Child Health Status in Andhra Pradesh

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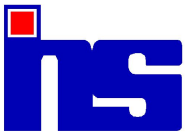

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A. Introduction

Child health refers to the health of children from birth till 14 years of age. Child health status is conventionally measured by various mortality and morbidity indicators. Important indicators of child mortality are; (a) Infant Mortality rate (IMR), i.e, the probability of dying during the first year of life, (b) child mortality, i.e, for those who survive till first birthday, the probability of dying before completion of five years. A measure combining the two is the under-five mortality, i.e, the probability of dying within the first five years of life. The infant mortality rate can be further disaggregated into, (a) neonatal mortality, i.e. death of infants within 30 days of birth, and (b) Post neonatal mortality. Perinatal mortality is a measure combining still births after 28 weeks of gestation and infant deaths within first seven days of life. Important morbidity measures are the incidence/prevalance of common childhood diseases like diarrhoea, acute respiratory infection (ARI), etc. Infant mortality rate is the most sensitive indicator of child health as well as the socio-economic development of the society. Here we first present a detailed study of IMR in AP. We then present available statistics on childhood morbidities.

B. Infant mortality rate

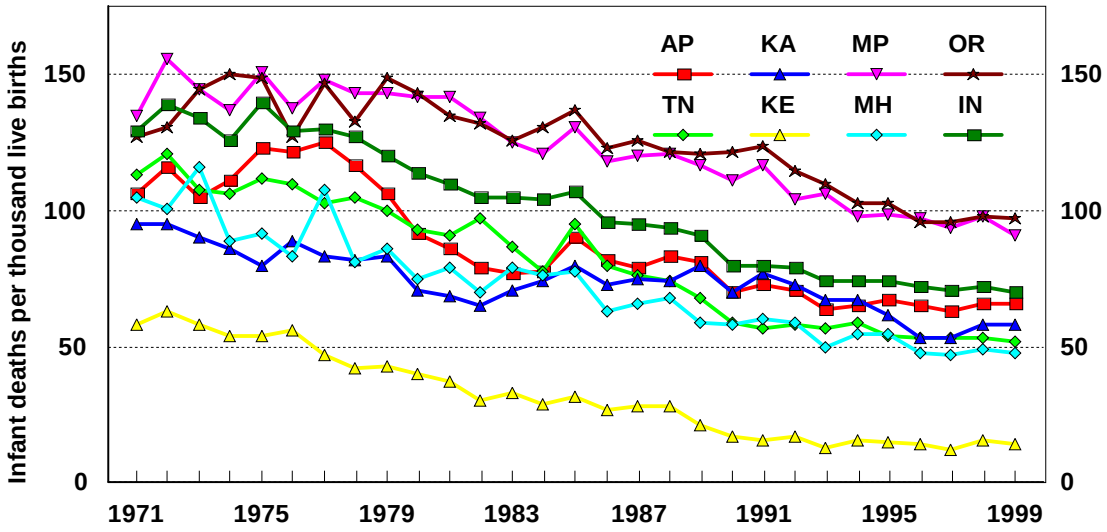
The Infant Mortality Rate (IMR) is a sensitive indicator of infants health population health as well as socio-economic development. In addition, IMR is a sensitive indicator of the availability, utilisation and effectiveness of health care, particularly perinatal care (WHO,1981).

1. Time trend

The IMR of the state registered a consistent decline from 110-120 in 1970s to 66-70 in 1990s (Figure 1). The All India (dark green line in fig 1) estimate of IMR was about 130 during the 1970s and declined to about 70-80

during the 1990s. The reduction of IMR in AP (red line in fig 1) has been keeping pace with the national trend. However performance of the state has been much less than that of the neighboring states. Kerala started with a lower level of IMR during the 1970s and has experienced consistent improvements over time. Tamil Nadu started with a level of IMR similar to AP. The decline of IMR in Tamil Nadu is higher than in AP. Both states started with similar levels of IMR in 1970s and improved the same more or less similarly during the 1980s. During 1990s, Tamil Nadu continued its improvements in IMR but Andhra Pradesh appears to have slowed down, resulting in a gap of about 10 infant deaths per 1000 live births between the two states. Orissa (light blue line in fig 1) also shows decline in IMR from 149 in 1975 to 97 in 1999. In Madhya Pradesh (brown line in fig 1) there was an increase in IMR in 1975 but again declined in 90s to about 97 in 1999.

Figure 1: Infant mortality trend in AP and other neighbouring states



[1]Source: SRS Annual Reports, 1971 - 1999.

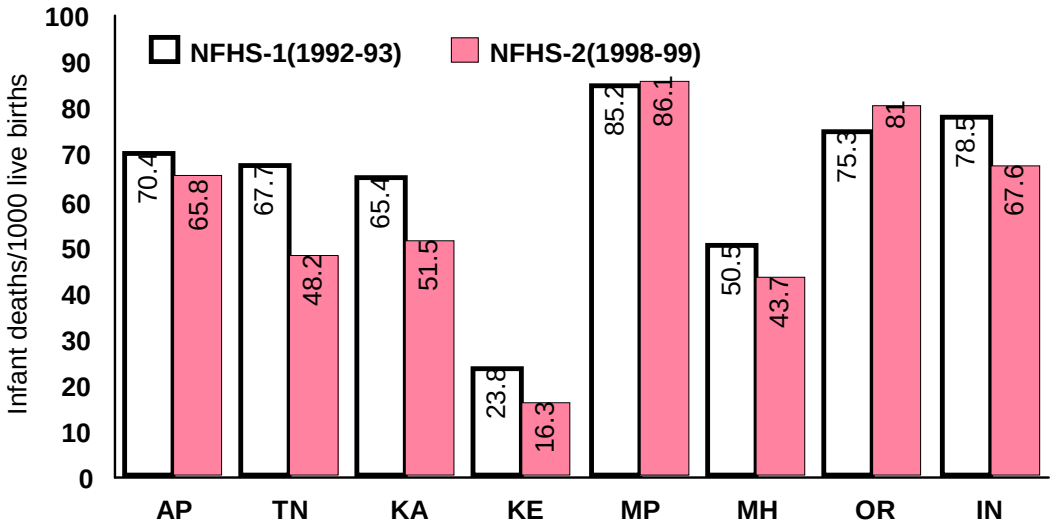
Though AP has performed reasonably well in reducing IMR, it has definitely not been able to exploit the full potential available to it. Of particular concern is the slow down in reduction of IMR in the state, during the 1990s.

The NFHS surveys in 1992-93 and 1998-99 provide an independent estimate of IMR and its trend. The figure 2 shows IMR from the two NFHS surveys. The time trend and comparative position of AP vis a vis to other

South Indian states is similar to the estimate from the SRS presented earlier in Figure 1. IMR in AP is slightly lower than the national average and is higher than other south Indian states. The decline in IMR between NFHS 1 and 2 is more marked for Kerala, Tamil Nadu, and Karnataka.

Infant mortality in AP declined from 85 deaths per 1000 live births during 1984-88 to 66 deaths per 1000 live births during 1994-99, an average rate of decline of nearly 2 infant deaths per 1000 live births per year. A comparison of the IMR for the period of NFHS-1 and NFHS-2 suggests a similar rate of decline of 11 deaths per 1000 live births. NFHS-1 suggests a much slower decline of only 4 deaths per 1000 live births.

Figure 2: IMR trend in AP and other states according to NFHS-1&2



[1] Source: NFHS-1 data from IIPS(1995) Table-8.8 p221; NFHS-2 data from IIPS(2000) Table-6.6 p194

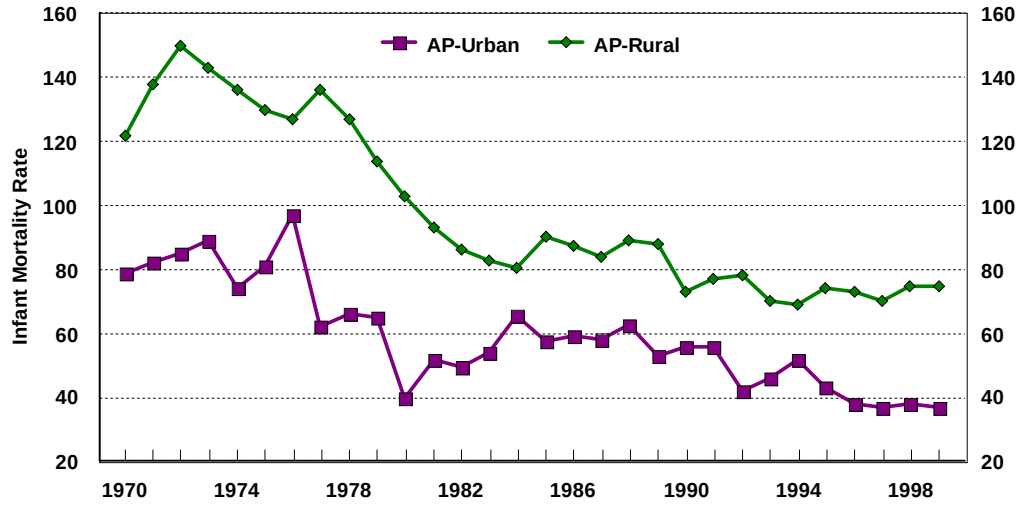
Despite the overall decline in infant and child mortality, 1 in every 15 children born during the mid 1990s i.e., five years before NFHS-2 died within the first year of life. Clearly, child survival programmes in AP need to be intensified to achieve further reductions in infant mortality.

2. Rural Urban Difference in IMR

In Andhra Pradesh rural infant mortality rates are considerably higher than urban mortality rates. Infant mortality in rural areas is almost double that of urban areas. There was a sharp decline in IMR during the 1970s both in the rural and urban areas. The decline in rural areas must have been

greater since the rural urban gap has reduced from about 43 infant deaths per 1000 live births during the 1970s to about 15 infant deaths per 1000 live births in 1980s. However the trend of reducing rural urban gap in the 1980s appears to have been lost or probably reversed during the 1990s.

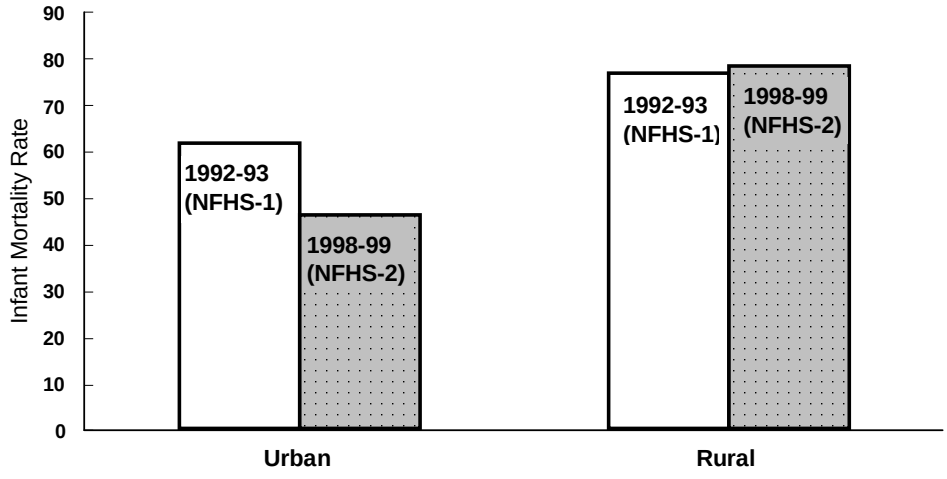
Figure 3: IMR in Urban and Rural areas of Andhra Pradesh



[1] Source: SRS 1970 to 1999.

Figure 4 shows that IMR in urban areas declined from around 62 in 1992-93 to 46 around 1998-99. But the rural IMR stagnated around 79 between the two surveys. As a result the rural urban gap increased. The NFHS estimate of increasingly urban rural difference is consistent with SRS estimate of widening rural urban gap during the late 1990s. The widening rural-urban gap is also evident from two NFHS conducted during the 1990s.

Figure 4: IMR in Urban and Rural areas of Andhra Pradesh, NFHS

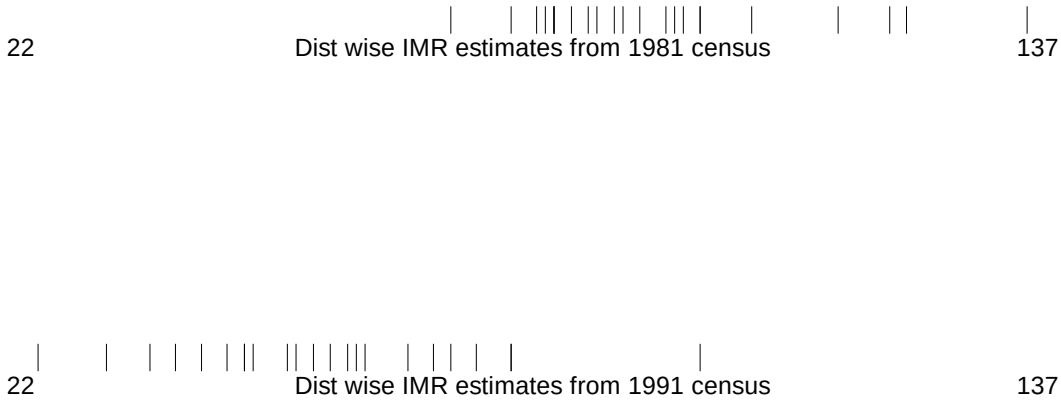


[1] Source: NFHS-1 data from p-132, table no:8.4. and NFHS-2 data from p-120 table- 6.3

3. Regional difference by districts

The population census of 1981 and 1991 provide indirect estimates of infant mortality at the district level (RGI, 1997). Figure 5 shows one way scatter plot of district level IMR estimates from 1981 and 1991 census respectively. The scale of both scatter plots (1981 and 1991 census) have been fixed between 22 and 137. Estimates used to generate Figure 5 are given in table 1.

Figure 5: One-way scatter plot of District wise IMR estimates from census data. (Each vertical bar represents the estimate for one district)



[1] Source: RGI, Occasional Paper No.1 of 1997, Table-3.1, p-114. See table-1 in this paper.

These estimates bring out three important characteristics of infant mortality risk prevalent in the state. Firstly, the IMR has reduced in all districts. The band of one way scatter plot of district level estimates from 1981 census are towards 137 end of the plot. The estimates from 1991 census are scattered towards the lower side of the range. Secondly, there is wide inter district variation and disparity in levels of child health status. The district level IMR ranged from 70 to 137 in 1981 i.e, a difference of 67 infant deaths/1000 live births and 22 to 99 in 1991 which amounts to a difference of 77 infant deaths per 1000 live births. Thirdly, the inter district disparity

appears to be increasing instead of narrowing. The difference between lowest and highest mortality districts increased from 62 infant deaths/1000 live births around 1981 census to 77 infant deaths per 1000 live births around 1991 census.

Table 1: District level indirect estimates of IMR from 1981 and 1991 census.

District	IMR-1981	IMR-1991	District	IMR-1981	IMR-1991
Hyderabad	82	22	Ranga Reddy	82	56
Krishna	92	30	Nalgonda	90	58
Karimnagar	81	35	Warangal	99	59
Guntur	80	38	Chittoor	115	60
Nizamabad	70	41	West Godavari	84	65
Cuddapah	105	44	Kurnool	96	68
Nellore	86	46	Anantapur	121	70
Prakasam	89	46	Visakhapatnam	97	73
Khammam	87	47	Mahaboobnagar	99	77
Adilabad	95	51	Srikakulam	123	77
Medak	82	52	Vizianagaram	137	99
East Godavari	77	54	**Inter district Variance**	**259**	**293**

[1] Source: RGI, Occasional Paper No.1 of 1997, Table-3.1, p-114

4. Small Area Analysis of IMR - Sub district level

Estimates of IMR below the district level are not easily available. The SRS sample size is not large enough for disaggregated estimates below the state level. Vital registration data would have been an useful source for small area estimates, suffers from gross, under reporting. Recently a District Family Health Survey was piloted (Mahapatra, Rao & Kumar, 2000) in three districts of AP to estimate IMR of sub district level areas. This study shows substantial area wise variations in IMR. The district and division level IMR estimates from this study shown in Table 2 provide useful insights about differences in health status by geographical regions. Clearly the IMR is significantly higher in Mahboobnagar district at 115 / 1000 live births as compared to 65 and 79 in Chittoor and Nellore respectively. Infant mortality level in Nellore district (71-87/1000 live births) is close to the state average of 75 according to SRS 1999, and 72 according to NFHS, 1998. Chittoor has a slightly better situation with comparatively lower infant mortality.

Table 2: District and divisional level estimates of IMR with 95 % Confidence intervals in three districts of AP.

District / division	Census estimates 1981	1991	DFHS 1998-2000. IMR	(95 % CI)
Nellore Dt.	86	46	79	(71 - 87)
Gudur Div.			92	(70 - 115)
Kavali Div.			58	(37 - 79)
Nellore Div.			81	(59 - 103)
Chittoor Dt.	115	60	65	(59 - 72)
Madanapally Div.			76	(60 - 92)
Chittoor Div.			67	(46 - 89)
Tirupati Div.			45	(27 - 62)
Mahbubnagar Dt.	99	77	115	(107 - 122)
Gadwal Div.			93	(60 - 127)
Mahbubnagar Div.			110	(91 - 128)
Narayanpet Div.			125	(102 - 147)
Wanaparthy Div.			62	(35 - 89)
Nagarkurnool Div.			140	(117 - 163)

[1] Source: Mahapatra, Rao, Kumar. District Family Health Survey, IHS RP-08/2001.

Mahboobnagar is clearly much worse compared to the state level IMR. Obviously there are important socioeconomic and geographic differences in mortality experience of people in different parts of the state. Going down to the division level, the DFHS study found that four of the five divisions in Mahboobnagar district have IMR that is higher than the state average, and in only Wanaparthy division, the IMR is comparatively lower (DFHS, 2001). The IMR estimate for Nagarkurnool division is as high as 140/1000 live births corresponding to the state average IMR in the 1960s. Thus there appears to be a wide regional variation in infant mortality with in the state. Some areas of the state are clearly three to four decades behind in terms of their mortality experience. This shows the need for districts and divisional level estimates of IMR and its importance to know the exact determinants of IMR and to develop area specific interventions to reduce IMR.

5. Difference in IMR by Socioeconomic status

Disaggregation of IMR estimates by socioeconomic status of the household is feasible only if both mortality and socioeconomic status data are

available at the household level. The NFHS collected data on socioeconomic status of households and mortality experience. Table 3 shows the infant mortality rates according to mothers background obtained from the NFHS. Infant mortality declines substantially with increase in the standard of living. In households with a high standard of living the infant mortality rate was 43 deaths per 1000 live births and in households with a low standard of living the IMR was 97 deaths per 1000 live births (NFHS-2). The scheduled castes and scheduled tribes have higher rates of infant mortality compared to other backward classes and others.

Table 3: Infant mortality by background characteristics

Background characteristics	IMR	Background characteristics	IMR
Mother's education		Standard of living index	
Illiterate	82.4	Low	97.1
< middle school	53	Medium	56.8
High school and above	48.9	High	42.5
		Social status	
Scheduled caste	95.4	Backward classes	69.7
Scheduled tribe	103.6	Other	47.1

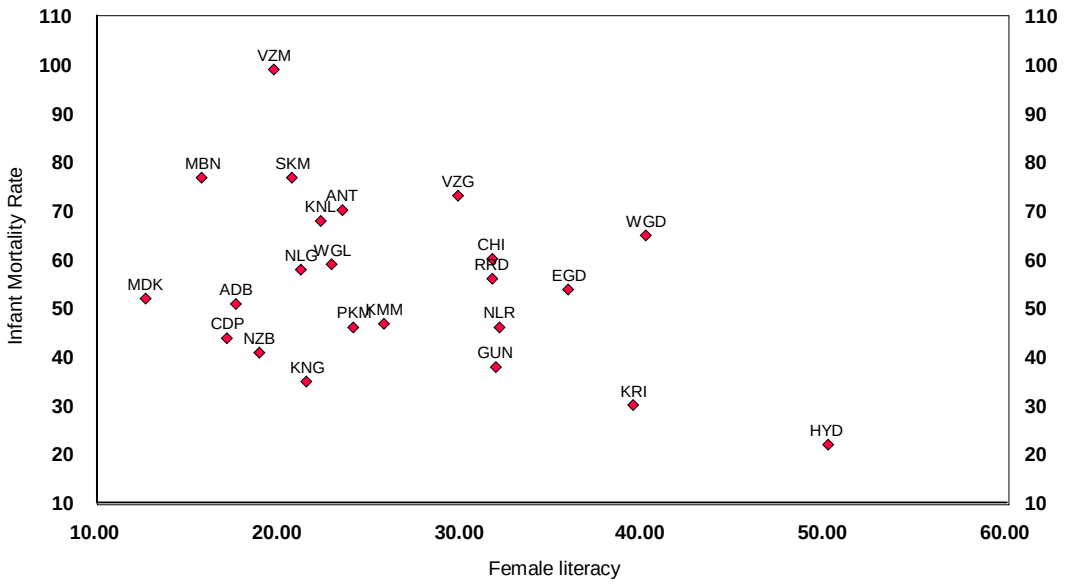
[1] Source: NFHS-2 (Andhra Pradesh) p-120, table-6.3

The infant mortality rate declines sharply with increasing education of mothers, ranging from a high of 82 deaths per 1000 live births for illiterate mothers to a low of 49 deaths per 1000 live births for mothers who have at least completed high school.

The NFHS estimates are based on stratification of sample households by literacy status. This is ideal. But the problem with NFHS is its small sample size. The sample size reduces further as we stratify the sample by socioeconomic status. Another way to study of these relationship is to correlate socioeconomic indicators with mortality levels by small areas. Many other factors, apart from household level exposure, will affect both the socieconomic variables and mortality experience of a small area. Hence analysts generally attach lesser importance to correlational analysis compared to household level relationships between socioeconomic variables and mortality experience. However, these area wise estimates are generally based on larger sample size and hence are more reliable. The decennial census

provide us with district level indirect estimates of IMR and direct estimates of female literacy level. In Figure 6 we have plotted female literacy ratio and IMR. The pattern of low IMR associated with high levels of female literacy is clearly visible.

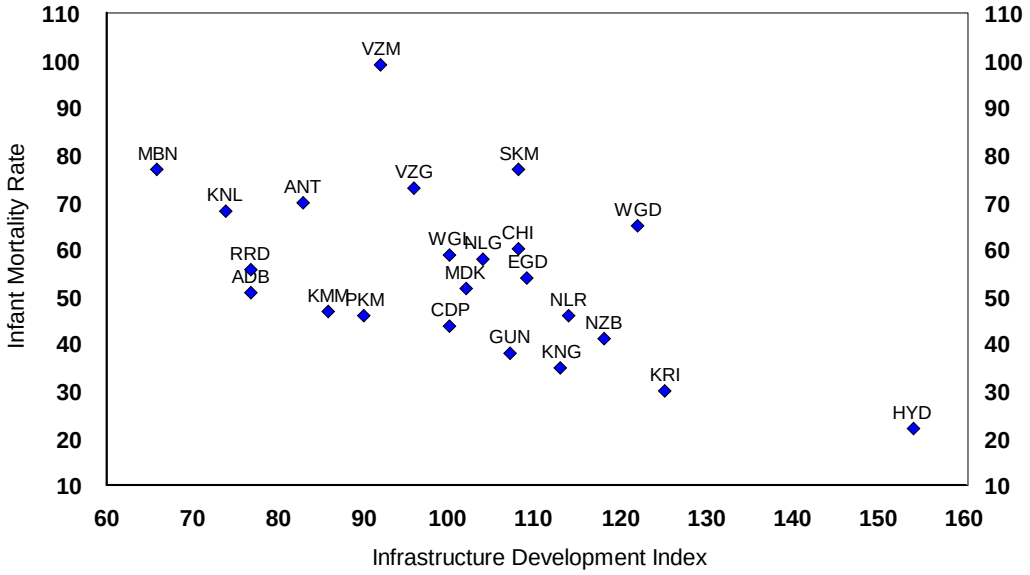
Figure 6: Female literacy rate and IMR in districts of AP, 1991



[1] Source: RGI, Census 1991. IMR = Indirect estimate from 1991 census. Female literacy = direct estimate from 1991 census.

To examine relationship of IMR with socioeconomic development the CMIE infrastructure development index was plotted against IMR from 1991 census (Figure 7). The pattern is similar to the previous plot of female literacy rates and IMR. Districts like Hyderabad, Guntur that have high infrastructure development index show low IMR. Districts with low infrastructure development index like Mahboobnagar, Vizianagaram have high IMR.

Figure 7: Infrastructure development and IMR in districts of AP, 1990s.

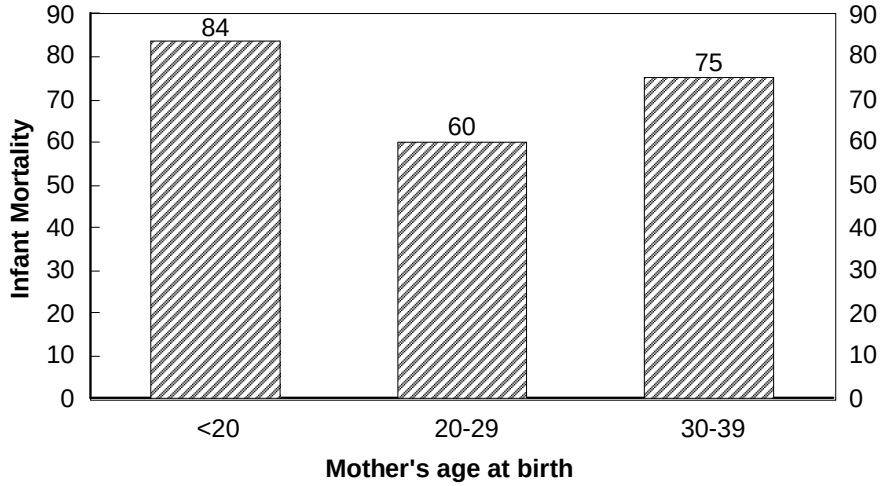


[1] Source: Infrastructure Development Index is for 1995 taken from CMIE, 2000. IMR - indirect estimate from Census, 1991.

Age of the mother is an important risk factor for infant and child mortality. Children born to mothers under 20 yrs of age are approximately 1.5 times more likely to die before their 1st birthday than children born to mothers in their 20s. Children born to young mothers are more likely to be premature, to have low birth weights, and to have delivery complications (Devitt et.al. 1996). Children born to mothers over the age of 40 are also at higher risk of death for a number of reasons, including an increased likelihood of congenital abnormalities and an increased likelihood of closely spaced births.

In AP, Infant mortality is 40 percent higher among children born to mothers under the age of 20 than among the children whose mothers are age 20-29 (84 deaths compared with 60 per 1000 live births). The age at which a women bears the first child affects these rates. IMR and MMR are high in the women who gave birth when they where between 15-19 years of age. The main contributing factor for this is their physiological growth which does not cater to the growing needs of the pregnancy. The low nutritional status also plays its part. As the age at marriage increases the child bearing age also increases and hence will aid to lower the IMR and MMR.

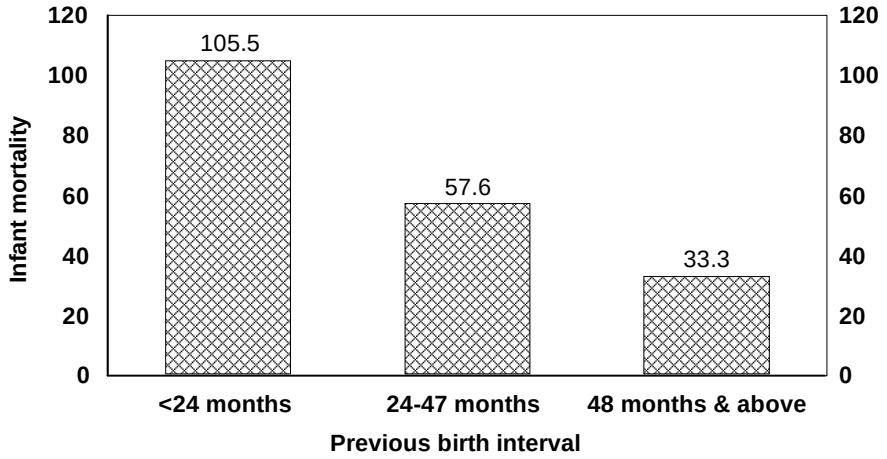
Figure 8: IMR by Mother's age at birth in Andhra Pradesh for the year 1998



[1]Source: NFHS-2 (AP), p-121, table-6.4

Figure 9 shows the infant mortality rates according to previous birth interval. Clearly births spaced less than 24 months after the previous child birth have a higher risk of infant mortality. The timing of successive births has a powerful effect on the survival chances of children in Andhra Pradesh. Infant and child mortality rates decrease as the length of the previous birth interval increases. When the intervals between births was 48 months and above the IMR is 33 and when the interval between births is less than 24 months the IMR increases more than three fold to 106 (NFHS-2).

Figure 9: Infant mortality by previous birth interval in Andhra Pradesh

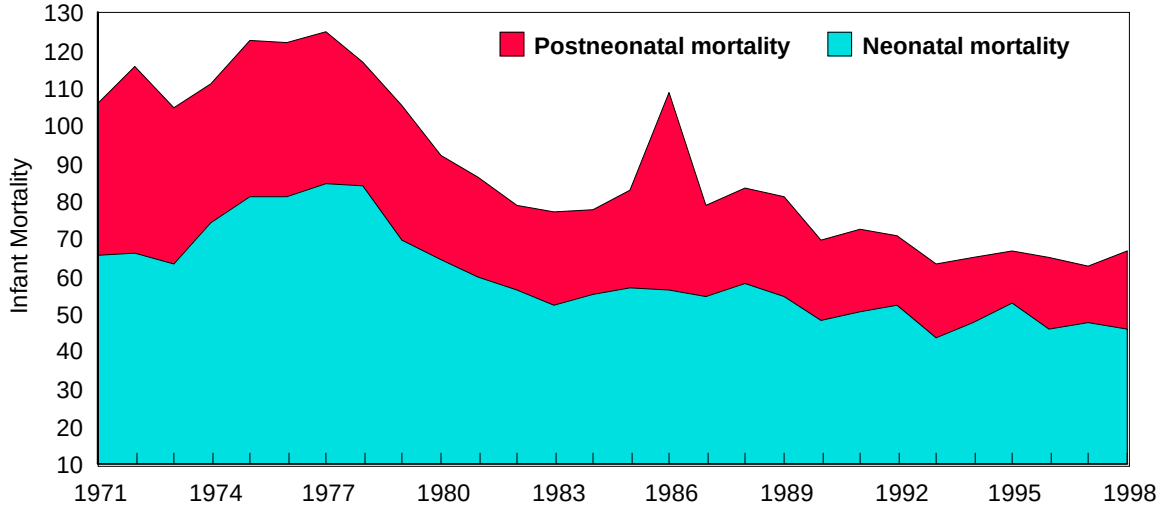


[1] Source: NFHS-2 (Andhra Pradesh) p-121, table-6.4

6. Decomposition of IMR into Neonatal Mortality, Postneonatal Mortality:

IMR is conventionally disagregated into neonatal mortality, and post neonatal mortality. Neonatal mortality refers to deaths during the first month of life. Post neonatal mortality refer to deaths of infants aged one month to less than a year. Determinants of neonatal mortality include congenital factors, low birth weight, perinatal factors and as well as exposure to infectious agents. Post neonatal mortality is more affected by external factors like exposure to infection, poor environment, child rearing practices, post neonatal nutrition etc. In most countries initial reduction in IMR has been found to be largely contributed by reduction in post neonatal mortality. As IMR levels reach to reasonably low levels, say 30-50 infant deaths per 1000 live births, further reduction in IMR is feasible only if the neonatal or perinatal mortality reduce. Figure 10 shows that both neonatal and post neonatal mortality in AP has gradually reduced over the last three decades (1970s - 1990s).

Figure 10: Decomposition of IMR into neonatal and post neonatal mortality rates in Andhra Pradesh from the years 1971 to 1998.

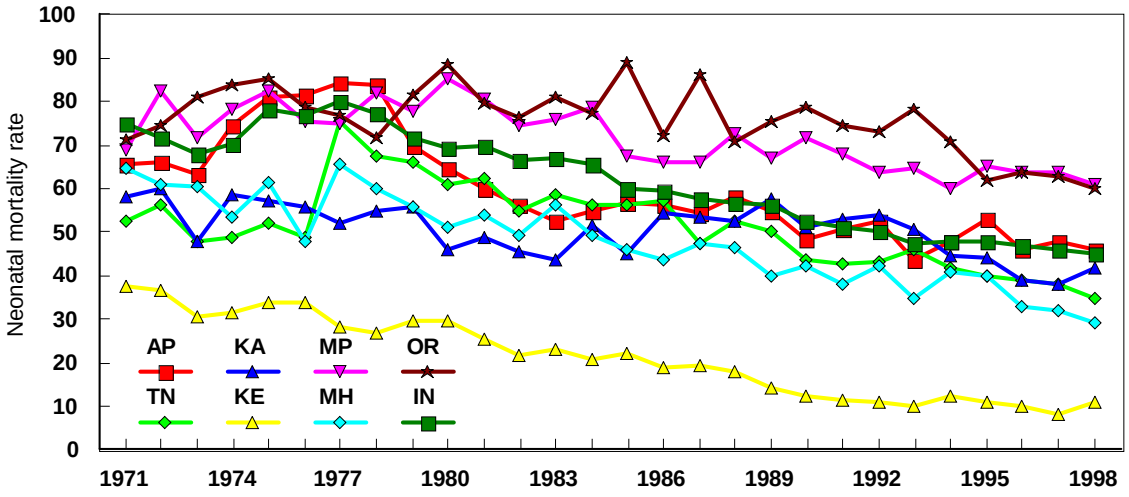


[1] Source: SRS 1970-98

Post neonatal mortality has reduced at a faster pace, as is to be expected. Figure 11 compares the declining trend of neonatal mortality in AP with the neighbouring states. The comparative position of AP's time trend of neonatal mortality is similar to the situation in case of overall IMR. The

declining trend of neonatal mortality in AP was similar to the experience of other states like Tamil Nadu, Karnataka, Maharashtra. As in case of IMR, Madhya Pradesh and Orissa have higher levels of neonatal mortality compared to AP.

Figure 11: Neonatal mortality rates in Andhra Pradesh and other neighbouring states from the years 1971 to 1998.

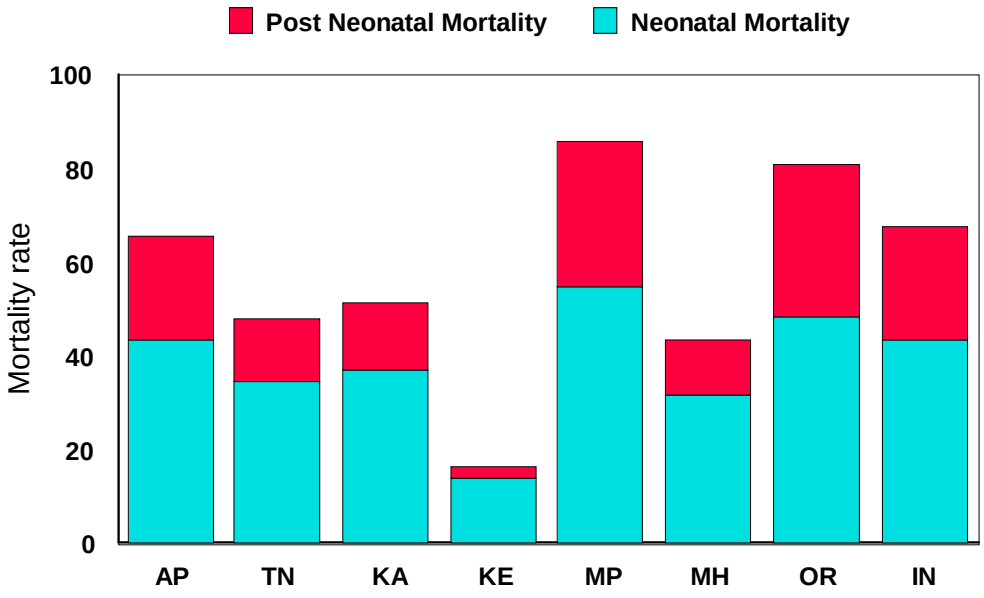


[1] Source: SRS 1970-98

Faster decline of post neonatal mortality, along with reduction of overall IMR shows up neonatal mortality as an increasing component of the overall IMR. This phenomenon is evident from the decomposition of IMR estimates for the recent NFHS survey shown in Figure 12. This figure shows stacked bars of neonatal and post neonatal mortality in south Indian states and other states neighbouring AP. The post neonatal component is shown as a band in red colour (darker grey scale) and the neonatal component is shown in green (lighter grey scale). The colour coding in Figure 12 is same as that in figure-10 where we examined time trend of neonatal and post neonatal mortality in AP. In Figure 12 we see that Kerala has the smallest bar i.e, lowest IMR and it's red band (post neonatal component of IMR) is very thin compared to the green (neonatal part of IMR). Other states have taller bars (higher overall IMR) and larger red bands (relatively more post neonatal mortality). Thus there is still a good deal of scope for the IMR to decline with reduction in post neonatal mortality. For example, in case of AP, IMR could be reduced to about

40/1000 live births, if the post neonatal mortality were to reach a level comparable to Kerala.

Figure 12: Neonatal and Postneonatal mortality rates in different states. 1998-99

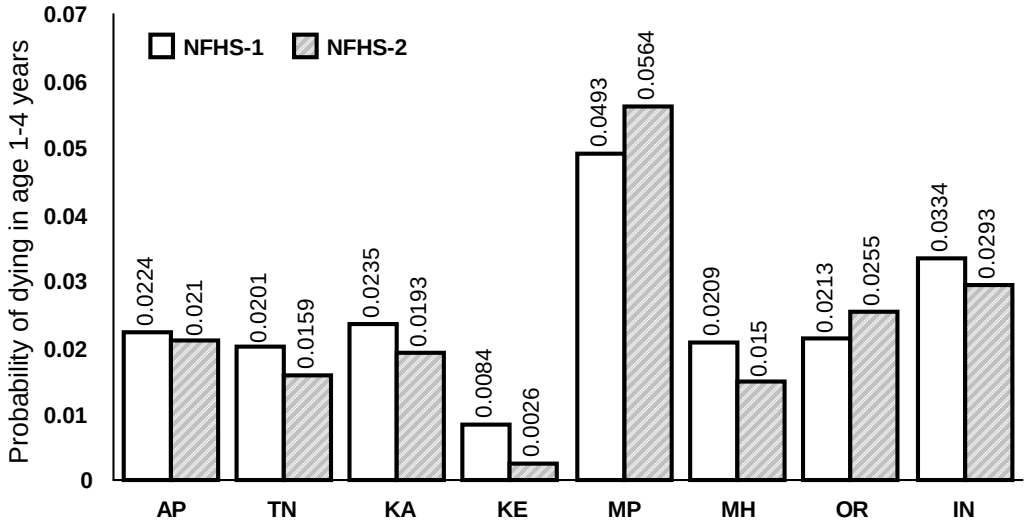


[1] Source: NFHS 2 (India) p-194, table: 6.6

C. Child Mortality:

The under-5 mortality for 0-4 year age group would be dominated by the high levels of IMR currently prevalent in AP and other Inidian states. Hence we examine the child mortality in the 1-4 year age group to supplement the preceding analysis of IMR. The SRS does not readily provide child mortality estimates for 1-4 years. But the NFHS provides child mortality estimates. Figure-13 shows child mortality for AP and other states according to NFHS 1 in 1992-93 and NFHS-2 in 1998-99. Andhra Pradesh shows slightly higher child mortality, compared to Tamil Nadu and Karnataka. The decline in child mortality between the two NFHS survey periods was negligible for Andhra Pradesh in comparison to other south Indian states like Kerala, Tamil Nadu and Karnataka. Madhya Pradesh shows the highest child mortality rate among the neighbouring states of AP.

Figure 13: Child mortality in AP and other states according to NFHS-1&2



[1] Source: NFHS-1data from IIPS(1995) Table-8.8 p221; NFHS-2 data from IIPS(2000) Table-6.6 p194

D. Causes of death in childhood:

Causes of death estimate for AP during the 1990s is available from Mahapatra (2000). Table-4 shows common causes of death in the 0-4 year age group. Lower Respiratory Infections (or Acute Respiratory Infection, ARI), low birth weight, diarrhoeal diseases are the three top killers in infancy and clearly childhood. About 10000 infants and less than five year old children in AP die of these three diseases every year. These high incidence of deaths due to low birth weight, ARI and diarrhoea also points to the dominance of risk factors like under nutrition, illiteracy, poor water supply and sanitation. Other significant cause of death of infants and young children in AP are bacterial meningitis, birth trauma, malaria, whoophing cough and accidents.

Table 4: Cause of death among 0-4 years age group in AP for the year 1991

Causes	Females	Males	Total
Lower respiratory infections (ARI)	32.7	23.8	24.2
Low birth weight	29.9	22.5	22.5
Diarrhoeal diseases	17.2	13.8	13.4
Bacterial meningitis and meningococcaemia	5.7	3.6	3.9
Birth asphyxia and birth trauma	5.3	3.6	3.8
Malaria	4.1	3.4	3.3
Pertusis	3.0	2.0	2.2
Other unintentional injuries	3.9	1.1	2.0
Other infectious diseases	3.0	1.65	1.9
Perinatal conditions	2.1	2.0	1.8
Cirrhosis of the liver	3.1	0.8	1.5
All Cause deaths (number)	**53247**	**80371**	**151033**

[1] Source: Mahapatra, Estimating National Burden of Disease, 2001.

E. Child morbidity:

1. Low birth weight prevalence

A birth weight of less than 2500 gms is considered less favourable for the survival and well-being of a newborn. Low birth weight babies face higher risks of dying than do babies of normal birth weight. World Health Organisation defined Low birth weight as “birth of less than 2500gms. irrespective of gestational age” [WHO, ICD, 1975]. Several, often interrelated, conditions are associated with low birth weight, including socio-economic status, ethnicity, maternal nutrition, the environment and health status. Birth weight is governed by two major processes: duration of gestation and intrauterine growth rate. Low birth weight is thus caused by either a short gestation period or Intrauterine growth retardation (IUGR) or a combination of both (Krama,1987).

Unfortunately, precise estimates of low birth weight prevalence in AP is hard to get. The two NFHS asked women about the weight of babies born to them within the last three years. According to NFHS-2 in Andhra Pradesh (Table 5), more than half (56%) of babies in the three years preceding the survey were not weighed at birth. The proportion not weighed is 31% in urban areas and 64% in rural areas. Even for babies that were weighed, some mothers did not remember the weight. Clearly, the major problem is lack of accurate estimate of the low birth weight prevalence. Among children for

whom birth weights are reported, 19% weighed less than 2.5 kilograms. The proportion weighing less than 2.5Kg is slightly higher in rural areas (20%) than in urban areas (16%).

Table 5: Percentage of births by birth weight according to residence in AP

Birth weight	Rural		Urban		Combined	
	1992-93	1998-99	1992-93	1998-99	1992-93	1998-99
<2.5kg	1.7	6.5	9.2	9.6	3.6	7.3
2.5 kg +	4.1	25.8	28.2	50.8	10.1	32
Don't know/missing	6.7	3.4	18.4	8.9	9.6	4.8
Not weighed	87.4	64.3	44.2	30.7	76.7	55.9

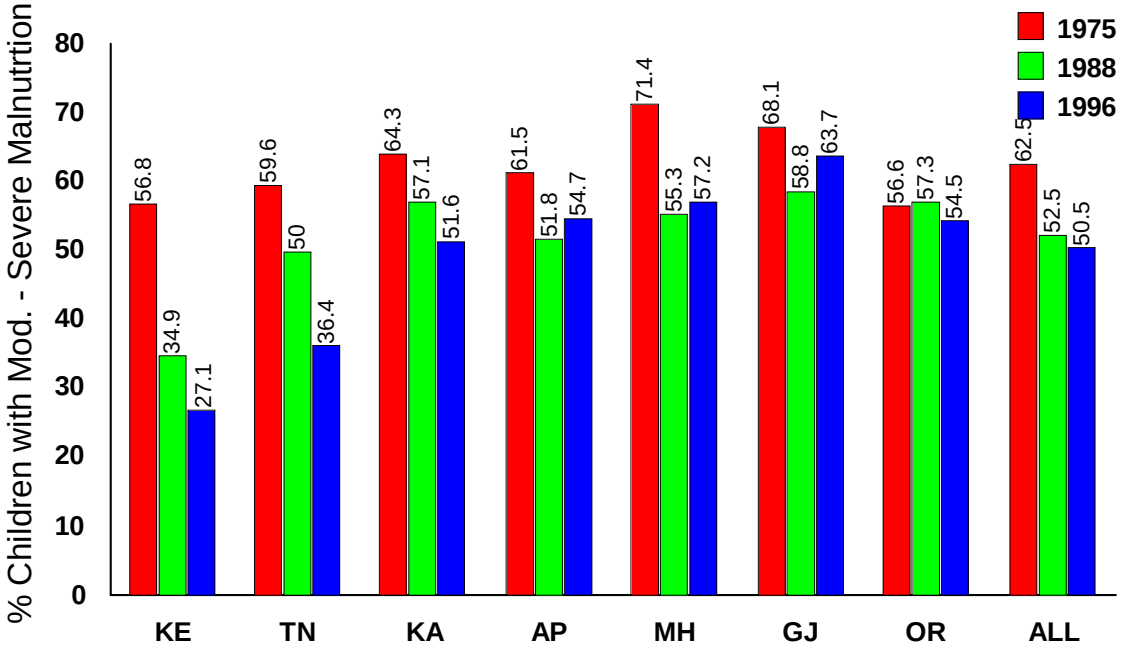
[1] Source: NFHS-1 p-153 table: 9.6, NFHS-2 p-188, table: 8.9

2. Nutritional status of children

Nutritional status is a positive health indicators (WHO, 1981 p32). There are many ways to measure nutritional status. Among these, the weight-for-age status of the preschool children, is considered to be the most sensitive indicator of community nutrition. The National Nutrition Monitoring Bureau (NNMB) at the National Institute of Nutrition, Hyderabad assesses nutrition situation in the country on a continuous basis. NNMB measures nutrition status in 10 states including Andhra Pradesh. The NNMB has so far conducted one reference and two repeat surveys to assess changes in nutritional status of population in the study states. The reference survey took place in 1975-79 and the two repeat surveys took place during 1988-90 and 1996-97. Figure 14 shows time trend of moderate to severe malnutrition prevalence among preschool children in different states, based on weight-for-age. The figure shows three bars for each state coloured red, green and blue from left to right. Each bar represents the percentage of preschool children with moderate to severe malnutrition based on weight-for-age measurements. Figures at the top of each bar give the exact percentage for respective repeat survey period. The bars shown above ALL represents the average for the states included in the survey. Many big states like UP and Bihar are not represented in the NNMB monitoring system. Hence it will not be accurate to think of the combined estimate for All NNMB states as the country estimate. In AP, as in most other NNMB states, there has been an improvement in nutritional status over the years. Kerala and Tamil Nadu show

substantial and consistent improvement in nutritional status of preschool children. Karnataka has also shown consistent decline in prevalence of malnutrition (Mahapatra, Reddy, 2001). However still 50% of children in AP are suffering the burden of moderate to severe malnutrition.

Figure 14: Malnutrition among preschool children in AP and other states.



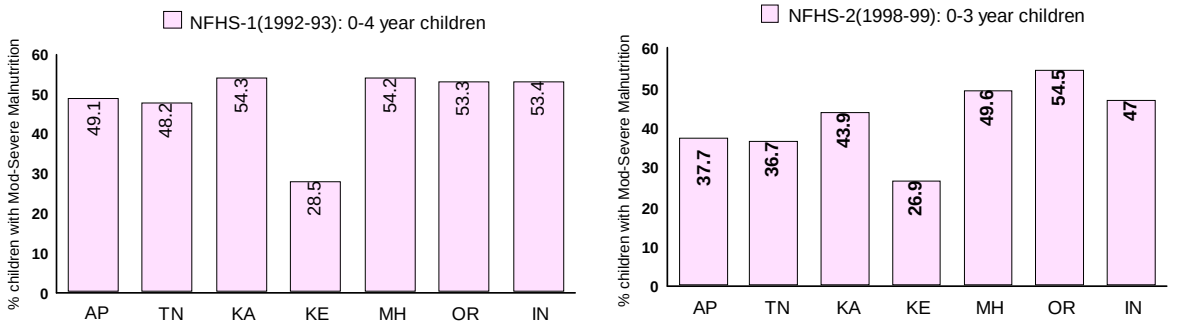
[1] Source: Mahapatra and Reddy, Health Status in AP, IHS Working Paper WP- 43/2001 (1-28).

[2] Based on Weight-for-age data from NNMB Repeat Surveys 1975-79, 88-90, and 96-97.

The National Family and Health Surveys (NFHS) provides estimate of prevalence of malnutrition among preschool children. NFHS-1 presented data for children aged 4 years and younger, and NFHS-2 has presented for children in 0-3 years age group. The Figure 15 compares the prevalence of moderate to severe under nourishment in AP and other states according to the two NFHS surveys. The first NFHS survey (left chart) shows that Kerala had the lowest prevalence of under nourishment and all other NNMB states including Andhra Pradesh had a higher but similar prevalence of malnutrition. The second NFHS survey shows that the states have some what differentiated probably on account of differences in interventions and programme implementation. According to NFHS-2 Kerala continued to show the lowest prevalence of malnutrition. Tamil Nadu and Andhra Pradesh show similar levels of malnutrition (36-68%). Karnataka showed a slightly higher level of

malnutrition compared to AP. States like Maharashtra and Orissa had much higher levels of malnutrition among preschool children.

Figure 15: Under nourishment in preschool children according to NFHS.



[1] Source: NFHS-1 and NFHS-2 (India) p-286, table- 10.10 NFHS-2 p-270 table- 7.17

Overall, under nutrition among preschool children is still an important problem in AP. About 40 to 50% of preschool children suffer from under nutrition. Poor nutrition is a risk factor for many infectious diseases like ARI, Diarrhoea etc.

3. Anaemia among children

Anaemia is a serious concern for young children because it can result in impaired cognitive performance, behavioural and motor development, coordination, language development and scholastic achievement, as well as increased morbidity from infectious diseases (Seshadri, 1997). One of the most vulnerable groups is children age 6-24 months (Stoltzfus and Dreyfuss, 1998).

Table 6: Percentage of children having anaemia in AP 1998-99

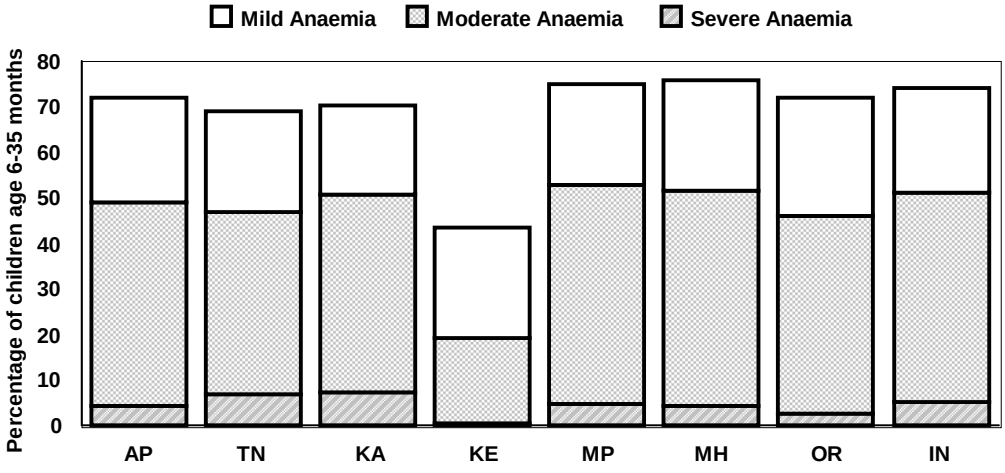
Age of the child	Any anaemia	Mild anaemia	Moderate anaemia	Severe anaemia
6-11 months	68.4	23.7	44	0.6
12-23 months	75.2	23.2	45.8	61
24-35 months	71.1	22.4	44.4	4.4
Mother's anaemia status				
Not anaemic	68.4	25.1	40.8	2.4
Mildly anaemic	74.8	22.5	47.3	4.9
Moderately anaemic	80.9	19.2	54.7	8.1
Residence				
Urban	69.5	23.2	44.4	1.9
Rural	73.3	23	45.1	5.2

[1] Source: NFHS-2 (AP) p-167 table- 7.11

Several groups of children have particulary high levels of moderate to severe anaemia. There is a strong positive relationship between the anaemia status of mothers and prevalence of anaemia among children. The figure 16 shows the prevalence of anaemia among children. Overall, nearly 72% of the children have some level of anaemia, including 23% who are mildly anaemic (10.0-10.9g/dl), 45% who are moderately anaemic (7.0-9.9g/dl), and 4% who are severely anaemic (less than 7.0 g/dl) according to NFHS-2.

Figure 16 shows prevalence of anaemia among neighbouring states of Andhra Pradesh. Kerala is having 43.9 percent and Maharashtra is having 76 percent.

Figure 16: Prevalence of childhood anaemia in AP and neighbouring states.



[1] Source: NFHS (2) India p-273, table-7.19

4. Childhood cluster of diseases

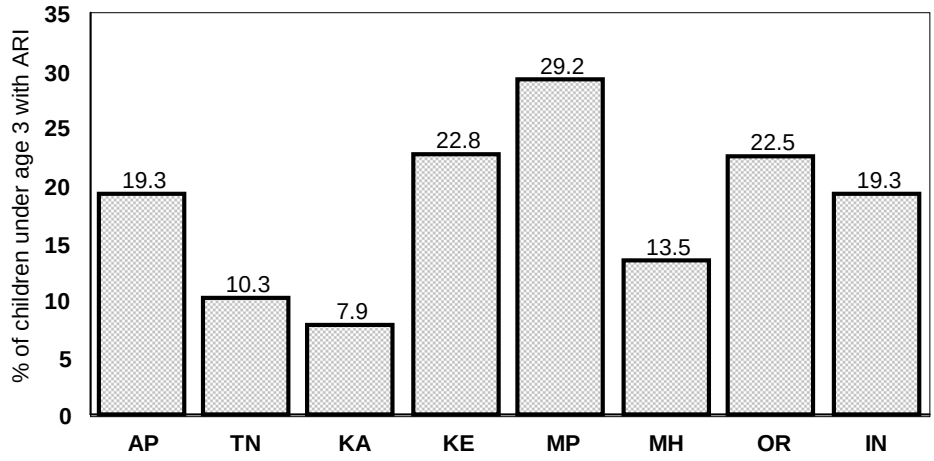
The common child morbidities are Acute Respiratory tract infection (ARI), Diarrhoea, cough, fever etc. Acute Respiratory infection (ARI), primarily pneumonia, is a major cause of illness among infants and children and the leading cause of childhood mortality throughout the world (Murray and Lopez, 1996). Early diagnosis and treatment with antibiotics can prevent a large proportion of ARI deaths.

Acute Respiratory Infection

NFHS-2 found that 19% of children under age 3 in Andhra Pradesh suffered from ARI (cough accompanied by short, rapid breathing). Acute

respiratory infections is an important childhood morbidity. Point prevalence of ARI in AP was lower compared to Kerala, Madhya Pradesh and Orissa. Other neighbouring states like Tamil Nadu, Karnataka and Maharashtra had lower point prevalence of ARI.

Figure 17: Acute Respiratory Infection (Pneumonia) cases among children upto 3 year age in AP and other states, 1998-99



[1] Source: NFHS-2 (India) p-219, Table no: 6.17

In MICS, children with acute respiratory infection (ARI) are defined as those who had an illness with a cough accompanied by rapid or difficult breathing and whose symptoms were due to a problem in a chest, or both the chest and a nasal congestion. 34% under-five children had cough during the two weeks prior to the survey. 16% had experienced cough with rapid breathing, 7% with chest in drawing and 6% had both the symptoms. It was found that children below 12 months are more likely to experience cough with rapid breathing or chest congestion campared to other children.

Diarrhoea

Diarrhoea is the second most important killer of children under five worldwide. Deaths from acute diarrhoea are most often caused by dehydration due to loss of water and electrolytes. Nearly all dehydration related deaths can be prevented by prompt administration of rehydration solutions. According to NFHS-2, 15% of children under age 3 suffered from diarrhoea. Among children age 1-35 months, those age 6-11 months are most

susceptible to diarrhoea. Among children age 1-35 months, those age 6-11 months are most susceptible to diarrhoea.

Table 7: Prevalence of ARI and diarrhoea in AP according to NFHS(2) and MICS estimates. 1998-99 & 2000

Background characteristic	ARI		Any diarrhoea	
	NFHS(2)	MICS	NFHS(2)	MICS
Age of Child				
1-5 months	18.5	33.5	12.5	16.4
6-11 months	19.7	43.8	23.5	28.3
12-23 months	20.6	40	16.2	21.9
24-35 months	17.8	30.9	10.2	9.9
Residence				
Urban	16.5	33.4	16.1	13.1
Rural	20.2	33.7	14.7	13.3
Combined	19.3	33.6	15	13.3

[1] Source: NFHS-2 (AP)1998-99 p-137, table: 6.11, MICS (AP) -2000

In the Multiple Indicator Sample Survey mothers/caregivers were asked to report whether their child had diarrhoea during the two weeks prior to the survey. Overall, 13 percent of under-five children had diarrhoea in the two weeks preceding the survey. There was no rural urban difference in the occurrence of diarrhoea. Incidence seemed highest at younger ages (i.e, 0-23 months). MICS also provides information on prevalence of fever and cough among children below five years of age during the two weeks prior to survey. 30% children were reported to have experienced fever. Rural - urban differentials were not much. The Table 7 gives the prevalence of diarrhoea, fever and cough in Andhra Pradesh in the year 2000.

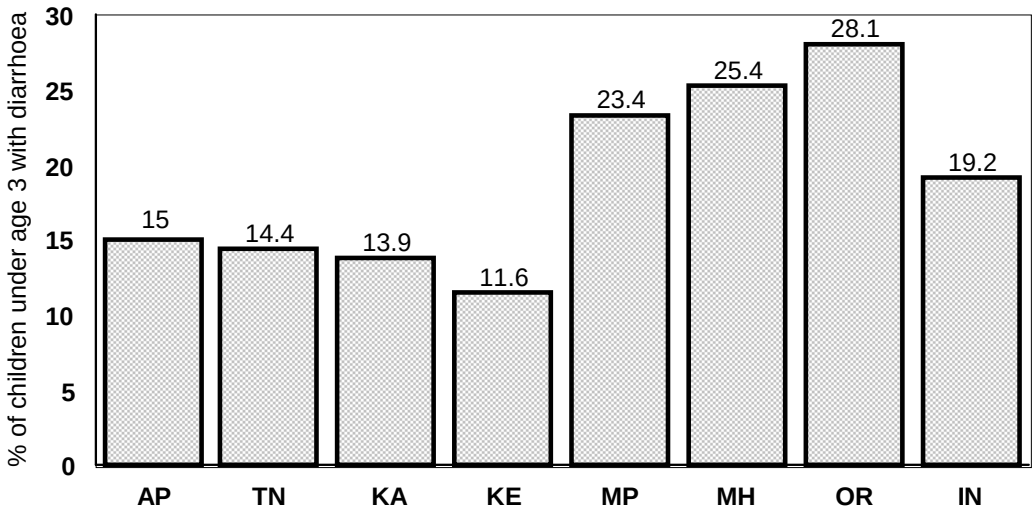
Table 8: Percent of children below five years of age who had diarrhoea during the year preceding the survey. MICS, Andhra Pradesh, 2000

Characteristic	Urban	Rural	Combined
Age of the child			
0-5 months	23.5	30.6	25.2
6-11 months	55.5	59.2	56.5
12-23 months	57.9	61	58.9
24-35 months	44.7	37.3	42.5
36-47 months	35.1	23.7	31.9
48-59 months	28.3	31.5	29.2

[1] Source: MICS-2000 Andhra Pradesh

Information regarding occurrence of diarrhoea among children below five years of age during the year preceding the survey was also calculated. 40 percent children had an occurrence of diarrhoea. No difference was observed between rural and urban areas. Children belonging to scheduled castes and tribes were more likely to have experienced diarrhoea compared to other groups. It was observed that young children below six months of age and older children more than 35 months are less likely to experience diarrhoea compared to children age 6-35 months.

Figure 18: Percentage of children under 3 years with diarrhoea by state. 1998-99



[1] Source: NFHS-2 (India) p-219, table: 6.17

The NFHS-2 figures of diarrhoea can be seen in the Figure 18. Prevalence of diarrhoea varies considerably by state. 15% of children under age 3 suffer from anaemia in AP.

Summary and Conclusions:

Child health refers to the health of children from birth till 14 years of age. Infant mortality rate (IMR), is the most sensitive indicator of child health as well as the socio-economic development. The IMR is defined as the number of infant deaths (less than one year old) per 1000 live births. In Andhra Pradesh the IMR registered a consistent decline from 110-120 in 1970s to 66-70 in 1990s. The reduction of IMR in AP kept pace with the national trend, but was less than what has been achieved by some of its neighbouring states

like Karnataka, Maharashtra, and Tamilnadu. More importantly, the slow down in reduction of IMR in AP during the 1990s is worrisome. Another cause for concern is the wide variation of infant mortality by geographic regions and possibly socioeconomic status. Although the average IMR was between 60-70 by late 1990s, there are areas in the state with IMR as high as 140/1000 live births. Unfortunately estimates of IMR below the district level are not easily available, to facilitate study mortality differentials by geographic region. There is clearly a need for districts and divisional level estimates and area specific interventions to reduce IMR.

IMR is conventionally disagregated into neonatal mortality, and post neonatal mortality. Neonatal mortality refers to deaths during the first month of life and the rest of the IMR is defined as the post neonatal mortality. In AP both neonatal and post neonatal mortality has gradually reduced over the last three decades. As it is to be expected, post neonatal mortality, has reduced at a faster pace. Faster decline of post neonatal mortality, along with reduction of overall IMR shows up neonatal mortality as an increasing component of the overall IMR. However, the absolute level of post neonatal mortality is still considerably high. By the late 1990s post neonatal mortality was about 45-50 infant deaths per 1000 live births.

Child mortality, i.e., probability of death between 1-4 years is another important indicator of child health. According to the NFHS surveys, child mortality decline in Andhra Pradesh was negligible in comparison with other south Indian states like Kerala, Tamil Nadu and Karnataka.

Common causes of death in the 0-4 year age group are Lower Respiratory Infections (or Acute Respiratory Infection, ARI), low birth weight, diarrhoeal diseases are the three top killers in infancy and clearly childhood. About 19% of children under age 3 in Andhra Pradesh suffered from ARI (cough accompanied by short, rapid breathing) and 15% of children under age 3 suffered from diarrhoea. About 10000 infants and less than five year old children in AP die of these three diseases every year. The high incidence of deaths due to low birth weight, ARI and diarrhoea also points to the

dominance of risk factors like under nutrition, illiteracy, poor water supply and sanitation.

Precise estimates of low birth weight prevalence in AP is hard to get. The major problem is lack of accurate measurement of the birth weight. More than half (56%) of babies were not weighed at birth. Under nutrition among preschool children is still an important problem in AP. About 40 to 50% of preschool children suffer from under nutrition.

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