Chapter 7

Summary and Conclusion

Programmatically the effects of eliminating diseases are studied by cause elimination life tables. In such life tables, a cause of death is eradicated and the life expectancy is recalculated to see the gains in the expected longevity. The gain in the expectation of life after a particular cause of death is eliminated gives a summary measure of the impact of a particular cause of death in the population. Deaths from a cause are assumed to disappear but the disease itself is not assumed to go away.

To study the cause of death pattern in India and selected States trend lines have been fitted for all the cause of death groups for the period from 1989 to 2008 by age and sex. However, only those causes of death which show some trends viz., certain infectious and parasitic diseases; neoplasms; diseases of the blood and blood forming organs and certain disorders involving the immune mechanisms; endocrine, nutritional & metabolic diseases; diseases of the nervous system; diseases of the circulatory system; diseases of the respiratory system; diseases of the digestive system; diseases of the genitourinary system; symptoms, signs and abnormal clinical and laboratory findings not elsewhere classified; and injury, poisoning and certain other consequences of external causes, have been discussed in the thesis. First of all, deaths under the head “age not stated” have been distributed in all age groups in proportion to total deaths at those age groups. This was done for all the years for all causes of deaths by age and sex. Proportion of each cause of death to total deaths by age and sex was also calculated. Three years moving average of proportion of each cause of death to total deaths have been calculated and analyzed for India, Maharashtra, Rajasthan and Tamil Nadu for the period from 1989 to 2008. Data for Bihar is available from 2002 to 2008 and hence the trend lines have been fitted by applying 3 years moving average.

Certain infectious and parasitic diseases, in India in males, shows downward trend in the age groups <1 and 1-4 years; slight downward in 5-14 years age group; slight upward trend in 25-34, 35-44 and 70 years and above age groups; and slight
fluctuating trend in 65-69 age group. In female, there is slight downward trend at a very high mortality level in <1 year; downward trend at very high mortality level in 1-4 years; slight downward trend in 5-14 years; slight fluctuating trend in 15-24 and 65-69 years; slight upward trend in 25-34, 35-44, 45-54, 55-64 and 70 years and above age groups. In Bihar, there is slight decreasing trend in males in <1, 45-54 and 70 years and above age groups; decreasing trend from 2004 onwards in 1-4 and 5-14 age groups; slight upward trend in 15-24, 25-34 and 35-44 years age groups; and slight fluctuating trend in 55-64 years age group. In females, there is slight decreasing trend in <1 and 55-64 years age groups; decreasing trend from 2004 onwards in 1-4 and 5-14 years age groups; slight upward trend in 15-24, 35-44 and 45-54 years age groups; and slight fluctuating trend in 65-69 years age group. In Maharashtra, there is downward trend in males in the age groups <1 and 1-4 years, slight fluctuating for age groups 5-14, 15-24, 45-54, 55-64, 65-69 and 70 years and above age groups, slight upward trend in 25-34 years age group till 2003 then downward trend, slight upward trend in 35-44 years age group. In females, there is downward trend in the age groups <1 and 1-4 years; slight fluctuating trend in 5-14, 25-34, 35-44, 45-54 and 55-64 years age groups; slight upward trend in the age groups 25-34, 65-69 and 70 years and above. In Rajasthan, in males the trend is fluctuating at a very high mortality level in <1 year age; fluctuating in the age groups 1-4, 25-34, 35-44 and 45-44 years; slight fluctuating in 15-24, 55-64 and 70 years and above age groups; slight increasing in 65-69 years age group. In females, there is fluctuating trend at a very high mortality level in <1 year age; slight fluctuating trend in the age groups 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64 and 70 years and above. In Tamil Nadu, in males in <1 year age, at a very high mortality level during 1990-97, there is steep downward trend from 1997 onwards; downward trend in 1-4 and 5-14 years age groups; slightly downward trend in 15-24 years age group; slight upward trend in 25-34, 45-54, 65-69 and 70 years and above age groups; fluctuating trend in 35-44 years age group; slight fluctuating trend in 55-64 years age group. In females, in <1 year age, at a very high mortality level during 1990-96, there is fluctuating trend. The trend decreases in 1-4 and 5-14 years age groups, slightly fluctuating in 15-24, 25-34 and 55-64 years age groups and slightly increasing in 35-44, 45-54, 65-69 and 70 years and above age groups.
Neoplasms, in India in males, shows slight downward trend in the age groups 5-14, 15-24 and 35-44 years during the period; slight downward trend at a very high mortality level in 45-54 years age group; slight fluctuating trend at a very high mortality level in 55-64 years age group; slight upward trend in 65-69 and 70 years and above age groups. In females, there is slight downward trend in the age groups 5-14 and 25-34 years; slight fluctuating trend in 35-44 and 70 years and above age groups; fluctuating trend at a very high mortality level in 45-54 years age group; slight upward trend in 65-69 years age group. In Bihar, in males there is upward trend in 5-14 years age group till 2005 then downward trend; fluctuating trend in 15-24 years age group; upward trend in 25-34 years age group; downward trend at a very high mortality level from 2004 onward in 35-44 years age group; slight upward trend in 45-54 years age group; downward trend at a very high mortality level in 55-64 and 65-69 years age groups; upward trend in 2004 and 2007 in the age groups 70 years and above. In females, there is steep upward trend during 2006-2007 in 5-14 years age group; slight upward trend in 15-24 and 70 years and above age groups; slight fluctuating trend in 25-34 years age group; and fluctuating trend at a very high mortality level in 35-44 years age group; whereas an upward trend at a very high mortality level in 45-54 years age group till 2004 then downward trend; again an upward trend in 55-64 years age group till 2005 then downward trend. In Maharashtra, in males there is slight fluctuating trend in the age groups <1, 1-4, 5-14, 15-24, 25-34, 35-44 and 65-69 years; slight downward trend at a very high mortality level in 45-54 and 55-64 years age groups; and slight fluctuating trend at a very high mortality level in 70 years and above age group. In females, there is slight fluctuating trend in the age groups 15-24, 25-34, 35-44, 65-69 and 70 years and above; and slight fluctuating trend at a very high mortality level in the age groups 45-54 and 55-64 years. In Rajasthan, in males there is slight fluctuating trend in the age groups <1 and 1-4 years; while fluctuating trend in the age groups 5-14, 25-34, 35-44, 45-54, 55-64, 65-69 and 70 years and above; steep downward trend in 15-24 years age groups in 1991-94 and steep upward trend in 1999-2002 then downward trend. In females, there is slight fluctuating trend in the age groups 1-4, 15-24 and 25-34 years; fluctuating trend in the age groups 5-14, 55-64, 65-69 and 70 years and above; slight downward trend at a very high mortality level in 35-44 years age group; and fluctuating trend at high mortality level in 45-54 years age group. In Tamil Nadu, in males there is fluctuating trend in the age groups <1 and 35-44 years; with slight
fluctuating in the age groups 1-4, 5-14, 25-34 and 65-69 years; slight downward trend in 15-24 years age group; slight downward trend at a very high mortality level in 45-54 years age group; and slight fluctuating trend at a very high mortality level in 55-64 years age group. In females, there is slight upward trend in <1 year age in 1999-2001; slight fluctuating trend in 1-4, 25-34 and 65-69 years age groups; slight downward trend in 5-14 and 15-24 years age groups; fluctuating trend at a very high mortality level in 35-44 years age group; decreasing trend in 45-54 years age group till 1995 then slight upward trend; slight fluctuating trend at a very high mortality level in 55-64 years age group; and slight upward trend in the age group 70 years and above.

Diseases of the blood and blood forming organs and certain disorders involving the immune mechanisms, in India in males, shows slight downward trend in the age groups <1 and 45-54 years during the period; while slight fluctuating trend in 1-4, 5-14, 15-24, 35-44, 55-64, 65-69 and 70 years and above age groups. In females, there is slight downward trend in <1 and 65-69 years age groups; while slight fluctuating trend in 1-4, 15-24, 25-34, 35-44, 45-54 and 70 years and above age groups; and slight upward trend in 5-14 and 55-64 years age groups. In Bihar, in males there is slight upward trend in <1, 25-34, 55-64 and 70 years and above age groups; while upward trend in 1-4 years age group in 2004 then downward trend in 5-14 years age group from 2004 onwards; with declining trend in 15-24 years age group; downward trend in 35-44 and 45-54 years age groups till 2004 then upward trend; and downward trend in 65-69 years age group. In females, there is downward trend in 1-4 years age group from 2004 onward; fluctuating trend in 5-14 years age group; slight downward trend in 15-24, 35-44, 45-54 and 55-64 years age groups; slight upward trend in 25-34 and 70 years and above age groups; and slight fluctuating trend in 65-69 years age group. In Maharashtra, in males there is fluctuating trend in the age groups <1, 1-4, 65-69 and 70 years and above; with slight fluctuating trend in 5-14, 15-24, 25-34, 35-44, 45-54 and 55-64 years age groups. In females, there is slight fluctuating trend in <1, 1-4, 15-24, 25-34 and 35-44 years age groups; while fluctuating trend in 5-14, 45-54, 55-65 and 65-69 years age groups; and slight fluctuating trend at a very high mortality level in 70 years and above age group.

In Rajasthan, in males there is fluctuating trend in the age groups <1, 25-34, 45-54, 55-64 and 70 years and above; with fluctuating trend at high mortality level in 1-4 and 5-14 years age groups; and slight fluctuating trend in 15-24, 35-44, 45-54, 55-64 and
70 years and above age groups. In females, there is slight fluctuating trend in the age groups <1, 1-4, 5-14, 35-44, 45-54, 55-64, 65-69 and 70 years and above; with slight downward trend at a very high mortality level in 15-24 years age group; and slight fluctuating trend at a very high mortality level in 25-34 years age group. In Tamil Nadu, in males there is fluctuating trend in <1, 1-4 and 35-44 years age group; whereas downward trend in 5-14 and 15-24 years age groups; and slight downward trend in 25-34 years age group; slight fluctuating trend in 45-54, 55-64 and 70 years and above age groups; and downward trend at high mortality level in 65-69 years age group till 2000 then slight upward trend. In females, there is slight fluctuating trend in <1, 1-4, 45-54 and 65-69 years age groups; downward trend in 5-14 years age group; slight downward trend in 15-24 and 35-44 years age group; slight downward trend at a very high mortality level in 25-34 years age group; slight upward trend in 55-64 years age group; and upward trend in the age group 70 years and above.

Endocrine, nutritional and metabolic diseases, in India in males, shows downward trend in <1 year age during the period; steep downward trend in 1-4 years age group; slight downward in 5-14 and 25-34 years age groups; slight fluctuating in 35-44 years age group; slight upward trend at a very high mortality level in 55-64 years age group; upward trend in 65-69 years age group; slight upward trend in 70 years and above age group. In females, there is downward trend in <1 year age, steep downward trend at high mortality level in 1-4 years age group; slight downward trend in 5-14 years age group; slight fluctuating trend in 35-44 years age group; slight upward trend at a very high mortality level in 55-64 years age group; upward trend in 65-69 years age group; and slight upward trend in 70 years and above age group. In Bihar, in males there is slight downward trend in <1 and 1-4 years age group; while slight upward trend in 5-14 years age group during 2003-2004; slight upward trend in 15-24 years age group from 2004 onward; downward trend in 25-34 years age group; upward trend in 35-44 and 54-54 years age group; downward trend at a very high mortality level in 55-64 years age group; fluctuating trend in 65-69 years age group; downward trend at high mortality level in 70 years and above age group till 2004 then upward trend. In females, there is slight fluctuating trend in <1 and 25-34 years age groups; slight upward trend in 1-4, 15-24 and 65-69 years age groups; slight upward trend in 5-14 years age group till 2006 then downward trend; slight fluctuating trend in 25-34 years age group; fluctuating trend in 35-44 years age group; upward trend in
45-54 years age group till 2004 then downward trend; downward trend at high mortality level in 55-64 years age group; downward trend in 70 years and above age group in 2004 then upward trend till 2006. In Maharashtra, in males there is downward trend in <1 year age from 1991 onward; downward trend in 1-4 years age group; slight downward trend in 5-14 years age group; slight fluctuating trend in 15-24, 25-34, 35-44 and 45-54 years age groups; slight fluctuating trend at a very high mortality level in 55-64 years age group; fluctuating trend in 65-69 years age group; fluctuating trend at a very high mortality level in 70 years and above age group. In females, there is downward trend in <1 and 1-4 years age groups; slight fluctuating trend in 5-14, 15-24, 35-44 and 45-54 years age groups; upward trend in 55-64 and 65-69 years age groups till 1995; slight fluctuating trend at a very high mortality level in 70 years and above age group. In Rajasthan, in males there is downward trend at a very high mortality level in <1 year age; while fluctuating trend in 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-69 and 70 years and above age groups. In females, there is slight fluctuating trend in <1, 5-14, 15-24, 25-34 and 45-54 years age groups; while fluctuating trend at high mortality level in 1-4 years age group; fluctuating trend in 35-44, 55-64, 65-69 and 70 years and above age groups. In Tamil Nadu, in males there is upward trend till 1993 then downward trend in <1 year age; while downward trend in 1-4 years age group; slight downward trend in 15-24 years age groups; upward trend during 1990-96 in 15-24 years age groups; fluctuating trend in 35-44 years age group; slight downward trend at a very high mortality level in 45-54 years age group; slight fluctuating trend at a very high mortality level in 55-64 years age group; upward trend in 65-69 and 70 years and above age groups. In females, there is upward trend till 1993 then downward trend in <1 year age; downward trend in 1-4 years age group; slight downward trend in 5-14, 15-24 and 25-34 years age groups; slight fluctuating trend in 35-44 years age group; slight downward trend at a very high mortality level in 45-54 years age group; slight fluctuating trend at a very high mortality level in 55-64 years age group; slight upward trend in 65-69 years age group; and an upward trend for age group 70 years and above.

Diseases of the nervous system, in India in males, shows downward trend at a very high mortality level in <1 year age during the period; while slight downward trend at a very high mortality level in 1-4 and 5-14 years age groups; slight downward trend in 15-24 years age group; slight upward trend in 35-44, 45-54, 55-64, 65-69 and
70 years and above age groups. In females, there is slight downward trend in <1 and 15-24 years age groups; slight downward trend at a very high mortality level in 1-4 and 5-14 years age groups; and slight upward trend in 35-44, 45-54, 55-64, 65-69 and 70 years and above age groups. In Bihar, in males there is slight upward trend in <1, 15-24 and 25-34 years age groups; while upward trend till 2005 then downward trend in 1-4 years age group; upward trend till 2006 then downward trend in 5-14 years age group; slight downward trend in 35-44 and 45-54 years age groups; downward trend in 55-64, 65-69 and 70 years and above age groups. In females, there is slight upward trend in <1 and 15-24 years age groups; downward trend from 2004 onward in 1-4 and 70 years and above age groups; upward trend till 2006 then downward trend in 5-14 years age group; slight downward trend in 25-34, 35-44, 45-54 and 55-64 years age groups; slight fluctuating trend in 65-69 years age group. In Maharashtra, in males there is fluctuating trend in <1, 1-4, 5-14, 45-54 and 55-64 years age groups; while slight downward trend in 15-24 years age group; slight fluctuating trend in 25-34, 35-44 and 65-69 years age groups; slight upward trend in 70 years and above age group. In females, there is fluctuating trend in <1, 1-4, 5-14 and 65-69 years age groups; slight fluctuating trend in 15-24, 25-34, 35-44, 45-54 and 55-64 years age groups; slight fluctuating trend in 65-69 years age group; slight upward trend in 70 years and above age group. In Rajasthan, in males there is fluctuating trend at a very high mortality level in <1, 1-4 and 5-14 years age groups; slight fluctuating trend in 15-24, 45-54, 55-64, 65-69 and 70 years and above age groups; fluctuating trend in 25-34 and 35-44 years age groups. In females, there is fluctuating trend at a very high mortality level in <1, 1-4 and 5-14 years age groups; slight fluctuating trend in the age groups 15-24, 25-34, 35-44, 45-54, 55-64, 65-69 and 70 years and above. In Tamil Nadu, in males there is steep downward trend from 1997 onward in <1 year age, at a very high mortality level during 1990-97; while downward trend in 1-4 and 5-14 years age groups; slight downward trend in 15-24 years age group; slight upward trend in 25-34, 45-54, 55-65 and 65-69 years age groups; fluctuating trend in 35-44 years age group and slight fluctuating trend in 70 years and above age group. In females, there is downward trend in <1, 1-4, and 5-14 years age groups; while slight fluctuating trend in 15-24, 45-54, 55-64 and 65-69 years age groups; slight upward trend in 25-34, 35-44 and 70 years and above age groups.
Diseases of the circulatory system in India, in males, shows slight fluctuating trend in 25-34 and 35-44 years age groups during the period; slight downward trend at a very high mortality level in 45-54 and 55-64 years age groups; upward trend at a very high mortality level in 70 years and above age group. In females, there is slight downward trend in 25-34 and 45-54 years age groups; slight upward trend in 35-44 years age group; slight downward trend at a very high mortality level in 55-64 years age group; slight upward trend at a very high mortality level in 70 years and above age group. In Bihar, in males there is slight downward trend in <1 and 5-14 years age groups; downward trend from 2004 onward in 1-4 years age group; slight upward trend in 25-34, 35-44 and 45-54 years age groups; slight fluctuating trend in 55-64 years age group; downward trend in 65-69 years age group; while upward trend till 2005 then downward trend in 70 years and above age group. In females, there is slight downward trend in <1 and 1-4 years age groups; while downward trend in 5-14 years age group; slight upward trend in 15-24 years age group; slight upward trend in 45-54, 55-64, 65-69 and 70 years and above age groups. In Maharashtra, in males there is slight fluctuating trend in <1, 1-4, 15-24, 25-34, 35-44, 45-54 and 65-69 years age groups; slight downward trend at a very high mortality level in 55-64 years age group; slight upward trend at a very high mortality level in 70 years and above age group. In females, there is slight fluctuating trend in <1, 35-44, 45-54 and 65-69 years age groups; slight downward trend at a very high mortality level in 55-64 years age group; slight upward trend at a very high mortality level in 70 years and above age group. In Rajasthan, in males there is slight fluctuating trend in <1, 1-4, 15-24 and 15-24 years age groups; fluctuating trend in the age groups 25-34, 35-44, 45-54, 55-64, 65-69 and 70 years and above. In females, there is slight fluctuating trend in the age groups <1, 1-4, 5-14, 15-24, 25-34, 35-44 and 45-54 years; while fluctuating trend in the age groups 55-64, 65-69 and 70 years and above. In Tamil Nadu, in males there is slight downward trend in the age groups <1, 1-4, 5-14, 15-24 and 25-34 years; slight fluctuating trend in 35-44 years age group; downward trend at a very high mortality level in 45-54 and 55-64 years age groups; slight upward trend in 65-69 years age group; and upward trend in 70 years and above age group. In females, there is slight downward trend in the age groups <1, 1-4, 5-14, 15-24 and 25-34 years; while slight fluctuating trend in 35-44 years age group; downward trend at a very high mortality level in 45-54 and 55-64 years age groups; slight upward trend in 65-69 years age group; and upward trend in 70 years and above age group.
Diseases of the respiratory system, in India in males, shows downward trend at a very high mortality level in <1 year age; downward trend in 1-4 years age group; slight downward trend in 5-14 years age group; slight fluctuating trend in the age groups 15-24, 25-34 and 35-44 years; and slight upward trend in 45-54, 55-64, 65-69 and 70 years and above age groups. In females, there is downward trend at a very high mortality level in <1 year age; downward trend at high mortality level in 1-4 years age group; slight downward trend in 5-14 and 35-44 years age groups; slight upward trend in the age groups 45-54, 65-69 and 70 years and above; slight fluctuating trend in 55-64 years age group. In Bihar, in males there is steep upward trend in <1 year age from 2004 onward; while downward trend in 1-4 years age group at a very high mortality level in 2006; downward trend in 2004 and 2006 in 5-14 years age group at a very high mortality level in 2003; downward trend in 15-24 and 35-44 years age groups; downward trend in 45-54 and 55-64 years age groups; upward trend till 2004 then downward trend in 65-69 and 70 years and above age groups. In females, there is steep upward trend in <1 year age from 2004 onward; while downward trend in 1-4 years age group at a very high mortality level in 2006; fluctuating trend in 5-14 years age group; slight downward trend in 15-24, 25-34, 35-44, 45-54 and 70 years and above age groups; downward trend in 55-64 years age group; slight fluctuating trend in 65-69 years age group. In Maharashtra, in males there is fluctuating trend at a very high mortality level in <1 year age; downward trend in 1-4 years age group; slight fluctuating trend in 5-14, 25-34, 45-54 and 55-64 years age groups; slight upward trend in 15-24, 35-44 and 65-69 years age groups; slight fluctuating trend at a very high mortality level in the age group 70 years and above. In females, there is fluctuating trend at a very high mortality level in <1 year age; fluctuating trend in 1-4 and 65-69 years age groups; slight fluctuating trend in 5-14, 15-24, 35-44, 45-54 and 55-64 years age groups; slight fluctuating trend at a very high mortality level in the age group 70 years and above. In Rajasthan, in males there is fluctuating trend at a very high mortality level in <1 year age; downward trend at high mortality level in 1-4 years age group; slight fluctuating trend in 5-14, 15-24 and 35-44 years age groups; fluctuating trend in the age groups 25-34 and 70 years and above; slight upward trend in 45-54 years age group; upward trend in 55-64 years age group; upward trend during 2001-06 in 65-69 years age group. In females, there is fluctuating trend at a very high mortality level in <1 year age; while downward trend
at a very high mortality level in 1-4 years age group; slight fluctuating trend in the age
groups 5-14, 15-24, 25-34, 35-44, 55-64, 65-69 and 70 years and above age groups;
slight upward trend in 45-54 years age group. In Tamil Nadu, in males there is steep
downward trend from 1997 onward at a very high mortality level in 1990-97 in <1
year age; fluctuating trend in 1-4 years age group; slight fluctuating trend in the age
groups 5-14, 25-34, 35-44 and 55-64 years; slight downward trend in the age groups
15-24 and 45-54 years; slight upward trend in 65-69 years age group; and upward
trend in the age group 70 years and above. In females, there is fluctuating trend at a
very high mortality level in 1990-96 in <1 year age; downward trend in 1-4 years age
group; slight fluctuating trend in 5-14, 55-64 and 65-69 years age groups; slight
downward trend in the age groups 15-24, 35-44 and 45-54 years; slight upward trend
in 25-34 years age group; and upward trend in the age group 70 years and above.

Diseases of the digestive system, in India in males, show slight downward
trend in the age groups <1, 1-4, 5-14, 15-24 and 25-34 years during the period;
upward trend at a very high mortality level in the age groups 35-44 and 45-54 years; a
very high mortality level in 55-64 years age group; while slight fluctuating trend in
the age group 70 years and above. In females, there is slight downward trend in the
age groups <1, 1-4, 5-14, 15-24 and 25-34 years; while slight fluctuating trend in the
age groups 35-44 and 70 years and above; and slight upward trend in the age groups
45-54, 55-64 and 65-69 years. In Bihar, in males there is slight downward trend in the
age groups <1 and 70 years and above; downward trend in 1-4 years age group; steep
downward trend from 2004 onward in 5-14 years age group; slight fluctuating trend in
15-24 years age group; upward trend in 25-34 years age group; downward trend at a
very high mortality level in 35-44 years age group till 2005 then upward trend; slight
upward trend in the age groups 45-54, 55-64 and 65-69 years. In females, there is
slight downward trend in the age groups 1-4 and 15-24 years; downward trend in 5-14
years age group; slight upward trend in the age groups 45-54, 55-64 and 65-69 years;
slight fluctuating trend in the age group 70 years and above. In Maharashtra, in males
there is slight downward trend in the age groups <1, 1-4, 5-14 and 15-24 years; slight
fluctuating trend in the age groups 25-34, 55-64, 65-69 and 70 years and above; slight
fluctuating trend at a very high mortality level in 35-44 and 45-54 years age groups.
In females, there is slight fluctuating trend in the age groups <1, 25-34 and 35-44
years; slight downward trend in the age groups 1-4 and 15-24 years; fluctuating trend
in the age groups 5-14 and 70 years and above, slight downward trend till 1997 then upward trend in 45-54 years age group; slight upward trend in 55-64 and 65-69 years age groups. In Rajasthan, in males there is slight fluctuating trend in the age groups <1, 1-4, 5-14, 55-64, 65-69 and 70 years and above; while fluctuating trend in the age groups 15-24, 25-34, 35-44 and 45-54 years. In females, there is slight fluctuating trend in the age groups <1, 1-4, 5-14, 35-44, 45-54, 55-64, 65-69 and 70 years and above; slight fluctuating trend at a very high mortality level in 15-24 years age group; while slight downward trend at a very high mortality level in 25-34 years age group. In Tamil Nadu, in males there is slight downward trend in the age groups <1, 15-24 and 25-34 years; slight upward trend till 1996 then downward trend in 1-4 years; slight fluctuating trend in the age groups 5-14, 65-69 and 70 years and above; slight fluctuating trend at high mortality level in 35-44 years age group; slight upward trend at a very high mortality level in 45-54 years age group; and slight upward trend in 55-64 years age group. In females, there is slight downward trend in the age groups <1, 15-24, 25-34 and 65-69 years; slight fluctuating trend in the age groups 1-4, 5-14, 45-54 and 55-64 years; downward trend at a very high mortality level in 35-44 years age group; and slight upward trend in the age group 70 years and above.

Diseases of the genitourinary system, in India in males, shows declining trend in the age groups <1, 1-4, 5-14, 15-24 and 25-34 years during the period; slight fluctuating trend in 35-44 years age group; slight fluctuating trend at a very high mortality level in 55-64 years age group; slight upward trend in the age groups 65-69 and 70 years and above. In females, there is slight fluctuating trend in <1 year age; with slight downward trend in the age groups 1-4, 5-14, 15-24, 25-34 and 45-54 years; fluctuating trend in 35-44 years age group; slight fluctuating trend at a very high mortality level in 55-64 years age group; and slight upward trend in the age groups 65-69 and 70 years and above. In Bihar, in males there is slight upward trend in the age groups <1 and 5-14 years; slight fluctuating trend in 15-24 years age group; steep downward trend till 2005 then upward trend in 25-34 years age group; upward trend in 35-44 years age group; downward trend at a very high mortality level in the age groups 45-54 and 65-69 years; upward trend till 2005 then downward trend in the age groups 55-64 and 70 years and above. In females, there is slight upward trend in the age groups 5-14, 15-24, 25-34 and 35-44 years; downward trend at a very high mortality level in the age groups 45-54 and 55-64 years; upward trend till 2004 then
downward trend in 65-69 years age group; slight fluctuating trend in the age group 70 years and above. In Maharashtra, in males there is fluctuating trend in the age groups <1, 45-54 and 65-69 years; while slight fluctuating trend in the age groups 1-4, 5-14, 15-24, 25-34 and 35-44 years; slight fluctuating trend at a very high mortality level in 55-64 years age group; fluctuating trend at a very high mortality level in the age group 70 years and above. In females, there is slight fluctuating trend in the age groups <1, 1-4, 15-24, 35-44 and 70 years and above; fluctuating trend in the age groups 5-14, 45-54 and 65-69 years; slight downward trend in 25-34 years age group; downward trend till 1997 then upward trend in 55-64 years age group. In Rajasthan, in males there is fluctuating trend in the age groups <1, 5-14, 25-34, 35-44, 45-54, 55-64, 65-69 and 70 years and above; slight fluctuating trend in the age groups 1-4 and 15-24 years. In females, there is slight fluctuating trend in the age groups <1, 1-4, 15-24, 25-34 and 45-54 years; fluctuating trend in the age groups 5-14, 35-44, 55-64, 65-69 and 70 years and above. In Tamil Nadu, in males there is slight downward trend in the age groups <1, 15-24 and 25-34 years; slight upward trend till 1996 then downward trend in 1-4 years age group; slight fluctuating trend in 5-14 years age group; fluctuating trend in 35-44 years age group; slight downward trend at a very high mortality level in the age groups 45-54 and 55-64 years; slight upward trend in 65-69 years age group; upward trend in the age group 70 years and above. In females, there is slight downward trend in the age groups <1, 5-14, 15-24, 25-34 and 35-44 years; while slight fluctuating trend in the age groups 1-4 and 65-69 years; slight downward trend at a very high mortality level in 45-54 years age group; slight fluctuating trend at a very high mortality level in 55-64 years age group; slight fluctuating trend in 65-69 years age group; and upward trend in the age group 70 years and above.

Pregnancy, childbirth and the puerperium, in India, shows slight downward trend at a very high mortality level in the age group 15-24 years during the period; slight fluctuating trend at a very high mortality level in the age group 25-34 years; slight fluctuating trend in 35-44 years age group; slight fluctuating trend at a low mortality level in 45-54 years age group; and slight upward trend during 1996-1998 in 55-64 years age group. In Bihar, there is slight fluctuating trend at a very high mortality level in 15-24 and 35-44 years age group; slight downward trend at a very high mortality level in the age group 25-34 years; slight upward trend in 45-54 years
age group. In Maharashtra, there is slight fluctuating trend at a very high mortality level in the age groups 15-24 and 25-34 years; steep upward trend during 2000-2003 then downward trend in the age group 35-44 years; slight fluctuating trend in the age group 45-54 years. In Rajasthan, there is slight upward trend during 2002-2006 in 5-14 years age group. Reaching at a very high mortality level in 1995 from a low mortality level in 1991, there is fluctuating trend in 15-24 years age group. In the age group 25-34 years, there is fluctuating trend with peak in 1999; while fluctuating trend with high peak in 1997 in 35-44 years age group; slight upward trend in 1999-2005 then downward trend in 45-54 years age group; at a very high mortality level in 1990-91 in 55-64 years age group; and slight upward trend in 1991-93 in the age group 70 years and above. In Tamil Nadu, there is slight fluctuating trend at a very high mortality level in the age group 15-24 years; slight upward trend at a very high mortality level in the age group 25-34 years; fluctuating trend at a very high mortality level in the age group 35-44 years; slight upward trend in the age group 45-54 years in 1993-95, 2000-02 and 2005 onward.

Symptoms, signs and abnormal clinical and laboratory findings not elsewhere classified, in India in males, shows slight downward trend in <1 year age during the period; slight fluctuating trend in the age groups 1-4, 5-14, 15-24, 55-64 and 65-69 years; slight upward trend in the age groups 25-34, 35-44 and 45-54 years; and fluctuating trend at a very high mortality level in the age group 70 years and above. In females, there is slight downward trend in the age groups <1 and 65-69 years; slight fluctuating trend in the age groups 1-4, 5-14, 15-24, 35-44 and 55-64 years; slight upward trend in 45-54 years age group; and slight fluctuating trend at a very high mortality level in the age group 70 years and above. In Bihar, in males there is slight downward trend in the age groups <1, 35-44 and 45-54 years; upward trend till 2006 then downward trend in 1-4 years age group; downward trend in 2005 in 5-14 years age group; slight upward trend in the age groups 25-34 and 65-69 years; slight fluctuating trend in 55-64 years age group; upward trend till 2004 then downward trend in the age group 70 years and above. In females, there is slight downward trend in the age groups <1, 15-24, 25-34 and 45-54 years; slight upward trend in the age groups 1-4, 5-14, 55-64 and 65-69 years; slight fluctuating trend in the age group 70 years and above. In Maharashtra, in males there is fluctuating trend in the age groups
Injury, poisoning and certain other consequences of external causes, in India in males, shows slight downward trend in the age groups 1-4 and 5-14 years during the period; slight downward trend at a very high mortality level in the age groups 15-24 and 35-44 years; slight fluctuating trend at a very high mortality level in 25-34 years age group; slight upward trend in the age groups 45-54, 55-64 and 65-69 years; slight fluctuating trend in the age group 70 years and above. In females, there is slight fluctuating trend in the age groups <1, 1-4, 15-24, 25-34, 35-44 and 45-54 years; slight downward trend in 5-14 years age group; slight downward trend in 5-14 years age group; slight upward trend in the age groups 25-34, 35-44 and 45-54 years; downward trend at a very high mortality level in 65-69 years age group; and slight fluctuating trend at a very high mortality level in the age group 70 years and above. In Bihar, in males there is slight downward trend in the age groups <1, 55-64 and 65-69 years; downward trend from 2004 onward in 1-4 years age group; slight upward trend in the age groups 5-14 and 45-54 years; slight upward trend in the age groups 15-24, 25-34 and 35-44 years; fluctuating trend at a very high mortality level in the age group 70 years and above. In females, there is fluctuating trend in the age groups <1, 55-64 and 65-69 years; slight fluctuating trend in the age groups 1-4, 5-14, 35-44 and 45-54 years; slight upward trend in the age groups 15-24 and 25-34 years; while fluctuating trend at a very high mortality level in the age group 70 years and above. In Rajasthan, in males there is fluctuating trend in the age groups <1, 1-4, 5-14, 25-34, 35-44 and 45-54 years; and slight fluctuating trend in the age groups 5-14, 15-24, 55-64, 65-69 and 70 years and above. In females, there is slight fluctuating trend in the age groups <1, 1-4, 15-24, 25-34, 55-64 and 65-69 years; fluctuating trend in the age groups 35-44 and 70 years and above; and slight downward trend in 45-54 years age group. In Tamil Nadu, in males there is fluctuating trend in the age groups <1 and 35-44 years; slight fluctuating trend in the age groups 1-4, 45-54 and 55-64 years; slight downward trend in the age groups 5-14, 15-24 and 25-34 years; downward trend at a very high mortality level in 65-69 years age group; fluctuating trend at a very high mortality level in 70 years and above. In females, there is slight fluctuating trend in the age groups <1, 1-4, 5-14 and 55-64 years; slight downward trend in 15-24 years age group; slight upward trend in the age groups 25-34, 35-44 and 45-54 years; downward trend at a very high mortality level in 65-69 years age group; and slight fluctuating trend at a very high mortality level in the age group 70 years and above.
45-54 years. At a very high mortality level in 2005 there is downward trend in 15-24 years age group; while upward trend at high mortality level in 25-34 years age group; downward trend till 2004 then slight upward trend at a very high mortality level in 35-44 years age group; and downward trend in the age group 70 years and above. In females, there is slight downward trend in the age groups <1 and 70 years and above; steep downward trend till 2005 in the age groups 1-4 and 55-64 years; downward trend till 2005 then upward trend in 5-14 years age group; upward trend till 2005 then downward trend at a very high mortality level in 15-24 years age group; upward trend till 2005 then downward trend in 25-34 years age group; slight upward trend in the age groups 35-44 and 45-54 years; and light fluctuating trend in 65-69 years age group. In Maharashtra, in males there is slight fluctuating trend in the age groups <1, 1-4, 5-14, 45-54, 55-64, 65-69 and 70 years and above; slight fluctuating trend at high mortality level in 15-24 years age group; slight downward trend at a very high mortality level in 35-44 years age group; and slight fluctuating trend at a very high mortality level in 35-44 years age group. In females, there is slight fluctuating trend in the age groups <1, 1-4, 5-14, 35-44, 45-54 and 55-64 years; slight downward trend at a very high mortality level in 15-24 years age group; slight downward trend at a very high mortality level in 25-34 years age group; slight upward trend in the age groups 65-69 and 70 years and above. In Rajasthan, in males there is fluctuating trend in the age groups <1 and 35-44 year; slight fluctuating trend in the age groups 1-4, 5-14, 45-54, 55-64, 65-69 and 70 years and above; fluctuating trend at high mortality level in the age groups 15-24 and 25-34 years. In females, there is slight fluctuating trend in the age groups <1, 1-4, 5-14, 35-44, 45-54, 65-69 and 70 years and above; slight fluctuating trend at a very high mortality level in 15-24 years age group; and fluctuating trend in 25-34 years age group. In Tamil Nadu, in males there is fluctuating trend in <1 year age; slight downward trend in 1-4 years age group; slight fluctuating trend in the age groups 5-14 and 65-69 years; downward trend at a very high mortality level in 15-24 years age group; upward trend till 1998 then downward trend at a very high mortality level in 25-34 years age group; fluctuating trend at high mortality level in 35-44 years age group; slight upward trend in the age groups 45-54 and 70 years and above; and upward trend till 2004 then downward trend in 55-64 years age group. In females, there is slight downward trend till 2005 then upward trend in 1-4 years age group; slight fluctuating trend in 5-14 years age group; slight fluctuating trend at a very high mortality level in 15-24 years age group; slight
downward trend at a very high mortality level in 25-34 years age group; downward
trend at a very high mortality level in 35-44 years age group; and slight upward trend
in the age groups 45-54, 55-64, 65-69 and 70 years and above.

As per the SRS estimates, the mortality transition in India has been in vogue
right from the fifties. Because of the U shape in the age pattern in mortality in India,
there has been greater contribution of infant and child mortality in the number of
deaths in the country. In early nineties, about one quarter of all deaths was due to
infant deaths (24%). This share has shown a steady decline over time. In the
beginning of the millennium, the share of infant death came down to the level of one
fifth of all deaths. In the next decade (2011-12), about 13% of all deaths are the infant
deaths showing a satisfactory improvement in the expectation of life as the latter
greatly affected by the deaths under age one. The contribution of child mortality in
the age group (1-4) used to be around 11% of all deaths with a declining trend
throughout the last two decades. In 2001, deaths among children age (1-4) was to the
tune of 6.5% of all deaths. In 2011-12, the contribution of deaths among children age
1-4 in the overall death come down to less than 3%. The share of death in the age
group 5-14 of all deaths remained around 5-4% during the end of the previous
century. It has, however, declined in the last two decades. The share of deaths in this
age group of all deaths was hovering in the range of 4 to 3 during 2001-10 and is
2.3% in 2011-12. The contribution of the deaths of the age group 15-59 to all deaths
remained almost constant (around 27%) during the nineties but started increasing
slowly and has reached to the level of over 30% during 2011-12. The above trend,
despite simultaneous decrease in maternal mortality, shows the preponderance of
population momentum as well as increase of new emerging diseases in the above age
group at the national level. About one-third of all deaths used to belong to the aged
population in early nineties. This share has sharply increased to the level that every 2
deaths of all 5 deaths belong to the age group 60 and above. Now, every second death
is an aged person in India.

In early nineties, in Bihar, about one quarter of all deaths was due to infant
deaths (21%). This share has shown slight upward trend over time. In the beginning
of the millennium, the share of infant death was around 23% of all deaths. In the next
decade (2011-12), about 18% of all deaths are the infant deaths. The contribution of
child mortality in the age group (1-4) used to be around 14.5% of all deaths with a slow declining trend throughout the last two decades. In 2001, deaths among children age (1-4) was to the tune of 11% of all deaths. In 2011-12, the contribution of deaths among children age 1-4 in the overall death come down to 5%. The share of death in the age group 5-14 of all deaths remained around 7-6% during the end of the previous century. It has, however, declined in the last two decades. The share of deaths in this age group of all deaths was hovering in the range of 6 to 3 during 2001-10 and is 3% in 2011-12. The contribution of the deaths of the age group 15-59 to all deaths was 27% during the nineties but started decreasing slowly and is now 24% during 2011-12. About one-third of all deaths (29%) used to belong to the aged population in early nineties and this share has sharply increased to 49% in 2011-12.

In early nineties, in Maharashtra, about one fifth of all deaths were due to infant deaths (19%). This share has shown a steady decline over time. In the beginning of the millennium, the share of infant death came down to the level of one ninth (12.4%) of all deaths. In the next decade (2011-12), about 6.6% of all deaths are the infant deaths showing a satisfactory improvement in the expectation of life as the latter greatly affected by the deaths under age one. The contribution of child mortality in the age group (1-4) used to be around 6.6% of all deaths with a declining trend throughout the last two decades. In 2001, deaths among children age (1-4) was to the tune of 2.3% of all deaths. In 2011-12, the contribution of deaths among children age 1-4 in the overall death come down to 0.7%. The share of death in the age group 5-14 of all deaths remained around 3-2% during the end of the previous century. It has, however, declined in the last two decades. The share of deaths in this age group of all deaths was hovering in the range of 2.8 to 1.5 during 2001-10 and is 1.4% in 2011-12. The contribution of the deaths of the age group 15-59 to all deaths remained almost constant (around 30%) during the nineties and is 28% during 2011-12. About 40% of all deaths used to belong to the aged population in early nineties and this share has sharply increased to the level of 63% in 2011-12.

In early nineties, in Rajasthan, about one quarter of all deaths was due to infant deaths (27%). This share has shown slight upward trend over time. In the beginning of the millennium, the share of infant death was one third of all deaths (30%). In the next decade (2011-12), about 19% of all deaths are the infant deaths showing a
satisfactory improvement in the expectation of life as the latter greatly affected by the deaths under age one. The contribution of child mortality in the age group (1-4) used to be around 15% of all deaths with a declining trend throughout the last two decades. In 2001, deaths among children age (1-4) was to the tune of 8.6% of all deaths. In 2011-12, the contribution of deaths among children age 1-4 in the overall death come down to 3.5%. The share of death in the age group 5-14 of all deaths remained around 6-4% during the end of the previous century. It has, however, declined in the last two decades. The share of deaths in this age group of all deaths was hovering in the range of 4 to 3.4 during 2001-10 and is 3.3% in 2011-12. The contribution of the deaths of the age group 15-59 to all deaths remained almost constant (around 24%) during the nineties but started increasing slowly and has reached to the level of over 27% during 2011-12. About one-third (27.6%) of all deaths used to belong to the aged population in early nineties and this share has sharply increased to the level of around 47% in 2011-12.

In early nineties, in Tamil Nadu about 13.5% of all deaths were due to infant deaths. This share has shown a slight decline over time. In the beginning of the millennium, the share of infant death was 12% of all deaths. In the next decade (2011-12), about 4.5% of all deaths are the infant deaths showing a satisfactory improvement in the expectation of life as the latter greatly affected by the deaths under age one. The contribution of child mortality in the age group (1-4) used to be around 4.5% of all deaths with a declining trend throughout the last two decades. In 2001, deaths among children age (1-4) was to the tune of 1.5% of all deaths. In 2011-12, the contribution of deaths among children age 1-4 in the overall death come down to 0.6%. The share of death in the age group 5-14 of all deaths remained around 4-1.6% during the end of the previous century. It has, however, declined in the last two decades. The share of deaths in this age group of all deaths was hovering in the range of 1.6 to 1 during 2001-10 and is 1.1% in 2011-12. The contribution of the deaths of the age group 15-59 to all deaths, remained almost constant (around 35%) during the nineties and is 33% during 2011-12. About 42% of all deaths used to belong to the aged population in early nineties and this share has sharply increased to 60% in 2011-12.
Among the states, Rajasthan has been showing greater contribution of infant deaths at the end of the last century and in early phase of current millennium. In 2011-12, in Bihar and Rajasthan, 18-19% of all deaths were the infant deaths against 5-7% in Tamil Nadu and Maharashtra. The contribution of child mortality has been highest in Bihar (5.3%) followed by Rajasthan (3.5%). Maharashtra and Tamil Nadu has shown healthy mortality transition with a substantially low share in the pool of all deaths (0.6-0.7%). The share of adult deaths were, expectedly higher in the states of Maharashtra and Tamil Nadu particularly in the nineties because of early mortality and epidemiological transition in the states. The states of Bihar and Rajasthan have shown a slightly slow mortality transition. The age pattern of mortality had been apparently moving from U-shape to J-shape, particularly in the last two decades in the selected states of India. Process has been slow in the northern states i.e., Bihar and Rajasthan.

To study the influence of cause of death on longevity, "abridged life table” and its applications - multiple decrement life table and cause eliminated life tables have been prepared and potential gains in life expectancy by partial and complete elimination of cause of death by age and sex by using MCCD data for the year 2003 have been calculated.

Abridged life tables for India, Bihar, Maharashtra, Rajasthan and Tamil Nadu by age and sex have been prepared by using MCCD 2003 data. Cause of death elimination life tables have also been constructed by age and sex by using MCCD 2003 data for leading cause of death groups and extensive analysis of those tables have been carried out. Six leading causes of death groups namely, (i) certain infectious and parasitic diseases; (ii) diseases of the nervous system; (iii) diseases of the circulatory system; (iv) diseases of the respiratory system; (v) symptoms, signs and abnormal clinical and laboratory findings not elsewhere classified; and (vi) injury, poisoning and certain other consequences of external causes. It was done for all the age groups viz., <1, 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-69 and 70 years and above.

As per author calculation, the life expectancy at birth in India in 2003 was 69 years for males, 72.7 years for females; in Bihar it was 68.2 years for males and 70.1
years for females; in Maharashtra it was 69.5 years for males and 73.3 years for female; in Rajasthan it was 65.9 years for males and 69.4 years for females; and in Tamil Nadu it was 69.1 years for males and 74.1 years for females. Females were enjoying more life years in India and the selected States.

Following a simulation exercise for eliminating these causes to the tune of 25%, 50%, 75% and 100%, it has been observed that elimination of diseases of the circulatory system yields maximum gain in life expectancy at birth in India and all the selected States; followed by diseases of the nervous system in Bihar, diseases of the circulatory system in Maharashtra, certain infectious and parasitic diseases in Rajasthan and symptoms, signs and abnormal clinical and laboratory findings not elsewhere classified in Tamil Nadu. The maximum gain in life expectancy at birth was 12.6 years in female and 12.6 years in Tamil Nadu (diseases of the circulatory system) in comparison to other selected states. Likewise, one can see differences in the gain at different ages for each cause of death group.

This study explored the structural changes in the age pattern of mortality for India and selected States. An interesting observation of the causes of death data for the period from 1989 to 2008 is that there has been shift in the structure of mortality by cause. The cause of death groups which have shown decrease in the percentage are – certain infectious and parasitic diseases (17% in 1989, 14% in 2008); diseases of blood and blood forming organs and certain disorders involving the immune mechanism (1.9% in 1989, 1.5% in 2008); diseases of the nervous system (3.5% in 1989, 2.5% in 2008); pregnancy, childbirth and the puerperium (2.6% in 1989, 0.4% in 2008); symptoms, signs and abnormal clinical and laboratory findings not elsewhere classified (39.9% in 1989, 13.1% in 2008); and injury, poisoning and certain other consequences of external causes (27.8% in 1989, 8.9% in 2008). The cause of death groups which have shown increase in the percentage are – neoplasms (3.3% in 1989, 4.7% in 2008); endocrine, nutritional and metabolic diseases (2.6% in 1989, 4% in 2008); diseases of the circulatory system (20.7% in 1989, 27.7% in 2008); diseases of the respiratory system (7.8% in 1989, 8.5% in 2008); diseases of the digestive system (3.9% in 1989, 4% in 2008); and diseases of the genitourinary system (1.4% in 1989, 2.9% in 2008). Thus, it is evident from the above that there is transition from communicable diseases to non-communicable diseases. The
transformation in the age pattern of mortality is the reflection of the transition in the demographic and epidemiological transition. Overall, the study had shed considerable insights on the progress in health and epidemiological transition via examining the mortality transition. Among the developing countries, India is currently amidst faster pace of demographic and epidemiological transition and accordingly the country is moving ahead with the process of mortality transition. During the early period of 1970-1980s the deaths were spread over the wide range of ages. However, over the course of demographic and epidemiological transition, the deaths have reduced in adult ages (15-59 years age group) and shifted to older age. As a result, the age pattern of mortality is flattening in the adult age and rising in older ages. The country faces double burden of communicable disease and non-communicable diseases in recent decade and thus the population is overwhelmed with high prevalence of degenerative diseases. As a consequence, the age pattern of mortality had been transforming from U-shape to J-shape and the corresponding age structural transition has elicited the process of mortality transition during the last two decades in India. Mortality transition is driven by the postponement of deaths to older ages, shifting mortality hypothesis and concentration of deaths in narrower age interval over the course of demographic and epidemiological transition.

This study shows a mortality pattern of a country in epidemiological transition and this presents a great challenge to a health system which has limited infrastructure and whose resources are focused on communicable diseases and maternal health. The high number of deaths due to chronic diseases and injury is of particular concern because of the inadequate medical resources available in rural India where 70% of the population lives. The data draws attention to the need for new interventions targeting chronic diseases while keeping the existing programs for communicable disease and maternal health.

It may please be noted that cause of death groups viz., certain infectious and parasitic diseases; diseases of the nervous system; diseases of the circulatory system; diseases of the respiratory system, symptoms, signs and abnormal clinical and laboratory findings not elsewhere classified; and injury, poisoning and certain other consequences of external causes constitute major portion of the total medical certified deaths in 2003 – India (75.1%), Bihar (81.5%), Maharashtra (78.9%), Rajasthan
(74.5%) and Tamil Nadu (78.8%). The absolute deaths comes to 440612 in India, 4700 in Bihar, 144316 in Maharashtra, 19674 in Rajasthan, and 67117 in Tamil Nadu. In the year 2003, the percentage of medically certified deaths to total registered deaths was only 13.5% and this pertains only to urban area. As per census 2011, around 70% (68.84%) Indian population lives in rural areas. If we take into consideration the same percentage of the total medically certified deaths in 2003 and calculate the number of deaths under these six leading cause of death groups we would have a substantial number of deaths to be averted by eliminating these causes.

About 7 million out of the 9.5 million deaths that take place in India annually occur at home and more than one-half do not have a medically certified cause of death (Jha et al., 2006). India’s Civil Registration System, Sample Registration System and Medical Certification of Cause of Death Scheme still do not provide reliable data about either numbers or causes of death. By way of example, the Andhra Pradesh Rural Cause of Death Study (APRCDS) identified all 3842 deaths in a carefully defined region of Andhra Pradesh over a 9-month period in 1998. Of the 3842 deaths recorded, only 2524 (66%) were present on the database held by the Registrar General of India and less than half of all the deaths (43%) had even broadly appropriate causes of death assigned (Mahapatra, 2001).

At the national level, only about 46 % of all deaths are registered by the Registrar General’s Office with large interstate variations (National Commission on Population). This very low proportion of deaths reported to the Registrar General of India is a consequence of high levels of illiteracy, a lack of understanding the rationale for registering deaths, and a failure of the legislature to enforce the compulsory registration of deaths under the “Registration of Births and Deaths Act, 1969”.

Only about one-third of all deaths in urban India and one-fifth of deaths in rural India take place in hospitals (Gupta and Sankar, 2004). While most hospital deaths are attended by a physician many deaths that occur outside hospitals are not making diagnosis of cause of death in majority of cases. Even for those deaths that occur in hospitals or that are attended by a physician, the use of laboratory and other
investigations is limited. In conjunction with very infrequent use of post mortem examinations and usually very limited clinical information available makes reliable certification of the cause of death very difficult throughout India.

Limitation of the Study

The study has addressed the epidemiological transition based on mortality transition in some selected states where more than one source of data on cause of death was available. The issues related to cause of death pattern and impact of cause of death on longevity has been examined based on the MCCD data which has varying level of coverage and urban dominance.

The study has used crude death rate, crude birth rate, sex ratio, age specific death rate provided by the SRS. Bhat (2002) has questioned the completeness of the India’s Sample Registration System (SRS). However, Mahapatra (2010) reassessed the quality of SRS data and commented that SRS completeness was better during 1980s but deteriorated during 1990s and after. Overall, SRS is the reliable and trusted source of mortality data.

It is worth mentioning that the study has used MCCD data in which percentage of medically certified deaths to total registered deaths till 2008 is still 19% and it varies widely across states and union territories in India.