five mortality, $q(5)$, was 152 children per thousand live births in 1981 as compared to 94 children per thousand live births in 1991. The decline in case of males was from 147 to 91 and for females from 157 to 101, during this period. For 1981 the difference between $q(5)$ and $q(1)$ for females was 49 per thousand live births as compared to 25 per thousand live births for males. This difference declined to 17 and 22 for males and females respectively for the year 1991. Much like the other health indicators, there are large inter-State variations. For the

major States, IMR varied between 52 per thousand live births for Kerala to 150 per thousand live births in Madhya Pradesh for the year 1981. Among other States, it was well above hundred for Orissa, Rajasthan and Uttar Pradesh. In 1991, the infant mortality declined to 42 in Kerala. A number of States where the IMR was close to 90 in 1981, brought it, down to around 50 per thousand live births. These included Andhra Pradesh, Haryana and Tamil Nadu. It was close to hundred for Uttar Pradesh and continued to be well above hundred for Orissa and Madhya Pradesh.

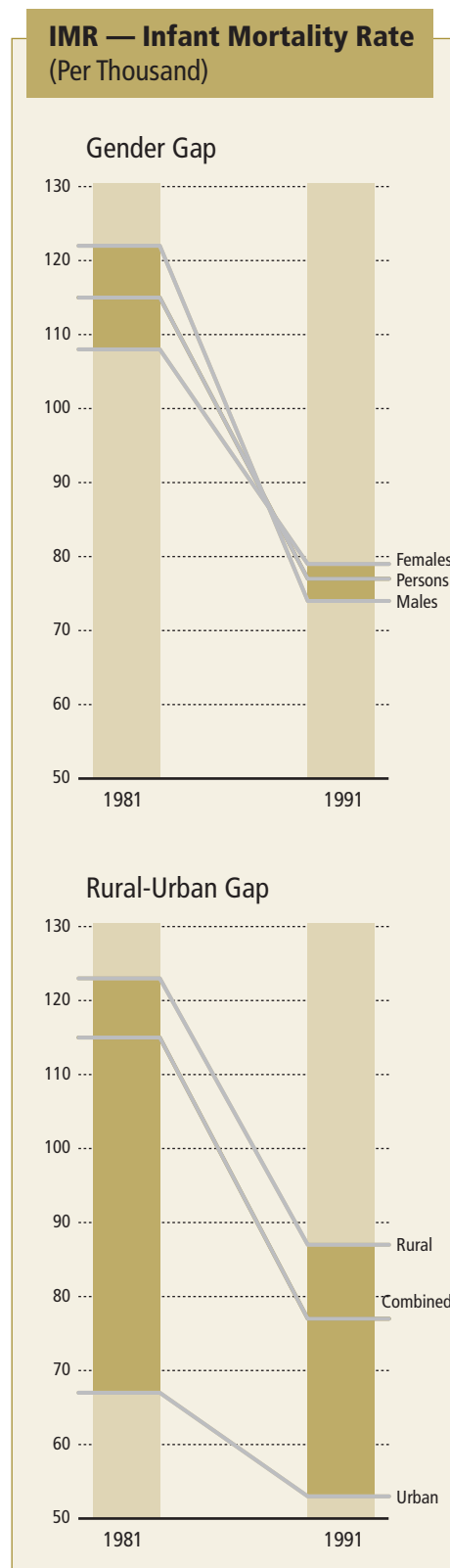
The under five mortality $q(5)$, varied between 51 per thousand live births in Manipur to 220 per thousand live births in Arunachal Pradesh in 1981. Among the major States, it was least in Kerala at 80 per thousand live births. On other hand, it was in the range of 175-200 per thousand live births in Madhya Pradesh, Rajasthan, Orissa and Uttar Pradesh. During the period 1981 to 1991 there has been a visible transition from higher to lower mortality rates in most States. By 1991 $q(5)$ declined to 60 in Kerala and was in the range of 130-150 per thousand live births for Madhya Pradesh, Orissa and Uttar Pradesh. Information on infant and under five mortality is also available from SRS, Registrar General of India and the NFHS.

Infant mortality accounts for the bulk of under five mortality. The Census 1981 and 1991 show that nearly three-fourth of the under five mortality is accounted for by the infant mortality. For the NFHS-I & II, this proportion is estimated at around 72 per cent. As per the information available from SRS, within infants, neo-natal mortality accounted for 60-65 per cent of the infant mortality during 1981-97. In the urban areas the proportion of neo-natal deaths has been marginally lower than in the rural areas. Similar results are also reported in NFHS-I & II.

Among other mortality indicators, the age-specific mortality rate for age group 0-4 or 5-9 years, maternal mortality rates (defined as the number of maternal deaths per hundred thousand women in the age-group 15-49 years) and the death rate (defined as the number of deaths per thousand persons) can also be used as indicators to track premature mortality of infants, children as well as the young and middle-aged adults. Of particular interest among these indicators is the maternal mortality rate, which like the infant mortality rate, continues to be high even while the death rate for the population, on the whole, is showing a steady decline over most of the last century.

Maternal deaths due to complication in pregnancy and childbirth are among the leading causes of death among women in a number of States in India. As per the World Health Organisation, maternal death refers to death of woman, while pregnant or within 42 days of termination of pregnancy irrespective of the duration and the site of pregnancy, from any causes related to or aggravated by pregnancy or its management but not from accidental or incidental causes. The maternal mortality ratio, defined as the number of maternal deaths per hundred thousand live births, was 408 at the national level for 1997 as per the estimates of Registrar General of India. The ratio at State level varies from 707 in Uttar Pradesh to 29 in Gujarat.

The causes for maternal mortality include haemorrhage, sepsis, puerperal complications, obstructed or prolonged labour, unsafe abortion, toxæmia, anaemia, etc. In addition, the chances of dying increase if complications arise in deliveries that do not take place in health institutions or if they cannot be quickly transported to a referral unit in case the need arises. A large number of these deaths are preventable, if attention is paid to some of the conditions prevailing in India from which women often suffer.



Transition in Infant Mortality Rates

Range per Thousand	Persons		Males		Females	
	1981	1991	1981	1991	1981	1991
<30		Manipur		Manipur		Manipur
30-60	Goa, Kerala, Manipur, Chandigarh.	Andhra Pradesh, Goa, Haryana, Kerala, Mizoram, Nagaland, Sikkim, Tamil Nadu, Chandigarh, Daman & Diu, Delhi, Pondicherry.	Goa, Kerala, Manipur, Chandigarh.	Goa, Haryana, Kerala, Mizoram, Nagaland, Sikkim, Tamil Nadu, Chandigarh, Delhi, Pondicherry.	Goa, Kerala, Manipur, Nagaland, West Bengal, Chandigarh, Tamil Nadu.	Andhra Pradesh, Goa, Haryana, Kerala, Mizoram, Nagaland, Punjab, West Bengal, Chandigarh, Daman & Diu, Delhi, Pondicherry.
60-90	Gujarat, Jammu & Kashmir, Karnataka, Meghalaya, Mizoram, Nagaland, Punjab, Tamil Nadu, Andaman & Nicobar Is., Delhi, Pondicherry.	Bihar, Gujarat, Himachal, Karnataka, Maharashtra, Meghalaya, Punjab, Rajasthan, Tripura, West Bengal, Andaman & Nicobar Is., Dadra & Nagar Haveli.	Gujarat, Haryana, Jammu & Kashmir, Karnataka, Meghalaya, Mizoram, Nagaland, Punjab, Tamil Nadu, Andaman & Nicobar Is., Delhi, Pondicherry.	Andhra Pradesh, Bihar, Gujarat, Himachal Pradesh, Karnataka, Maharashtra, Meghalaya, Punjab, Tripura, West Bengal, Andaman & Nicobar Is., Dadra & Nagar Haveli, Daman & Diu.	Andhra Pradesh, Gujarat, Himachal Pradesh, Jammu & Kashmir, Karnataka, Maharashtra, Meghalaya, Mizoram, Delhi, Punjab, Sikkim, Tamil Nadu, Andaman & Nicobar Is., Lakshadweep, Pondicherry	Assam, Gujarat, Himachal Pradesh, Karnataka, Maharashtra, Meghalaya, Rajasthan, Sikkim, Tripura, Andaman & Nicobar Is., Dadra & Nagar Haveli, Lakshadweep.
90-120	Andhra Pradesh, Bihar, Haryana, Himachal Pradesh, Orissa, Maharashtra, Rajasthan, Sikkim, Tripura, West Bengal, Dadra & Nagar Haveli, Lakshadweep Arunachal	Arunachal Pradesh, Assam, Uttar Pradesh, Lakshadweep	Andhra Pradesh, Bihar, Himachal Pradesh, Maharashtra, Orissa, Rajasthan. Sikkim, Tripura, West Bengal, Dadra & Nagar Haveli.	Arunachal Pradesh, Assam, Rajasthan, Uttar Pradesh, Lakshadweep	Arunachal Pradesh, Bihar, Haryana, Orissa, Rajasthan, Tripura, Dadra & Nagar Haveli.	Arunachal Pradesh, Orissa, Uttar Pradesh
> 120	Pradesh, Madhya Pradesh, Uttar Pradesh.	Madhya Pradesh, Orissa.	Arunachal Pradesh, Madhya Pradesh, Uttar Pradesh, Lakshadweep.	Madhya Pradesh, Orissa.	Madhya Pradesh, Uttar Pradesh.	Madhya Pradesh.

These include poor health care, often, on account of lack of awareness of good health practices; poor nutrition; early marriage of women, particularly in Northern and Central parts of the country; high and closely spaced fertility that often stretches from adolescence to menopause; and the low status of women that marginalises them in decision making process at all levels.

Nutrition

Over half of the children under age of five years in India are moderately or severely malnourished, 30 per cent of newborn children are significantly underweight and nearly 60 per cent of women are anaemic. This is despite the country having attained self-sufficiency in food production for well over a decade, with mounting public food stocks at its command. The food security at the national level has not percolated to poor households. The prevalence of under-nutrition — a condition resulting from inadequate intake of food or essential nutrients resulting in deterioration of physical growth and health — is widespread. Protein/energy malnutrition is the most common form of malnutrition among children in age-group 0-4 years. Iron deficiency anaemia is quite common in children, as well as women, particularly pregnant women. A critical consequence of widespread incidence of malnourishment is the impact it has on cognitive development and learning achievements, reducing capacity to work and productivity among adults and enhancing mortality and morbidity among children.

As per NFHS-II for the period 1996-98, 47 per cent of children under age 3 years were classified as undernourished (below 2-SD) on weight-for-age basis. Similarly, percentage of undernourished on height-for-age and weight-for-height basis was 45.5 per cent and 15.5 per cent respectively. These proportions, though for children under age 4 years, were 53.4, 52 and 17.5 per cent respectively for the period 1990-92 as per NFHS-I. The Body Mass Index (BMI) was less than 18.5 kg./sq. m. in nearly 36 per cent of women. Over half of the ever-married women and three-fourths of the children suffered from anaemia as per the NFHS-II. At State level, the disparities were quite widespread. The underweight children were in the range of 25-35 per cent in some Northern States, namely, Delhi, Haryana, Jammu and Kashmir, Punjab; most of the North-Eastern States; Kerala and Goa. On the other hand, the proportion was nearly 50 per cent or above in Bihar, Madhya Pradesh, Maharashtra, Orissa, Rajasthan, West Bengal and Uttar Pradesh. The regional pattern of undernourishment on the basis of height-for-age and weight-for-height were not very different over the two NFHS rounds. Nearly 48 per cent of women in Orissa had BMI less than 18.5 Kg./sq.m. This proportion was

Maternal Mortality — Some Evidence from Field Studies

A field investigation of deaths among women of reproductive ages, conducted in Anantpur district of Andhra Pradesh during 1984-85, estimated maternal mortality ratio of 830 in rural areas, and 545 in urban areas, per hundred thousand live births. The maternal mortality rate was 142 and 42 per hundred thousand women aged 15-49 for rural and urban areas respectively. The maternal mortality ratio in a 'poorly developed' village was nearly 4 times higher than in a 'highly developed' village. Over 80 per cent of maternal deaths in rural areas of Anantpur were of those women who had not made even a single visit for ante-natal check-up. In contrast, none of the women who had made 5 or more visits for ante-natal check-up died. According to this Study, 41 per cent of deaths were definitely preventable, 37 per cent possibly preventable and remaining unavoidable. Control of infection and early transfer of patients to hospitals for skilled care could have prevented most of these deaths. Similar results were reported in another Study that took into account data of 41 medical teaching institutions. It found 4,707 maternal deaths with maternal mortality ratio of 721 per hundred thousand live births during 1978-81. Only 5 per cent of deaths were booked cases, while 85 per cent were emergencies and were, often, late arrivals. According to this Study, nearly 69 per cent of deaths could have been avoided.

Source Bhatia (1988), and WHO (1991).

nearly 44 per cent in West Bengal; in the range of 37-40 per cent in Andhra Pradesh, Bihar, Gujarat, Karnataka, Madhya Pradesh and Maharashtra; and less than 25 per cent in Arunachal Pradesh, Kerala, Manipur, Mizoram, Nagaland, Punjab, Sikkim and Delhi.

Among other sources of data on nutrition, the Report of Second Repeat Survey 1996-97 undertaken by the National Institute of Nutrition covering households in eight States, namely, Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, Maharashtra, Gujarat and Orissa found that, in all, 40 per cent of the households had adequate energy levels, whereas 80 per cent had adequate proteins. In general, households with lower per capita income had lower calorie and protein intake. NSSO's 50th Round Survey on Nutritional Intake in India had similar results to report. It also found that nearly 37 per cent of rural households and 42 per cent of urban households were consuming less than the recommended average energy levels. In the poorest category — both in rural and urban areas — this proportion was 93 per cent. The Department of Women and Child Development had also brought out a report in 1998 on India's nutrition profile covering 18 States and Union Territories. It found that nearly one-third of rural children in age-group 1-5 years were underweight in Punjab, Haryana and Himachal Pradesh as compared to 44 per cent in Rajasthan and around 57 per cent in Bihar. Though there were not much variation in the nutritional status of male and female children, but there were considerable rural-urban differences.

Morbidity Indicators

There is some evidence, even in the Indian context, indicating that mortality and morbidity patterns may often run counter to each other. Considering that loss of life and sickness are, perhaps, equally important for individual and social well-being, this aspect becomes important in the process of evaluating development outcomes. For instance, Kerala, which has the lowest mortality rate, has the highest incidence of morbidity in the country for acute, as well as chronic ailments. It, therefore, becomes necessary, particularly at low levels of mortality that indicators for morbidity are reflected in assessment of health attainments.

Illness is generally categorised into short-term or acute morbidity — such as infectious diseases affecting children, viz. measles, influenza, diarrhoea; long term morbidity with limited duration such as tuberculosis; and permanent or chronic morbidity such as diabetes, arthritis, blindness, deafness, etc. Some of the increase in morbidity, particularly of chronic variety is on account of ageing of population.

As per the 52nd Round of the NSSO, nearly 5.5 per cent of rural persons and 5.4 per cent of urban persons reported ailment during 15 days period prior to the survey. Females reported higher ailments than males. Nearly 12 per cent of the persons in rural areas of Kerala reported ailment. This proportion was also high in rural areas of Assam, Himachal Pradesh, Punjab, Tripura, Chandigarh and Pondicherry. The urban areas of Assam, Kerala, Punjab, Tripura and Chandigarh also reported higher proportion of ailments among people. The number of those who reported acute ailment was nearly thrice as high as those reporting chronic ailment in rural as well as urban areas. In Kerala and Andhra Pradesh, the proportion of persons reporting acute ailments was nearly twice the proportion reporting chronic ailments. In Bihar, Gujarat, Haryana, Himachal Pradesh, Karnataka,

Maharashtra, Punjab, Tamil Nadu and West Bengal, the proportion of those reporting acute ailments was 2.5-3.5 times higher than those reporting chronic ailments. In some other States like Madhya Pradesh, Orissa, Rajasthan and Uttar Pradesh, this ratio was between 5-9 times. A look at age profile of persons reporting acute ailments reveals that among major States, only in Kerala, the proportion reporting such ailments is higher in age group 0-14 years as compared to those belonging to age group 60 and above. In Punjab, this proportion is more or less same among rural males for both these age groups. In all other States, the proportion reporting acute ailments in age group 0-14 years is much lower than in age group 60 and above. For age groups in between these two groups, much lower proportion of persons reported acute ailments. Similarly in urban areas, in case of persons in Kerala and for males in Punjab, the proportion reporting acute ailments is higher in age group 0-14 years as compared to those in age group 60 and above. In urban areas of other States the situation is the same as that prevailing in rural areas. The chronic ailments were seen to increase with age both in rural, as well as in urban areas.

Among other source for data on morbidity, a survey done by National Council for Applied Economic Research, 1995 shows that morbidity prevalence rate (defined as number of cases of a disease present in a community at one time) was 103 persons per thousand at the national level. It was marginally higher in urban areas in comparison to rural. It was also higher among females than males both in rural and urban areas; higher for those in age groups less than 5 years and more than 60 years; and higher for females in age group 15-59 vis-à-vis females in other age groups. It was seen that morbidity declined with increase in education level of the head of a family, as well as with an increase in household income, but increased with the level of per capita income. The survey found prevalence of morbidity among the highest in the States of Kerala, Orissa, Himachal Pradesh, Punjab and Andhra Pradesh. It was lowest among Maharashtra, Tamil Nadu, Gujarat and Haryana. In almost all States prevalence of infectious diseases exceeded non-infectious diseases in rural areas except in Andhra Pradesh, Kerala and Karnataka. In urban areas, prevalence of infectious diseases was higher except in case of Andhra Pradesh, Himachal Pradesh, Kerala and Tamil Nadu. The NFHS-I and II have also reported morbidity among children, though, the two surveys are strictly non-comparable as the children covered in the first survey were in the age group 0-4 years while it was 0-3 years in the second.

Demographic Transition — Patterns and Some Concerns

India continues to be in the middle of its demographic transition. For the country as a whole, the Crude Death Rates have been declining since 1921, but decline in Crude Birth Rates has been with a considerable lag and remarkably slow, beginning only after 1941. The gap between the fertility and mortality has resulted in rapid growth of India's population over the last five decades. The country's population as per the latest Census is 1,027.02

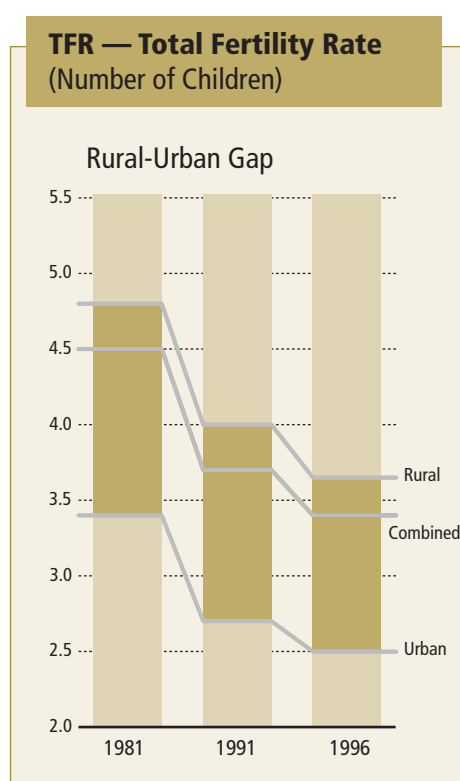
million as on 1st March 2001. There has been an increase of nearly 181 million in the decade of nineties alone. The figure is quite striking when one compares it with the population of Brazil (168.2 million), Russian Federation (146.2 million), Pakistan (137.6 million), Bangladesh (134.6 million) or Japan (126.8 million) for the year 1999, as indicated in UNDP's HDR for 2001. India is, in fact, adding nearly the equivalent of Australia's population to its own population every year.

The annual average growth in population has been declining since the 1971. It was 2.26 per cent in the period 1971-81, 2.13 per cent in the period 1981-91 and has declined to 1.95 per cent in 1991-2001. Though, there is a visible reduction in the population growth rate and it now seems to be on a secular decline, the future pace of deceleration in fertility and mortality is by no means certain. Much of this uncertainty comes from the fact that there are considerable differences in fertility across States and while there are States that have already attained replacement level of fertility or are close to attaining it, five States namely, Bihar, Uttar Pradesh, Madhya Pradesh, Rajasthan and Orissa, accounting for nearly 40 per cent of country's population in 2001, will contribute well over 50 per cent of the population growth in the next decade. The performance of these States will determine the time and the magnitude at which the country's population stabilises.

Three factors, namely, a large segment of the population in the reproductive age group (estimated contribution 60 per cent); high fertility due to considerable unmet need for contraception (estimated contribution 20 per cent); and high desired level of fertility due to prevailing high IMRs (estimated contribution about 20 per cent) have been found to influence the population momentum and, hence, its current growth rate. **Total fertility rate** (TFR) is an indicator, which is useful in this context for undertaking an analysis on the prospects of population stabilisation. It is defined as number of live births a woman would expect to deliver, if she were to live through her reproductive years (age 15 to 49 years) and to bear children at each age in accordance with the prevailing age-specific fertility rates. This indicator pertains to the number of live births and not pregnancies. As against the replacement level of fertility, i.e. corresponding to a TFR of 2.1, the TFR in India at national level was 4.5 in 1980-82, 3.7 in 1990-92, declining to 3.4 in 1995-97. During the period 1980-82 and 1995-97, the TFR declined from 4.8 to 3.7 in rural areas and from 3.4 to 2.5 in urban areas. The rural-urban gap declining only marginally from 1.4 to 1.2.

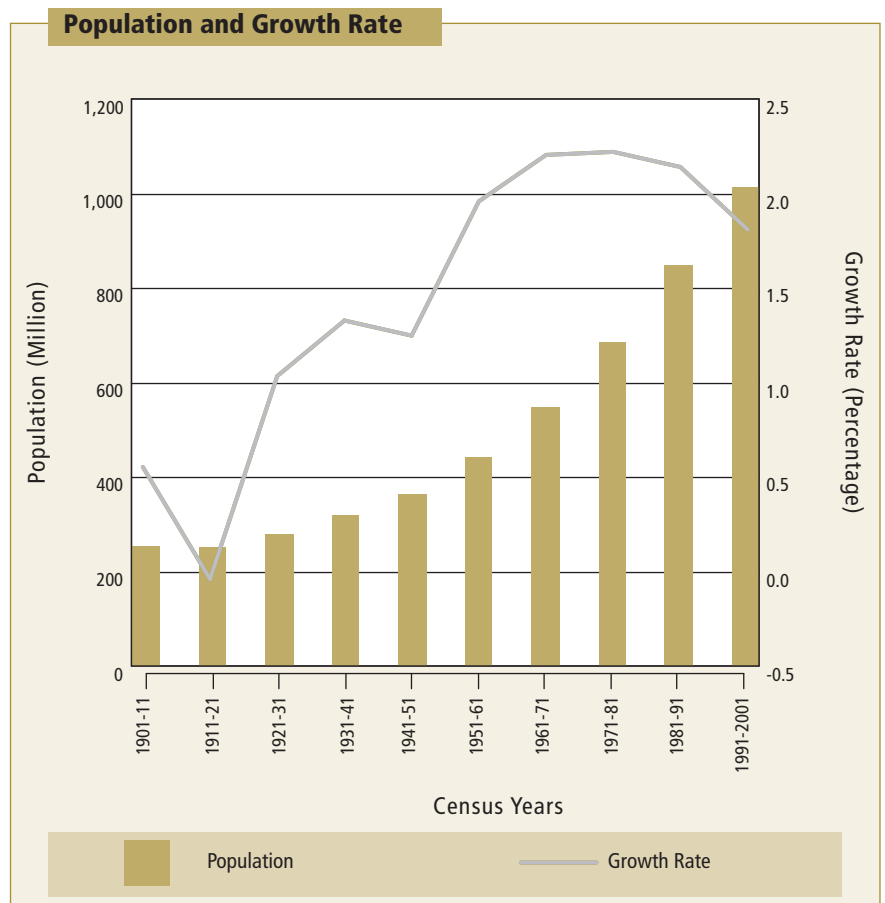
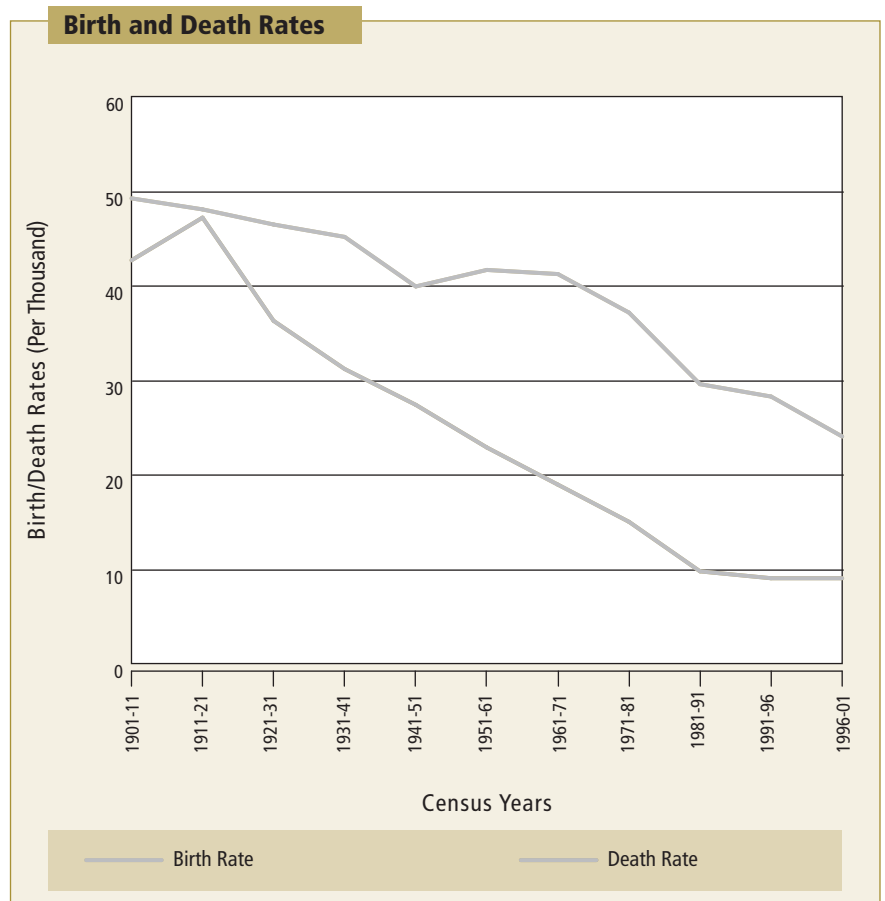
There are, however, large inter-State differences in the TFR. Kerala, Tamil Nadu, along with some other smaller States and Union Territories, accounting for nearly 12 per cent of the country's population have already attained TFR of less than 2.1 by 1995-97. There are other States and Union Territories that have TFR between 2.1 in and 3.0 and account for nearly 42 per cent of the total population. These include Andhra Pradesh, Arunachal Pradesh, Himachal Pradesh, Gujarat, Karnataka, Maharashtra, Orissa, Punjab and West Bengal. For other States that account for nearly 48 per cent of the country's population, TFR is more than 3. For Uttar Pradesh, Bihar, Rajasthan and Madhya Pradesh, it is over 4. With the exception of Kerala, in all States the birth rates in rural areas are much higher than those in urban areas, as a result, there is a considerable gap in rural and urban TFRs.

While looking at factors that explain the varied performance of States in India in bringing down their respective TFRs, it turns out that economic development and social sector attainments in education and health have



played a significant role. It also appears that factors influencing the decision-making process at household level, such as participation of women in decision-making due to their empowerment brought about by spread of education or other specific factors, have had a decisive role to play. These influences stand out in the success of demographic transition in the States of Kerala, Manipur and Himachal Pradesh. However, in each of these cases, as well as in case of Tamil Nadu and Andhra Pradesh, there are other specific and contextual factors that may have also helped in bringing about a decline in TFRs and, hence, in population growth rate. While there cannot be a single model of successful demographic transition, particularly from the point of its application to other States of the country, there is much to be learnt from each of these success stories.

The level of fertility has been, generally, found to be higher at lower education levels of the parents. According to a study undertaken by the Registrar General of India for the year 1984, it was found that the TFR declined progressively with the level of education of the mothers. It was the highest (5.1) for illiterate women and lowest (2.4) for women who had studied at least up to matriculation. The TFR initially increased with the level of household income and declined after a certain level. It was also seen that at the national level the TFR was least among the Sikhs and Christians and the highest for Muslims. The TFR was higher for Scheduled Castes/Scheduled Tribes in comparison to the others. Overall, TFR was lower in urban areas than in rural areas. Similar findings were reported by the NFHS-I and II. They reported that fertility was higher among rural, less



Towards Population Stabilisation — Models of Successful Demographic Transition

In India, apart from Kerala — the most frequently quoted State for not only recording impressive attainments on a number of social indicators — the States of Manipur, Himachal Pradesh, Tamil Nadu, Karnataka and Andhra Pradesh present successful models of demographic transition. While there are some common elements across these States, each of them has some unique characteristics that explain their recent performance.

Kerala

Kerala's birth, death, infant mortality and literacy rates compare favourably even with countries having much higher income levels. It is all the more creditable that these have been achieved in a democratic set up without any coercive measures. There are several factors that explain Kerala's performance but most of these are not easily replicable in other States. Historically, the benevolent rulers of Travancore and Cochin had enlightened policy towards health and education that paved the way for a human development strategy for the State. Several mass movements led by social reformers and visionaries helped mobilise the masses and empowered them to fight for their rights. This led to a high degree of political consciousness and social awareness. Christian Missionaries have played a pioneering role in promoting health and education. They continue to manage accessible and affordable hospitals, schools and colleges in the State. Effective implementation of land reforms under the Communist Governments created a high degree of motivation for education, which has yielded long-term social dividends to Kerala. As a result of the land reforms, those who lost land and those who got small parcels of land realised the need for alternate source of income and, hence, turned to education in a big way. Matrilineal System, though confined to certain higher castes, created a helpful social environment and a higher status of women compared to other States in India. The marriage age of girls and boys increased continuously and this made a significant impact on birth rate. Late marriages and educated mothers resulted in lower rates of maternal, infant and child mortality and higher practice of contraception. Massive investment in health and education combined with good administration, private and civil society participation helped in enriching the human resource development strategy, yielding better health standards and adoption of small family norms. Effective management of Government's family planning programme

and contribution of private doctors and charitable hospitals have played a significant role in reducing mortality and fertility rates. The widespread coverage of print and electronic media along with cinema in the State helped improve communication and publicity for the spread of family planning concerns and practices. A rural-urban continuum in human habitations and well developed transportation network — by road and water — improved accessibility to health services and education. Finally, migration in large number has always been a feature of Kerala's development. Apart from easing population pressure and unemployment, migration has brought in considerable monetary remittances to families in Kerala, which has improved the living standards.

Manipur

Even in 1981, Manipur had the distinction of having the lowest infant mortality rate in the country, even lower than Kerala and yet, not much is known about the Manipur model. There are many similarities in social and institutional context facilitating such outcomes in the two States, but there are also many differences. Both Kerala and Manipur have better availability and a more equitable distribution of health services in comparison to rest of the country. While, the physical provisioning and access to health services is perhaps better in Kerala than in Manipur, the proportion of current expenditure (both public and private) on health care and related facilities is far more in Manipur than in present day Kerala. Like Kerala, Manipur is not among the more economically prosperous States in India. In fact, its per capita Net State Domestic Product, which was around 85 to 90 per cent of the national average in early eighties, declined to about 65 to 70 per cent of the national average, in the second half of nineties. However, the NSSO per capita consumption expenditure for the State fares well in comparison to the national average, particularly for rural areas. It is important to note that among the States (and data problems notwithstanding), the inequality in per capita consumption expenditure, as measured by the Gini Ratio, for Manipur is among the lowest in India. Both Manipur and Kerala have a far more equitable distribution of landholdings than the so called 'BIMARU' States. What is striking that, unlike Kerala, the level of female literacy in Manipur is not significantly high, it is in fact around the national average. Women's empowerment brought about by its unique socio-cultural context, and not so much by female literacy, explains the impressive health attainments of the State. Greater women's freedom; increased political consciousness and participation facilitated, in part, by the

matrilineal structure of the society; higher levels of maternal advancement; stronger social organisations and, perhaps, overall system of entitlement protection and relative equality reinforce each other to lower infant mortality rate in Manipur. Work participation rates for women in Manipur, in different categories of work, are much better than the national average as per Census 1981 and 1991. The participation rates are consistently high across all age groups. In Manipur, the mean age of women at marriage, 23.3 years in 1981, is even higher than in Kerala. It turns out, from Manipur's experience, that child survival or lower infant mortality is not just a result of medical and life saving support services, it is significantly connected with maternal capabilities which in turn are not necessarily contingent on higher female literacy. They, in this case are a result of a unique socio-political and economic context that has brought about empowerment of women and higher levels of maternal advancement in the State.

Himachal Pradesh

A critical element in case of Himachal Pradesh is the self-empowerment of women. This has been brought about by a host of factors working synergistically over the last few decades. The school participation rates for girls are almost as high as for boys. Himachal Pradesh is second only to Kerala in terms of school participation and literacy rates in the younger age groups. The State has a high level of female labour force participation. In a hill economy, where natural resources, such as, forests and pastures are relatively abundant, there is greater scope for labour absorption and women labour tend to be mobilised on a larger scale. A considerable proportion of males are engaged in public services in towns or district headquarters or have been deployed in public programmes/projects, thereby making it, perhaps, necessary for female to take to work outside their homes. This aspect has been reinforced by the transition in agricultural economy from cultivation of food grains to fruits and flowers, which require 'delicate labour'. Higher female labour-force participation has had a number of positive social influences including a reduction in female discrimination within the family; greater participation in decision making at household and at local village level; improved economic returns to female education; increase in the marriage age for girls; and more gender symmetric nature of marriage practices. Higher female education and work participation rates have encouraged females to take to a variety of jobs including teaching. The proportion of female teachers in Himachal Pradesh at primary level at above 40 per cent is much higher than its neighbouring

States. This, in turn, facilitates school enrolment among even adolescent girls. Public and social action at village level is much less male dominated than other parts of the country. Unlike the States in North India, the division of class, caste and gender are less pronounced. This, in turn, may have prevented alienation of social and political leadership from the masses and checked the emergence of politics of vested interests organised on lines of caste or communities as in the 'Hindi heartland'. A history of good political leadership, a reasonably responsive administration with comparatively low level of corruption has helped in identifying development priorities and implementing programmes fairly efficiently. There is a near complete coverage of the population in terms of safe drinking water, electricity, road-connectivity and telecommunication facilities. The availability of some of these services at the doorstep, releases labour, particularly the child labour, from the household chores of collecting water and fuel wood, in turn enabling them to attend schools. Community, public health and medical services are better organised and have a fairly high credibility. The modernising influence of rural-urban interaction, facilitated by a good network of roads and public transport service and the desire to visit larger markets in the towns has also increased exposure, awareness and encouraged the process of women-empowerment. Finally, improvements in rural living standards brought about by diversification of agricultural activities into horticulture and now floriculture and sericulture — activities with far better economic returns — is reinforcing the dynamics of demographic transition at a greater pace.

Tamil Nadu

The demographic transition in Tamil Nadu has been largely a result of cumulation of gradual improvement over time in the driving variables of population growth, literacy rates along with the process of social mobilisation. The State has, historically, been a hot bed of social reform movements, often precipitating political action in the desired direction. Social consciousness inspired by leaders such as Ramasami Naicker 'Periyar' has influenced the people to become responsible parents, among other things, to adoption of family planning as a means to bridge the gap between increasing aspirations and availability of resources to meet these aspirations. It is quite common in the State to invite political leaders to preside over marriage ceremonies who, invariably, advise young couples to adopt a small family norm. Tamil Nadu was among the first States, in independent India, to launch family planning programmes.

The male sterilisation (vasectomy) programme was taken up in the State as early as in 1950s, coupled with good administration, it meant an early start and acceptability to a practice that took much longer time in getting known and accepted elsewhere in the country. There has been a steady improvement in literacy rates in the State. The nineties have seen an increase in school enrolment rates and at the same time there has been a considerable decline in the school drop out rates. The mid-day meal programme for school children, started on a large scale for the first time in Tamil Nadu, has been a success. It has improved school attendance and contributed to the nutritional level of children, besides, perhaps, helping in overcoming some social rigidity of caste and class among the children. This programme has also helped women, mostly widows, engaged for cooking hot meals for the school children. All this has had a positive impact on the family planning programme of the government. The spread and reach of mass media, in particular the films have helped in reinforcing the social message for family planning.

Andhra Pradesh

The decline in fertility rate in Andhra Pradesh has not been accompanied by any significant improvement in social indicators. The female literacy rate has been lower and infant mortality rate much higher than in Kerala and Tamil Nadu. The percentage of urban population in the State is almost same as that of all-India. Access to electronic media seems to have played some motivational role in acceptance of family planning practices and, hence, in engineering a

decline in fertility. The exposure to mass media is considerably higher than many other parts of country. This would have also helped in spreading the message of family planning. A large percentage of mothers — literates, as well as illiterates — have accepted antenatal care, a majority of them from a medical doctor, both in urban and rural areas. There has been an improvement in living standards of people and a considerable reduction in population living below the poverty line. In part, this is due to substantial subsidies provided by the State Government on food, particularly on rice (the Two Rupees Rice Scheme), that has helped in raising living standards of people. The relatively well managed public distribution system for food grains through which subsidised rice is distributed and the Integrated Child Development Services programme that integrates supplementary nutrition with primary health care and informal education have made an impact on poverty alleviation and on family planning. On a per capita basis, Andhra Pradesh spends much more money on anti-poverty programmes than many other States. There has been a significant reduction in the rural unemployment, particularly among females, along with increase in real wage rates. In general, in the nineties, a pro active Government, guided also by a competitive urge to do as well as the neighbouring States, has helped focus the public policy and improve effectiveness of delivery mechanism in the State. These factors could have created a favourable climate for a decline in fertility, even with a low level of social development as reflected in some indicators.

*Source Adapted from Ashish Bose (2000),
A K Shiva Kumar(1995).*

educated women, Muslim and Scheduled Castes/Scheduled Tribe women in the period 1990-92 and 1996-98.

An important concern in the present stage of India's demographic transition relates to persisting adverse **Sex Ratio**, defined as number of females to thousand males. It has fluctuated between 927-934 between the period 1971 to 2001. This is much lower than the sex ratio of 980 that prevailed in the early part of the 20th century in the country. It is despite medical evidence that suggests that women have a distinct advantage over men in terms of lower mortality and, therefore, longer life spans if they are symmetrically placed in terms of availability of nutrition, access to health care and medical life support.

There is a significant variation in sex ratio across States. In general the female to male ratios are more favourable in the Southern and Eastern regions in comparison to the Northern and the Western regions. In 1991, the sex ratio in the four Southern States ranged between 960-1036 females for every thousand males as against close to 900 in the Western region and even lower ratio in Punjab, Haryana and Uttar Pradesh. The sex ratio also varied between the rural and urban areas, as well as among different sections of the society.

For the Scheduled Caste, Scheduled Tribes and the rest of the population it was 922, 972 and 923 females for every thousand males, respectively, as against the overall sex ratio of 927 for the country in 1991. As per one estimate it amounts to nearly 31.8 million 'missing females' in the country, if the observed Sex ratio for 1991 was closer to the expected sex ratio.

Before one looks at factors that explain prevailing patterns in sex ratio in the country, it is quite instructive to look at **juvenile sex ratios**, i.e. sex ratio in the age group 0-9 years. The juvenile sex ratios are free from sex selective migration and can be directly associated with pattern of mortality among children by sex. An improvement in the sex ratio in age group 5-9 years vis-à-vis the sex ratio in 0-4 years in favour of females, would be in keeping with expected biological trends. On other hand, a reduction in this ratio would imply higher female mortality in comparison to males, indicating discrimination against girl child in availability and access to food, nutrition, health care and, perhaps, even medical support services.

Between the population Census of 1981 and 1991, juvenile sex ratio declined from 958 to 946. The decline was in age groups 0-4 years, as well as in 5-9 years. At the national level, difference between rural and urban areas was marginal, although it widened somewhat in 1991 in comparison to 1981. The ratio was more favourable for females in age group 0-4 years than that prevailing in age group 5-9 years for both the Census years. However, the inter-State variations were quite striking. The sex ratio was relatively more favourable for females in Southern, Northeastern and Eastern States and was particularly adverse in the States of Haryana, Punjab, Rajasthan, Uttar Pradesh and Delhi. For a majority of States both in rural and urban areas, the sex ratio was lower in age group 5-9 years than in age group 0-4 years though the differences declined over the period. The preliminary results from Census 2001 for sex ratio in age group 0-6 years was 927 females for thousand males, with a similar pattern at State level.

Among the factors that explain these patterns in the sex ratios, it turns out that while female mortality was 10.5 per cent higher than male mortality in the age group 0-4 years, it was higher by 19 per cent in the age group 5-9 years in 1981. These differences in female and male age specific mortality were much higher for rural areas than for urban. In 1991, mortality differences narrowed down considerably, to the extent that male mortality marginally exceeded female mortality in urban areas for age group 5-9 years. There are, however, wide differences in the female-male mortality at State level. For a few States, namely, Bihar, Haryana (in 1981), Madhya Pradesh, Punjab (in 1991), Rajasthan and Uttar Pradesh the female mortality was higher than the male for both age groups.

Another factor that has a bearing on female to male ratio in the population is the sex ratio at birth. The world over, proportion of male

Sex Ratios in the Age Groups 0-4 and 5-9 years

(Females per Thousand Males)

Age Group	1981			1991		
	Rural	Urban	Total	Rural	Urban	Total
0-4	979	973	978	959	943	955
5-9	941	942	941	937	939	938
0-9	959	957	958	948	940	946

Source Estimated from Registrar General of India (1999)

Variations in Sex Ratio in Age Groups 0-4, 5-9 for 1981 and 1991

	Sex Ratio in age group 5-9 greater than Sex Ratio in age group 0-4	Sex Ratio age group 5-9 not significantly different than Sex Ratio in age group 0-4	Sex Ratio in age group 5-9 less than Sex Ratio in age group 0-4
1981 (Rural)	Karnataka, Maharashtra, Sikkim, Pondicherry.	Goa, Kerala, Mizoram, Orissa, Tamil Nadu	Andhra Pradesh, Arunachal Pradesh, Bihar, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Manipur, Meghalaya, Nagaland, Punjab, Rajasthan, Uttar Pradesh, Tripura, West Bengal, Andaman & Nicobar Is., Chandigarh, Dadra & Nagar Haveli, Delhi and Lakshadweep.
1981 (Urban)	Himachal Pradesh, Karnataka, Mizoram, Dadra and Nagar Haveli.	Kerala, Pondicherry	Andhra Pradesh, Arunachal Pradesh, Bihar, Goa, Gujarat, Haryana, Jammu & Kashmir, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Nagaland, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal, Andaman & Nicobar Is., Chandigarh, Delhi and Lakshadweep.
1981 (Combined)	Karnataka, Maharashtra, Sikkim, Pondicherry.	Goa, Kerala, Mizoram, Orissa, Tamil Nadu	Andhra Pradesh, Arunachal Pradesh, Bihar, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Manipur, Meghalaya, Nagaland, Punjab, Rajasthan, Uttar Pradesh, Tripura, West Bengal, Andaman & Nicobar Is., Chandigarh, Dadra & Nagar Haveli, Delhi and Lakshadweep.
1991 (Rural)	Goa, Himachal Pradesh, Karnataka, Kerala, Mizoram, Punjab, Sikkim, Tamil Nadu, Andaman & Nicobar Is.	Andhra Pradesh, Assam, Gujarat, Maharashtra, Orissa, Tripura, West Bengal, Daman & Diu, Pondicherry	Arunachal Pradesh, Bihar, Haryana, Madhya Pradesh, Manipur, Meghalaya, Nagaland, Rajasthan, Uttar Pradesh, Chandigarh, Dadra & Nagar Haveli, Delhi and Lakshadweep.
1991 (Urban)	Goa, Gujarat, Karnataka, Manipur, Meghalaya, Mizoram, Punjab, Sikkim, Tamil Nadu, Andaman & Nicobar Is.	Andhra Pradesh, Himachal Pradesh, Kerala, Madhya Pradesh, Maharashtra, Chandigarh	Arunachal Pradesh, Assam, Bihar, Haryana, Nagaland, Orissa, Rajasthan, Tripura, Uttar Pradesh, West Bengal, Dadra & Nagar Haveli, Daman & Diu, Delhi, Lakshadweep Pondicherry.
1991 (Combined)	Goa, Himachal Pradesh, Karnataka, Kerala, Tamil Nadu, Manipur, Mizoram, Punjab, Sikkim, Andaman & Nicobar Is.	Andhra Pradesh, Assam, Gujarat, Maharashtra, Meghalaya, Orissa, Tripura, Dadra & Nagar Haveli	Arunachal Pradesh, Bihar, Haryana, Nagaland, Orissa, Rajasthan, Tripura, Uttar Pradesh, West Bengal, Daman & Diu, Delhi, Lakshadweep, Pondicherry.

children at birth is more than that of female. The sex ratio at birth varies on an average between 943 to 952 females for every thousand males. It tends to progressively become favourable for females on account of higher mortality for males. In India, however, the sex ratio at birth has generally remained in the range of 900-910 females for every thousand males in 1980s, declining to 878 in 1993-95, improving marginally thereafter to 901 in 1996-98. At sub-national level, for Southern States, it is by and large, in line with prevailing

trends in the developed world, but is adverse for females in the States of Bihar, Gujarat, Haryana, Punjab, Rajasthan and Uttar Pradesh. For Haryana and Punjab, the sex ratio at birth, in urban areas was at sub-800 levels in 1996-98. This points to the possibility of widespread prevalence of pre-natal sex determination and sex selection practices. It highlights the impact of perverse social and cultural factors related to marriage practices and dowry, as well as role of women in household level decision making in an essentially patriarchal social context in these States.

Two other demographic concerns that are particularly important from the point of a human centric approach to the development process relate to the issue of 'greying of the population' and the incidence of disability in the population. These have been discussed in the Chapter 6.

Policies, Interventions and Prospects

It would not be entirely incorrect to suggest that India's approach to health sector development has not been sufficiently integrated with overall process of development. This is reflected, for instance, in the absence of an adequate policy framework that conceives and exploits inter and intra sectoral synergies between development processes directed at improving availability of drinking water, sanitation and public hygiene, access to elementary education, nutrition and poverty alleviation, on one hand, with awareness and access to public health and medical services, on other. There has been a misplaced emphasis on maintenance and strengthening of private health care services, perhaps, on account of the inertia of colonial inheritance, at the expense of broadening and deepening of public health care system targeted at controlling the incidence of disease, particularly of the communicable diseases, in rural areas. There are significant rural-urban disparities in various mortality, morbidity and nutrition indicators. Moreover, there is multiplicity of public programmes and interventions in health sector resulting in a thin spread of available resources, manpower and infrastructure. In States where inter-sectoral linkages that influence health attainments of people, have existed either for historical reasons, or have been consciously forged as a part of planned effort, and where the health concerns of the rural population have been reasonably addressed, results on health attainments, as well as demographic transition have been quite impressive.

The National Health Policy 1983 and the draft National Health Policy 2001 recognise these concerns. The Statements have highlighted a need for time-bound programme for setting up network of comprehensive primary health care services, linked with extension and health education. It talked of intermediation through 'health volunteers' having appropriate knowledge and skill. It emphasised establishment of a referral system to prevent needless load on higher levels of health care hierarchy, at the same time creating a network of super-specialty services by also encouraging private health care facilities for patients who can afford. While there has been noteworthy success in eradication of some communicable diseases and some are expected to be eliminated in near future, the sustainability of India's health care system, as it stands today, is uncertain. Moreover, there is far greater urgency to ensure an equitable access to health care services and

The approach to health sector development in the country has not been sufficiently integrated with the overall process of development.

attain acceptable standards of good health for the population in the country.

As per the Constitutional allocation of responsibilities between the Central and State Governments, health and family welfare has been identified as a State subject. The main responsibility of infrastructure and manpower building rests with the State Governments. However, the Central Government has over the last five decades provided supplementary funds for control of major communicable, as well as non-communicable diseases, by initiating national level programmes, in some cases, with the help of assistance from foreign agencies.

At the time of independence, communicable diseases were a major cause of morbidity and mortality in India. Initial efforts in public health care were, therefore, directed to their prevention and control. Among the initiatives, at national level, the National Anti Malaria Programme (launched in 1953); Kala Azar which is confined to 36 districts in Bihar and 10 districts in West Bengal covering a population of about 7.5 million; the National Tuberculosis Control Programme (launched in 1962); National Leprosy Eradication Programme (launched in 1983); National AIDS Control Programme (launched in 1992) are important interventions that have contributed considerably in bringing down the crude death rate per thousand, from about 25 in 1951 to under 9 in 1999. However, morbidity due to communicable diseases continues to be high in spite of renewed effort at extending the immunisation coverage of the population. Deteriorating urban and rural sanitation, poor solid waste management and overcrowding have escalated the prevalence of communicable diseases. The emergence of drug-resistant pathogens and insecticide-resistant vectors has compounded the problem of controlling communicable diseases. National initiatives, on some non-communicable diseases that were perceived as major public health problems, have also been taken. Among these the National Goitre Control Programme (launched in 1962), the National Blindness Control Programme (launched in 1976), the National Cancer Control Programme (launched in 1975-76), National Mental Health Programme (launched in 1982) and Integrated Non-Communicable Disease Control Programme (launched on a pilot basis in the Ninth Plan) are some of the major initiatives of the Central Government. In addition, the Central Government supports bio-medical research in a number of areas. The Indian Council for Medical Research is the nodal organisation for undertaking and supervising this work.

At State level, apart from the overall responsibility of providing preventive and curative health care, the Integrated Child Development Services (ICDS) Programme, the National Mid Day Meals Programme (NMMP), various micro nutrient schemes, including those targeted for improving intake of iron-folate, vitamin A and iodised salt, as well as food for work through various anti poverty programmes are some important initiatives aimed at addressing the problem of malnutrition and women and child health. The ICDS programme providing services like supplementary feeding, immunisation against preventable childhood diseases, health checkups, health and nutrition education to women and pre-school education for children has recorded significant success in many areas, particularly in States where the primary level health care infrastructure is relatively well developed. The States that have done well include, Kerala, Tamil Nadu, Karnataka and Andhra Pradesh in the South, Maharashtra and Gujarat in the West and West Bengal in the East. Himachal Pradesh, Haryana and Punjab have also done well but it is Rajasthan and Madhya

Pradesh that have of late made significant strides in improving the implementation of ICDS programme in their State. The National Mid Day Meal Programme (NMMP) was initiated in 1995 to improve nutritional status and learning achievements of school-going children and, more importantly, their enrolment and attendance in schools. The programme has been modelled after a similar initiative in Tamil Nadu showed considerable success in attaining the stated objectives of the programme. The availability of cooked meal in schools has been found to not only improve enrolment and attendance levels of the school going children but has provided critical nutrition supplements to the children. In the States where cooked meals were substituted by dry rations as, for instance, in Andhra Pradesh, the results have not been as encouraging. In fact in a recent judgement of the Supreme Court it has been directed only cooked meals are to be given under this programme.

Much of the success of these initiatives, both for preventive, as well as curative health care services depends on availability of health care infrastructure, trained manpower and public provisioning of resources. At the national level, the functional primary healthcare infrastructure, including Sub-Centres, Primary Health Centres and Community Health Centres nearly meets the existing norms (for 1991 population) formulated, taking into account population, density and terrain. At present, the national norms envisage a Sub-Centre for population of three to five thousand; a Primary Health Centre for population of twenty to thirty thousand; and a Community Health Centre for four Primary Health Centres. The number of Primary Health Centres doctors at the national level exceeds the requirement as per the norms. There are, however, shortages in the availability of para-medics, as well as specialists at the Community Health Centres, which undermines their functioning as referral units. The disparities across States and within States between regions for infrastructure, as well as for manpower are quite striking. For instance, the indicator — births

A Diagnosis of India's Health Care Services

India's has a large network of public, voluntary and private health care infrastructure manned by an equally large number of medical personnel and paramedics. Some ailments of India's health care system includes:

- Persistent gaps in manpower and infrastructure, with wide inter-State differences, especially at the primary health care level, disproportionately impacting less developed and rural areas;
- Sub-optimal functioning of the existing infrastructure, poor referral services;
- Significant proportion of hospitals not having appropriate manpower, diagnostic and therapeutic services and drugs, particularly in public sector;
- Increasing dual disease burden of communicable and non-communicable diseases because of persisting poverty along with ongoing demographic, lifestyle and environmental transitions;
- Increased dependence of people on private health care services, often leading to indebtedness in rural areas;
- Escalating costs of health care, ever widening gaps between what is possible and can be afforded;
- Technological advances, though, widen the spectrum of possible interventions but are well beyond the financial reach of majority;
- Inadequate integration of indigenous and alternative system of medicines with the allopathic stream;
- Inadequate integration of public interventions in the area of drinking water, sanitation, urban waste disposal with public health programmes thereby failing to exploit potential synergies that reinforce health attainments of people;
- There is, perhaps, a misplaced emphasis on development and maintenance of private health care services at the expense of a broadening and deepening of public health care system targeted, essentially, at controlling the incidence of communicable diseases in rural areas;
- In case of preventive health care, among the five levels of prevention, namely — health promotion; specific protection; early diagnosis and prompt treatment; disability limitation; and rehabilitation — there is little that has been done by way of strengthening the institutional and delivery mechanism of public policy and programmes, at least, in case of the last two; and
- Continuation of a universally free public health care system — preventive as well as curative — is unsustainable in its present form. Moreover, there is inadequate policy movement on creating an alternative, accessible, affordable, viable and dependable health care system for majority of the population.

attended by health professionals — shows not only a striking rural urban disparity at national level but also significant disparities across States. For Kerala proportion of births attended by health professionals was nearly 88 and 96 per cent in rural and urban areas respectively, whereas, the corresponding figure was only 11 and 44 per cent for rural and urban areas of Uttar Pradesh in 1992-93, as per NFHS-I. The data for NFHS-II (1998-99) shows improvement in almost all States with some decline in rural-urban disparities. On the whole, at national level, as against 34 per cent births attended by health professionals in 1992-93, the proportion increased to 42 per cent in 1998-99. Similarly, the proportion of fully vaccinated children between ages

12 to 23 months improved from 35 per cent to 42 per cent in the country as per NFHS data for 1992-93 and 1998-99. This proportion for Bihar was just about 10 per cent in 1992-93, whereas, it was well over 60 per cent for Goa, Tamil Nadu, Punjab, Maharashtra, Himachal Pradesh and Jammu & Kashmir. The coverage has remained the same in Bihar in 1998-99 but it is above or close to 80 per cent in case of Goa, Himachal Pradesh, Kerala, Maharashtra and Tamil Nadu.

The public provisioning of resources for development and maintenance of health care infrastructure has had a direct bearing on the health attainments of States. At the national level, the health expenditure ratio i.e., the ratio of public expenditure on health to total public expenditure increased for the Central Government from 1.4 per cent in 1980-81 (Statistical Appendix Tables 7.5 to 7.8) to 1.5 per cent in 1990-91 and, subsequently, to 1.8 per cent in 1998-99. The corresponding figures for major States, however, declined from 7.1 per cent in 1980-81 to 5.9 per cent in 1990-91 and further to 5.8 per cent in 1998-99. At State level, except for Tamil Nadu and Karnataka, which have recorded impressive improvement in health expenditure ratio between 1980-81 and 1990-91, for all major States there has been a decline. Among the major States the ratio of public spending on health — both revenue

Rural Medical Care — Alternative Low Cost Health Care Models

The rural-urban disparity in accessibility to modern health care services is quite striking in India. The accessibility of the impoverished population is even more. According to a survey undertaken by Voluntary Health Association of India not more than 20 per cent of the population has any access to allopathic medicine, leave alone basic surgical services like life-saving caesarean section, or a life saving repair of typhoid perforation. The trickle down effect of technology-intensive medical care, which in most cases is unaffordable for the majority, is limited. It is against this background that initiatives such as the networking of rural surgeons through Association of Rural Surgeons of India (launched in 1993) is providing viable models of rural health care that is accessible and affordable to a common person. In addition to the stated objectives of providing a second level health care in areas where it does not exist at present; initiate and provide primary health care within the community; and support tertiary health care, the network is supporting a platform for dissemination of modern health care technology and research, adapted/modified to meet local needs and constraints, in rural areas.

The Small Scale Rural Surgical Clinics in West Bengal is one such initiative that has been successful in extending affordable basic surgical health care at the level of sub-division. It is estimated that approximately 60 per cent of the operation load is being shared by these small clinics while the State-run sub-divisional hospital absorbs the remaining 40 per cent. These clinics are usually run by a single experienced doctor who builds up a team of paramedics locally, and often without the help of a trained anaesthetist is able to provide medical service at a fraction of the cost. A similar effort by the Rural Medicare Society in the suburbs of Delhi is extending both preventive and curative health care to those who otherwise would have been bypassed altogether because of lack of affordability.

There are at least 300 such hospitals registered with the Association of Rural Surgeons of India through out the country and many more that are yet to take advantage of the forum. The reasons for the success of these hospitals includes, inadequate availability of resources, lack of basic equipment, medicines and essential manpower in the public health care system in rural areas. Ultimately, how well such initiatives fare and the extent to which they are able to supplement the Government's efforts in providing a universal health cover to all, depends on the institutional support — including training and skill upgradation — that is extended to these hospitals and the medical practioners. They have to be viewed as partners in the health sector development plans of the country.

Source Rural Medicare Society, New Delhi and Banshree Clinic Jhargram, Midnapur, West Bengal.

and capital expenditure — to Gross State Domestic Product was above 4 per cent in case of Himachal Pradesh and Jammu & Kashmir, between 2-2.5 per cent in case of Rajasthan and Kerala, between 1.5-2 per cent in case of Orissa, Madhya Pradesh and Tamil Nadu and less than 1.5 per cent for the rest in 1980-81. In 1998-99, it was about 2.5 per cent in Himachal Pradesh and Jammu & Kashmir, 1.6 per cent for Andhra Pradesh and between 1 and 1.5 per cent for Tamil Nadu, Orissa and Karnataka and less than 1 per cent for the rest. It turns out that the proportion of public resources for health at the State level declined in the last two decades for almost all States. The share of Central Government allocations to the health sector, however increased, though only marginally in the nineties.

The private expenditure on health has shown a significant increase in the nineties. The data from National Accounts Statistics shows that as against an average growth of a little over 2 per cent in the expenditure on health in the eighties, when the growth in private final consumption expenditure was around 4 per cent per annum, the growth in health expenditure, in the nineties, was over 7.5 per cent per annum as against the growth of 4.6 per cent in the total private final consumption expenditure. The growing dependence of the population on private health care facilities is also reflected in indicators capturing the growth of health care infrastructure in the private sector.

National Population Policy 2000

In 1952, India was the first country to launch a national programme, emphasising family planning, to the extent necessary, for reducing birth rates to stabilise the population at a level consistent with the requirement of national economy. But it was only in 2000 that a National Population Policy was adopted in the country. The Policy has the long-term objective of achieving a stable population by 2045, at a level consistent with the requirements of sustainable economic growth, social development and environmental protection. The Policy has set the following goals for 2010:

- Universal access to quality contraceptive services in order to lower the Total Fertility Rate to 2.1 and attaining two-child norm.
- Full coverage of registration of births, deaths and marriage and pregnancy.
- Universal access to information/counselling services for fertility regulation and contraception with a wide basket of choices.
- Infant Mortality Rate to decline below 30 per thousand live births and sharp reduction in the incidence of low birth weight (below 2.5 kg.) babies.
- Universal immunisation of children against vaccine preventable diseases, elimination of Polio by 2000 and near elimination of Tetanus and Measles.
- Promote delayed marriage for girls, not earlier than age 18 and preferably after 20 years of age.
- Achieve 80 per cent institutional deliveries and increase in the percentage of deliveries conducted by trained persons to 100 per cent.
- Containing Sexually Transmitted Diseases.
- Reduction in Maternal Mortality Ratio to less than 100 per 100,000 live births.
- Universalisation of primary education and reduction in the dropout rates at primary and secondary levels to below 20 per cent both for boys and girls.

The National Commission on Population has been constituted under the Chairmanship of the Prime Minister and Deputy Chairman, Planning Commission as Vice Chairman on 11th May 2000 to review, monitor and give directions for implementation of the National Population Policy. A Strategic Support Group consisting of Secretaries of concerned sectoral ministries has been constituted as Standing Advisory Group to the Commission. Some Working Groups have been constituted to look into specific aspects of implementation of the Policy.

Summing Up

Stabilisation of population is an essential requirement for promoting sustainable development and a more equitable distribution of resources and opportunities in a developing society characterised by range of scarcities and multiple constraints on the ability to transform its endowments into desirable development outcomes. In spite of being among the first in the world to recognise the importance of and initiate family planning and

welfare programmes in its development strategy, as early as in 1952, India's population has grown nearly three times from about 361 million in 1951 to 1027 million in 2001. It has taken the country five decades to have a National Population Policy and have it adopted by the Parliament to reflect a national consensus. Some States including Andhra Pradesh, Rajasthan, Uttar Pradesh, Madhya Pradesh, Maharashtra, Gujarat, Orissa and Kerala have also presented or taken steps to formulate their respective population policies. These policy statements affirm the commitment of Government towards voluntary and informed choice and consent of citizens while extending reproductive health care services. Moreover, there is a continuation of the target free approach in administering family planning services. The national policy provides a framework for advancing goals and prioritising strategies during the next decade to meet reproductive and child health needs of the population and to achieve replacement levels (TFR) by 2010. While it is based on the need to simultaneously address issues of infant mortality and maternal mortality, meeting unmet needs of contraception and increasing the coverage of reproductive and child health services by Government in partnership with industry and voluntary health organisations, in the ultimate analysis, the success of the effort rests critically on forging an inter-sectoral development strategy that improves the accessibility of the population to primary and secondary education, extending basic amenities including sanitation, safe drinking water, housing and connectivity and most importantly catalysing empowerment of women in all walks of their life.
