Levels And Trend Of Infant Mortality In Sikkim

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2. To analyze the variation at district level in infant mortality in Sikkim during 1991 to 2007

3. To access districts level progress on reduction of infant mortality as per MDG-4
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ABSTRACT
OBJECTIVE OF THE STUDY:
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4. To analyze the variation at district level in infant mortality in Sikkim during 1991 to 2007
4. To access districts level progress on reduction of infant mortality as per MDG-4

DATA AND METHODOLOGY:
The study was a descriptive, retrospective study based on secondary source of data published by Registrar General of India, New Delhi (RGI, 1999-2010).

STATISTICAL METHOD:
Proportion and time series analysis were used to compare and contrast the levels and trends of infant mortality rate in the state.

RESULTS:
The analysis shows that IMR in Sikkim had been declined during these decades but the rate of declination is not uniform. The overall decline is 43.10 per cent during 1990- 2010. The overall decline is however, more in urban areas as compared to rural areas. In rural areas it was 45.0 percent decline whereas in urban areas it was 57.14 per cent reduction.

CONCLUSION: The study shows that the decline in infant mortality is slow in the state and the level of reduction of IMR is higher in urban areas as compare to the rural areas which may be because of the good health facilities provided at the urban areas.

KEY WORD: INFANT MORTALITY RATE, MILLENNIUM DEVELOPMENT GOAL, TREND, RURAL, URBAN, LIVE BIRTH
INTRODUCTION:
Infant mortality is an indicator that is used to measure the health status, level of utilization of maternal and child health services and the level of socio-economic development of a country. (United Nation, 1999). (1)
Child mortality is a key indicator not only of child health and nutrition but also of the implementation of child survival interventions and, more broadly, of social and economic development. (2)
Several socio-economic factors have been found to be associated with infant and childhood mortality in the developing countries. However, the relative importance of socio-economic and demographic factors in influencing infant mortality varies with the level of socio-economic development of the nation (Gubhaju, Streatfield & Majumder, 1991). (3)
One of the eight Millennium Development Goals (MDGs) adopted after the Millennium Summit in 2000 is to reduce child mortality (MDG4) by two-third between 1990 to 2015(State of the World’s Children unicef,2006). (4)
There are significant variations in child mortality among the various regions of the World. About half of under-five deaths occur in only five countries: India, Nigeria, Democratic Republic of the Congo, Pakistan and China. India (22 percent) and Nigeria (11 percent) together account for a third of all under-five deaths (Levels & Trends in Child Mortality Report 2011) (5)
There is substantial variation in infant mortality even within India and within states. IMR in the state of Madhya Pradesh was five times than that in Kerala in 2006 (Office of the Registrar General, 1981). (6)
Sikkim, the second smallest State of with 7096 sq. km. is the least populated state in India according to 2011 census and there are 4 districts, 9-sub division, 452 villages and 9 towns. The percentage of child (0-6 years) population to total population is 9.86

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5. To access districts level progress on reduction of infant mortality as per MDG-4

MATERIALS AND METHODS:
The study is a descriptive, retrospective study. The estimate of IMR at state have been taken from various bulletin and annual reports of SRS from 1999 to 2010 to assess the levels and trends of IMR in Sikkim, using proportion and the three years moving average and for estimating the IMR at district level, the population census data from 1991 to 2001 is use.DLHS-3 Data is use to assess the districts level progress in reducing IMR in the state.
METHOD OF DATA ANALYSIS
The Brass and Trussell Technique, a variant of the original Brass technique is used for estimating infant mortality rate at district level. Information required; data on children ever born and surviving classified by five age group of mother. Specific information for the computation: five-year age group of women, average number of children born alive (Pi t) to women (classified by five-year age group), average number of children dead, proportion of children dead (Di), multipliers for adjusting for the effects of age pattern of childbearing (Ki).

The technique seeks to convert the proportion of children dead into life table probability of dying by multiplying the proportion dead by the adjustment factors K(i) as follows.
The basic Brass equation is given as:

\[ q(x) = K(i) \times D(i) \]

Equation for the adjustment

\[ k_i = a_i + b_i \times \left( \frac{P_2}{P_3} \right) \]

Where “a” and “b” are constants and P^2 and P^3 are the mean parity for the age groups 20-24 and 25-29 respectively. The implied mortality levels and the expectation of life at birth for each of the study regions were determined using the Coale-Demeny model life tables. The computer package “MORPAK- version 4.0” developed by United Nation is used for analyzing the data.

DRLS-3 provide information about Children Ever Born (CEB) and child Surviving (CS classified by mother age groups.

RESULTS:
Fig. 1 showed that during these two decades there has been considerable decline in infant mortality in Sikkim. At the same time it is observed that the pace of decline in IMR is inconsistent and fluctuating during these periods. The IMR declined from 58 percent in 1990 to 37 percent deaths per 1000 live birth in 2000, registering 19.0 percent decline. However the pace of decline became faster during the next decade, in which 21.4 percent was recorded during 2000 to 2010. The overall decline during the entire period was 43.1 percent where IMR decline from 58 to 33 deaths per thousand live births. The trend of IMR for rural and urban areas also reveals a similar pattern of inconsistency and fluctuating during the last decades. The decline of IMR in both rural and urban areas started only after 1999 whereas prior to this the change was inconsistent and fluctuating somehow. The overall decline is however, more in urban areas as compared to rural areas during 1990-2010. In rural areas IMR was 60 in 1990, which came down to 33 in 2010, a decline of 45 percent reduction in infant deaths. In urban areas IMR declined from 42 to 18 deaths per 1000 live birth which account 57.1 percent reduction.
FIGURE 1. THE TREND OF INFANT MORTALITY OF SIKKIM BY RESIDENCE (RURAL AND URBAN) DURING 1990 TO 2010.
Table No.1 TRENDS OF INFANT MORTALITY RATE FOR THE DISTRICT OF SIKKM (1991-2007):

<table>
<thead>
<tr>
<th>Sl.no</th>
<th>Name of the Districts</th>
<th>Infant Mortality Rate in Sikkim 1991 Rank</th>
<th>2001 Rank</th>
<th>DHLS-3(2007-08)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>North</td>
<td>63</td>
<td>2</td>
<td>49</td>
</tr>
<tr>
<td>2</td>
<td>West</td>
<td>67</td>
<td>1</td>
<td>53</td>
</tr>
<tr>
<td>3</td>
<td>South</td>
<td>60</td>
<td>3</td>
<td>51</td>
</tr>
<tr>
<td>4</td>
<td>East</td>
<td>51</td>
<td>4</td>
<td>46</td>
</tr>
<tr>
<td>5</td>
<td>STATE</td>
<td>57</td>
<td></td>
<td>43</td>
</tr>
<tr>
<td>6</td>
<td>SRS for State level</td>
<td>56</td>
<td></td>
<td>42</td>
</tr>
</tbody>
</table>

Infant mortality rate for 1991 and 2001 estimated from census, published by Population foundation of India (PFI, 2008) and district level for 2007-2008 have been estimated from DHLS-3 using the above mentioned methodology.

Table No. 2 ACHIEVING THE MILLENNIUM DEVELOPMENT GOAL - SIMULATIONS

<table>
<thead>
<tr>
<th>Name of the Districts</th>
<th>Target IMR by 2015(MDG-4)</th>
<th>District level progress in Reducing IMR ( in percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>East</td>
<td>17.0</td>
<td>22.2</td>
</tr>
<tr>
<td>West</td>
<td>22.3</td>
<td>20.9</td>
</tr>
<tr>
<td>North</td>
<td>21.0</td>
<td>22.2</td>
</tr>
<tr>
<td>South</td>
<td>20.0</td>
<td>15.0</td>
</tr>
<tr>
<td>State</td>
<td>19.0</td>
<td></td>
</tr>
</tbody>
</table>

To make our analysis relevant to the MDG-4, then, we apply the same goal of a two-thirds reduction in infant mortality between 1990 and 2015. In Sikkim’s case, this goal implies a reduction from about 57 per thousand in 1990 to about 19 per thousand in 2015. It is 38 deaths per thousand reduction that will only help to achieve the target during this period.

DISCUSSION:

The level of infant is one of the most revealing measure of how well as society meet the needs of its people and the infant mortality shows how well government distribute the available resources for health education, food distribution, sanitation enhancement of the status of women and the other priorities in public spending. Deprivation among the people of a particular region, class or ethnic group within a country is likely to show up in the form of an increased IMR (Newland, 1981). Kabir and Chowdhury (1993) explained that urban-rural differentials may be attributed to different health care services including higher coverage with immunization, safe delivery of births and access to health care services. A study conducted by Majumdar et al., (1998) in rural Bangladesh on determinants of infant and child mortality found that that in rural the incidence of child mortality is quite high when compared to urban areas. According to the infant and child mortality Survey conducted by Office of the Registrar General of India (1981) observed the rural urban differences in Infant mortality.
Similarly other studies of Jain, A K.\(^{(11)}\) Pandey et al,\(^{(12)}\) L.singh et al,\(^{(13)}\) Sing et al,\(^{(14)}\),Visaria L\(^{(15)}\) also revealed same finding. Giving reasons for rural urban differential of infant mortality, Sandhya (1991) expressed that easy accessibility to medical care is one of the reasons for lower infant mortality in urban areas than in rural areas.\(^{(16)}\)

**CONCLUSION:**

The analysis shows that IMR in Sikkim had been declined during these decades but the rate of declination is not uniform. The trend of IMR for rural and urban areas also reveals a similar pattern of inconsistency and fluctuating during these two decades. The overall decline is 43.10 per cent during 1990-2010. The overall decline is however, more in urban areas as compared to rural areas. In rural areas it was 45.0 percent decline whereas in urban areas it was 57.14 per cent reduction. Tracking the estimates of the level and trends in infant mortality and finding the rural urban differences will help to set priorities, shape policies, design programmes and monitor progress towards the MDG at the state level.

**REFERENCES:**


