

# **Nutritional Status and Gender Differences in the Children of less than 5 Years of age Attending ICDS Anganwadis in Vadodara City**

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**Vol. 27, No. 3 (2002-07 - 2002-09)**

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## **Abstract:**

**Research questions:** 1. What is the prevalence of malnutrition in the children of ICDS anganwadies of Vadodara city? 2. Is there a gender difference in malnutrition prevalence among the children attending anganwadis? 3. What is the impact of ICDS programme on the nutritional status of children of anganwadis?

**Objectives:** 1. To measure the prevalence of malnutrition with the gender difference and age trend in the children of less than 5 years of age. 2. To compare the level of malnutrition in the children in the years of 1996 to 1998. 3. To study the pattern of change in the nutritional status of the children from the year 1996 to 1998.

**Study design:** Cross-sectional study with a cohort data analysis.

**Settings:** 30 randomly selected anganwadis of Vadodara city.

**Participants:** 3157 children aged less than 5 years attending ICDS anganwadis of Vadodara city.

**Statistical analysis:** Simple proportions, Chi square test.

**Results:** From the total 3157 children 62.9% were found malnourished. The prevalence of moderate to severe malnutrition among girls was 28.4% as against 16.9% in boys ( $p < 0.0001$ ). Nutritional status of the children started worsening in the 2nd year of their life. More than 60% of infants were found normal as against 37.6% of children of age group of 1 to 2 years, 29.3% of children of 2 to 3 years and 23.5% of children of 3 years and above ( $p < 0.0001$ ). From the children who were normal in 1996, only 44.4% remained normal after attending ICDS anganwadis for two years, while from the children who were malnourished in 1996, 17.8% children deteriorated further, 58.0% remained as malnourished as they were and only 24.2% of them improved.

**Conclusion:** ICDS programme failed to bring the expected results in the slum children of Vadodara city.

**Keywords:** Pre-school children, Nutritional status, Gender differences, ICDS

## **Introduction:**

Nutrition is the cornerstone of socio-economic development. The nutritional problems are multifactorial with roots in the sectors of education, demography, agriculture and development. During 1995, more than 28% of the world's children under the age of 5 years were underweight for their age ranging from 2.9% in the developed countries to 31% in developing countries<sup>1</sup>. Because of the size of the population, almost half of the world's malnourished children are to be found in just 3 countries - India, Pakistan and Bangladesh<sup>2</sup>.

**Integrated Child Development Services (ICDS)** scheme is running for the last 25 years all over India with the main objective of improving the nutritional status of the children under 5 years of age. The network of ICDS consists of 3,907 projects and reaches out to 17.8 million children of disadvantaged group<sup>3</sup>

However, there are studies, which have shown the decline in 'severe' and 'moderate' malnutrition in the pre-school children, the present study measured the prevalence of malnutrition and also the impact of ICDS on the nutritional status of children with special reference to gender among urban anganwadis.

Vadodara is a city with total population of 1.03 million according to 1991 census<sup>4</sup>. There are 336 slum areas scattered in the 10 different administrative wards of Vadodara Municipal Corporation. In these slums 160 anganwadis (AWs) function, 120 of which are managed by the Vadodara Municipal Corporation, while remaining 40 are managed by Kashiba Children's Hospital.

## **Material and Methods:**

This is a cross-sectional study that was carried out between July 1, 1998 and August 31, 1998.

Initially, a complete list of AWs of urban slums of Vadodara city was obtained from the ICDS office of the Vadodara Municipal Corporation. The permissions of the Chief Medical Officer, Municipal Corporation, Vadodara and ICDS officer, Kashiba Children's Hospital, Vadodara were obtained to conduct a study and field survey.

The schedule was prepared in the computer package Epi-info 6.04b and was pre-tested by visiting one of the selected AW and modified accordingly.

The sample for the study was selected by systematic random sampling method. Out of 160 AWs 30 were selected.

All the selected AWs were visited and list of the children of less than 5 years of age with their age (in months) and sex records were obtained from the register maintained by the anganwadi workers (AWWs). Weight records (in Kgms.) of the children for the months of June 98, June 97 and June 96 were also obtained from the AWs. For classification of malnutrition, Indian Academy of Paediatrics (IAP) classification was used.

## Results and Discussion:

From the total of 3157 children studied in 30 AWs, 705(22.4%) were moderate to severely malnourished according to IAP classification (in grade II and III) and 1280(40.5%) were mildly malnourished (in grade I), while only 1172(37.1%) children were not malnourished. There was no child in grade IV in the study population.

**Table I: Sex-wise prevalence of malnutrition in the children of less than 5 years of age in 1998.**

IAP grades	Malnutrition								
	Male (n=1659)			Female (n=1498)			Total (n=3157)		
	No.	(%)	95% CI	No.	(%)	95% CI	No.	(%)	95% CI
0	696	(42.0)	39.6-44.4	476	(31.8)	29.4-34.2	1172	(37.1)	35.4-38.8
I	683	(41.2)	38.8-43.6	597	(39.8)	37.4-42.4	1280	(40.5)	38.8-42.3
II	264	(15.9)	14.2-17.8	370	(24.7)	22.5-27.0	634	(20.1)	18.7-21.5
IV	16	(1.0)	0.6-1.6	55	(3.7)	2.8-4.8	71	(2.3)	1.8-2.8

$$x^2 = 78.2; p < 0.0001.$$

More girls (68.2%) were malnourished than boys (58%) and the difference was statistically significant. Even in severity of malnutrition this difference persisted (Table I).

There are number of possible explanations for the gender difference like, negligence of girls, poor nutrition, more morbidities and less health care facilities and overall lower social status of the girl child. However, it could also be because the same yardsticks (reference curves) were used in IAP classification for assessing nutritional status in male and female children.

**Table II: Age-wise prevalence of malnutrition in the children of less than 5 years of age in 1998.**

IAP grades	Malnutrition									
	<6 months (n=293)		6-11 months (n=417)		12-23 months (n=731)		24-35 months (n=777)		> 35 months (n=939)	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
0	191	(65.2)	257	(61.6)	275	(37.6)	228	(29.3)	221	(23.5)
I	84	(28.7)	109	(26.1)	302	(41.3)	344	(44.3)	441	(47.0)
II	14	(4.8)	46	(11.0)	133	(18.2)	187	(24.1)	254	(27.1)
III	4	(1.4)	5	(1.2)	21	(2.9)	18	(2.3)	23	(2.4)

$$x^2 = 318.73; p < 0.0001.$$

5.2% of the children under 6 months of age were normal. As the age advanced, the proportion of normal children in the age group decreased. Among the children aged 3 years and above only 23.5% were normal. The sharp fall in the proportion was observed in the second year of life. The rise in level of malnutrition continued with increasing age but the rate of rise was much lower after second year. The prevalence of moderate to severe malnutrition were from 6.2% to 29.5% in different age groups (Table II). There was an increased level of malnutrition with increasing age ( $p < 0.0001$ ).

Breastfeeding meets all nutritional needs of the child for the first 6 months of life. Because of the conventionally adopted good practice of breastfeeding, the level of malnutrition in this age group is minimal and often it is similar to the children in Europe and North America as the food the children receive is the best<sup>2</sup>.

The National Family Health Survey (NFHS) 1992-93 has also shown similar trend. The results of the survey underline the critical period of infancy in the strategies for reducing malnutrition rates. The pooled data from 18 states showed that the malnutrition rate increased sharply in the end of the first year of life. There was a little change in the rates in children of 24 months and above. If fewer children were malnourished at 12 to 23 months of age, it is less likely that the rates will increase further in older age groups<sup>5</sup>.

Around 6 months of age, all children need other foods, besides breast milk, as it alone is no longer adequate for child's nutritional progress<sup>2</sup>. After the age of 4 to 6 months, supplementary feeding (weaning) should be started. Late start of weaning or inadequate supplementary food can lead a child to malnourishment. During the weaning process, children are particularly exposed to the deleterious synergistic action of malnutrition and infection. Once the child becomes malnourished, due to weakened immune system, child becomes prone to infections and may fall in the vicious circle of malnutrition to illness and illness to malnutrition.

Sudden rise of malnutrition level in second half of infancy and in the second year of life seen in our study could be because of the poor weaning practices prevalent in the society. In India, Bangladesh and Pakistan, the proportion of breastfed children aged six to nine months receiving complementary foods is less than one third<sup>2</sup>.

### Malnutrition in 1996, 1997 and 1998:

**Table III: Prevalence of malnutrition in the years of 1996, 1997 and 1998.**

IAP grades	Malnutrition					
	1996 (n=786)		1997 (n=1615)		1998 (n=3157)	
	no.	%	no.	%	no.	%
0	250	(31.8)	542	(33.6)	1172	(37.1)
I	343	(43.7)	706	(43.7)	1280	(40.5)

II	176	(22.4)	323	(20.0)	634	(20.1)
III	16	(2.0)	42	(2.6)	71	(2.3)
IV	1	(0.1)	2	(0.1)	0	(0)

Overall there was not much change in the level of moderate to severe malnutrition in the children from 1996 to 1998. 22.4%, 22.7% and 24.5% were the respective figures of the prevalence of moderate to severe malnutrition in the years of 1996, 1997 and 1998. 37.1% of the children were normal in 1998 against 33.6% and 31.8% children in the year of 1997 and 1996 respectively.

It was observed that in many slums, large number of people influxed from the other states are living. Their children had not attended the anganwadis for the whole year, as they didn't live there for the whole year. In some areas because of different reasons (as shown by the people during informal talk e.g. helper was not calling children, snack was not given etc.), some people were not sending their children regularly to take the advantage of ICDS services. Such reasons could neutralize the gain in reduction in level of malnutrition in the children, if any.

#### Child to child shift (96-98) in nutritional status:

Malnutrition status of children for 3 years was compared where data were available with ICDS anganwadis to see their progress with age and attending anganwadis. The shift (difference of grades) of malnutrition in children from their grades in the year 1996 to their grades in 1998 was studied in those 786 children, whose weight records of the year of 1998 and 1996 were available.

**Table IV: Child to child shift of nutritional status in the children (96 to 98).**

Sex	Child to child shift of nutritional status (96-98)															
	-3	(%)	-2	(%)	-1	(%)	0	(%)	+1	(%)	+2	(%)	+3	(%)	+4	(%)
Male (n=413)	0		14	(3.4)	108	(26.1)	224	(54.2)	62	(15.0)	4	(1.0)	0		1	(0.2)
Female (n=373)	1	(0.3)	25	(6.7)	86	(23.0)	198	(53.1)	56	(15.0)	6	(1.6)	1	(0.3)	0	
Female (n=373) [This should actually be TOTAL - Lakshmi]	1	(0.1)	39	(5.0)	194	(24.7)	422	(53.7)	118	(15.0)	10	(1.3)	1	(0.1)	1	(0.1)

$\chi^2 = 8.89$ , shift = change in the IAP grade;  $p=0.261$ .

422(53.7%) of the total 786 children remained in the same grade of malnutrition and 234(29.8%) worsened (negative shift of malnutrition), while only 130(16.5%) of them

improved from their malnutrition status of 1996. There was not much difference in the shift of malnutrition status between male and female children ( $p=0.261$ ).

But 'no shift' is making confusion here. The child who was malnourished in the year of 96 and remains malnourished in the year of 98 and the child who was normal in the year of 96 and remains normal in the year of 98, both represent entirely different picture of shift in malnutrition. Because the children who are normal i.e. in grade 0 cannot improve further according to IAP grading, which is not the case for the children who were malnourished.

So the children who were Normal (in grade 0) in the year of 96 and who were Not Normal (in grade >0) or Undernourished in the year of 96 represent two different cohorts which should be studied separately.

**Table V: Shift of nutritional status in the 'Normal' children.**

Sex	Child to child shift of nutritional status (96-98)							
	-3	(%)	-2	(%)	-1	(%)	0	(%)
Male (n=160)	0		14	(8.7)	70	(43.8)	76	(47.5)
Female (n=90)	1	(1.1)	22	(24.4)	32	(35.6)	35	(38.9)
Total (n=250)	1	(0.4)	36	(14.4)	102	(40.8)	111	(44.4)

$$x^2 = 13.54; p=0.0036.$$

250(31.8%) of the total 786 children were normal in 96. Only 44.4% of them could maintain their normal nutritional status in the year 98, while 40.8% shifted down by one grade and 14.4% shifted down by two grades of malnutrition. The removal of confounding effect of 'nutritional status of the children in 1996' brought the difference in the shift between two sex ( $p=0.0036$ ) to surface in this cohort. 47.5% of the boys remained normal, while only 38.9% of the girls remained normal. Moreover, 24.4% of the girls shifted down by two grades of malnutrition as against only 8.7% of boys.

Thus the large proportion of healthy children in 1996 had shifted to different levels of malnutrition in 1998, showing the retrograde trend. It is important to note that here this shift from healthy to malnourished status is proportionately more in girls than in boys. Possible explanations have been discussed earlier.

**Table VI: Shift of nutritional status in the 'Malnourished' children in 1996.**

Sex	Child to child shift of nutritional status (96-98)													
	-2	(%)	-1	(%)	0	(%)	+1	(%)	+2	(%)	+3	(%)	+4	(%)
Male (n=253)	0	(0)	38	(15.0)	148	(58.5)	62	(24.5)	4	(1.6)	0	(0)	1	(0.4)

Female (n=283)	3	(1.1)	54	(19.1)	163	(57.6)	56	(19.8)	6	(2.1)	1	(0.3)	0	(0)
Total (n=536)	3	(0.6)	92	(17.2)	311	(58.0)	118	(22.0)	10	(1.8)	1	(0.2)	1	(0.2)

As an expected cell value is less than 5,  $\chi^2$  is not valid.

536(68.2%) of the total children, were malnourished in 1996, only 24.2% of them showed improvement in their nutritional status, while 75.8% of them remained either unchanged (0 shift) or shifted in higher grades of malnutrition. This means that 3/4th of the children, who were malnourished in the year 1996, either didn't improve at all or worsened further in two years. This is in contradiction to what ICDS anganwadis result, we would expect.

20.2% of the malnourished girls worsened further as against only 15% of the boys, while 26.5% of the boys improved from their nutritional status of 96 as against 22.2% of the girls, showing privileged position of male gender.

**Table VII: Age trend in the shift (96-98) in the children.**

Sex	Child to child shift of nutritional status (96-98)							
	-3	-2	-1	0	+1	+2	+3	+4
Mean age (months)	29.0	32.8	36.7	42.4	42.2	39.7	42.0	37.0

Children between the age of 2 and 3 years (as in 1998) worsened more than their elder colleagues. This may be because these children were of around 6 months of age in 1996 and because of the good breastfeeding practices, they were well nourished in 1996. But in 1998, because of the poor weaning practices, they shifted to higher grades of malnutrition.

### Conclusions:

From the study, it is concluded that,

1. According to IAP classification, 22.4% of the children of under 5 years of age, registered in the anganwadis of Vadodara city were moderate to severely malnourished (Gr II, III and IV) with a significant difference in its prevalence between male (16.9%) and female (28.4%) children.
2. The level of moderate to severe malnutrition in the elder children was higher than that in younger children ranging from 6.1% in the age group of under 6 months to 29.5% in the age group of 36 to 59 months, with a steep rise in the level in the second year of life.
3. There was almost no change in prevalence of malnutrition in the children of under 5 years, registered in the ICDS anganwadis during these two years i.e. from June, 96 to June 98.
4. A study of child to child shift of malnutrition (according to IAP classification) by cohort analysis from the record data in the children showed that, only 44.4% of the

children, who were Normal in the year of 1996 remained Normal, while from the Malnourished (in 1996) children, only 24.2% improved and all others either remained in the same grade of malnutrition or worsened further.

5. Gender-wise analysis of the shift study revealed a significant difference in the shift between male and female children, who were Normal in 1996 favoring the male children.

### **Recommendations:**

ICDS has been by far the best comprehensive nutritional programme and a detailed qualitative study is required to understand the reasons of failure of this programme to improve nutritional status of children attending AWs.

### **Acknowledgements:**

We heartily thank Medical Officers of Vadodara Municipal Corporation and staff members of AWs besides little children attending AWs.

### **References:**

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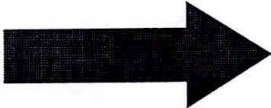
**2005-06 National Family Health Survey  
(NFHS-3)**

**Adult  
Nutrition**

# **Adult Nutrition**

**The poor nutrition conditions of young children in India have received much attention recently, but adults are also experiencing a variety of nutritional problems that will be examined in this presentation.**

# Contents

-  ● **Malnutrition**
- **Anaemia**
- **Micronutrient  
intake**

# Body Mass Index (BMI)

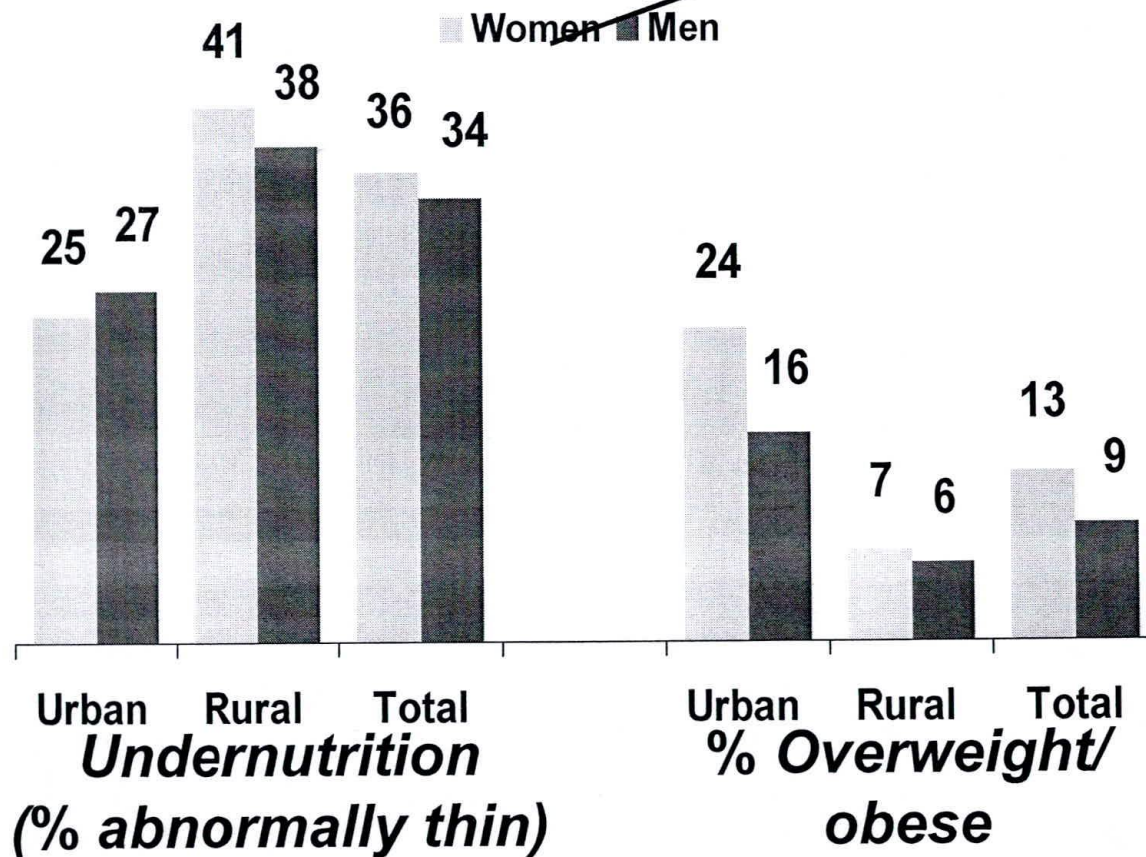
- The BMI is defined as weight in kilograms divided by height in metres squared ( $\text{kg}/\text{m}^2$ ).
- A cut-off point of 18.5 is used to define thinness or acute undernutrition and a BMI of 25 or above indicates overweight or obesity. BMI of 17.0-18.4 refers to mildly thin and  $<17.0$  refers to moderately/severely thin. BMI of over 30.0 refers to obesity.
- This index excludes women who were pregnant at the time of the survey and women who gave birth during the two months preceding the survey.

# Dual Nutritional Burden

More than a third (36%) of women have a BMI below 18.5, indicating a high prevalence of nutritional deficiency. Among women who are thin, 44% are moderately or severely thin.

- The percentage of ever-married women age 15-49 who are overweight or obese increased from 11 percent in NFHS-2 to 15 percent in NFHS-3
- This is a growing problem in India. Women suffer from a dual burden of malnutrition with nearly half of them being either too thin or overweight
- As undernutrition decreases, overnutrition increases by about the same amount

# Prevalence of Undernutrition and Overweight/Obesity among Adults by Residence



Undernutrition is more prevalent in rural areas.

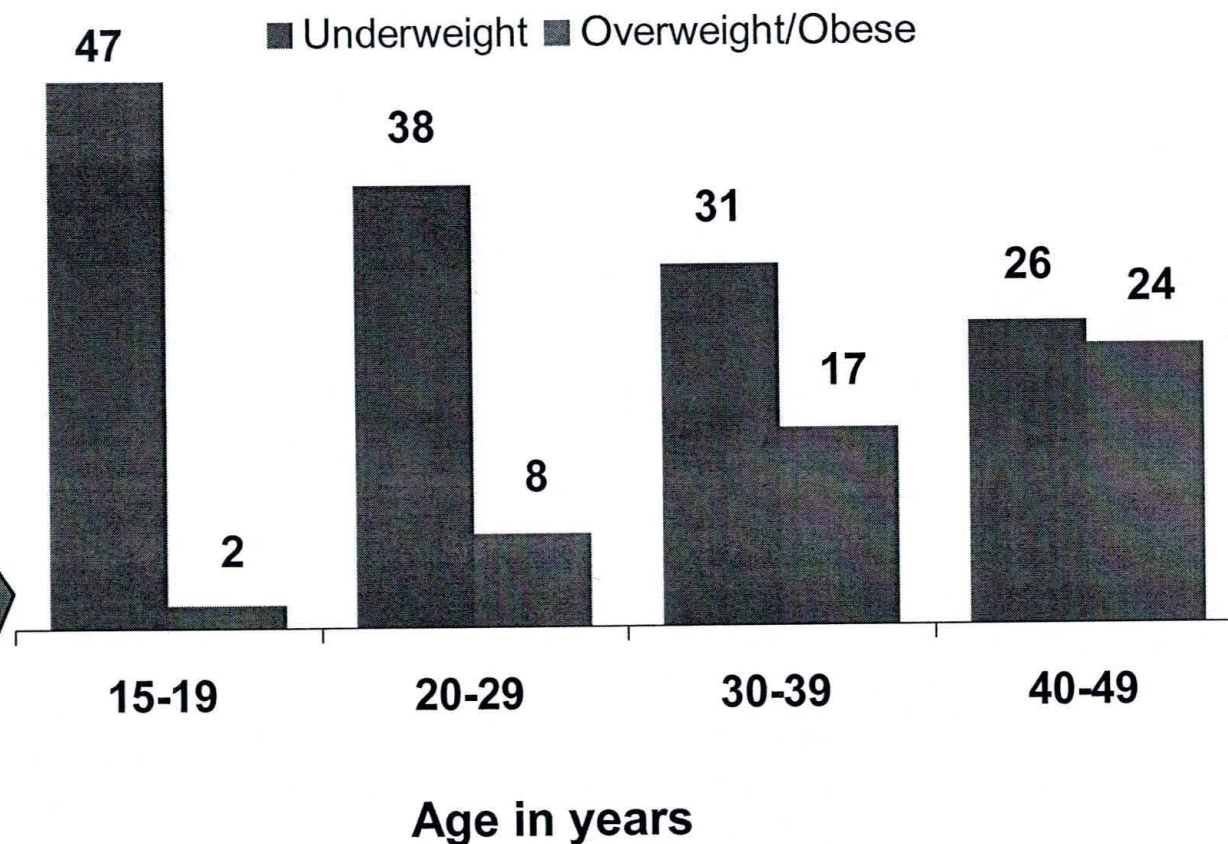
Overweight and obesity are more than three times higher in urban than rural areas.

Both undernutrition and overweight and obesity are higher among women

# Undernutrition and Overweight/Obese Women by Age

Malnutrition levels are higher among young girls. Almost half of the girls in age 15-19 are undernourished.

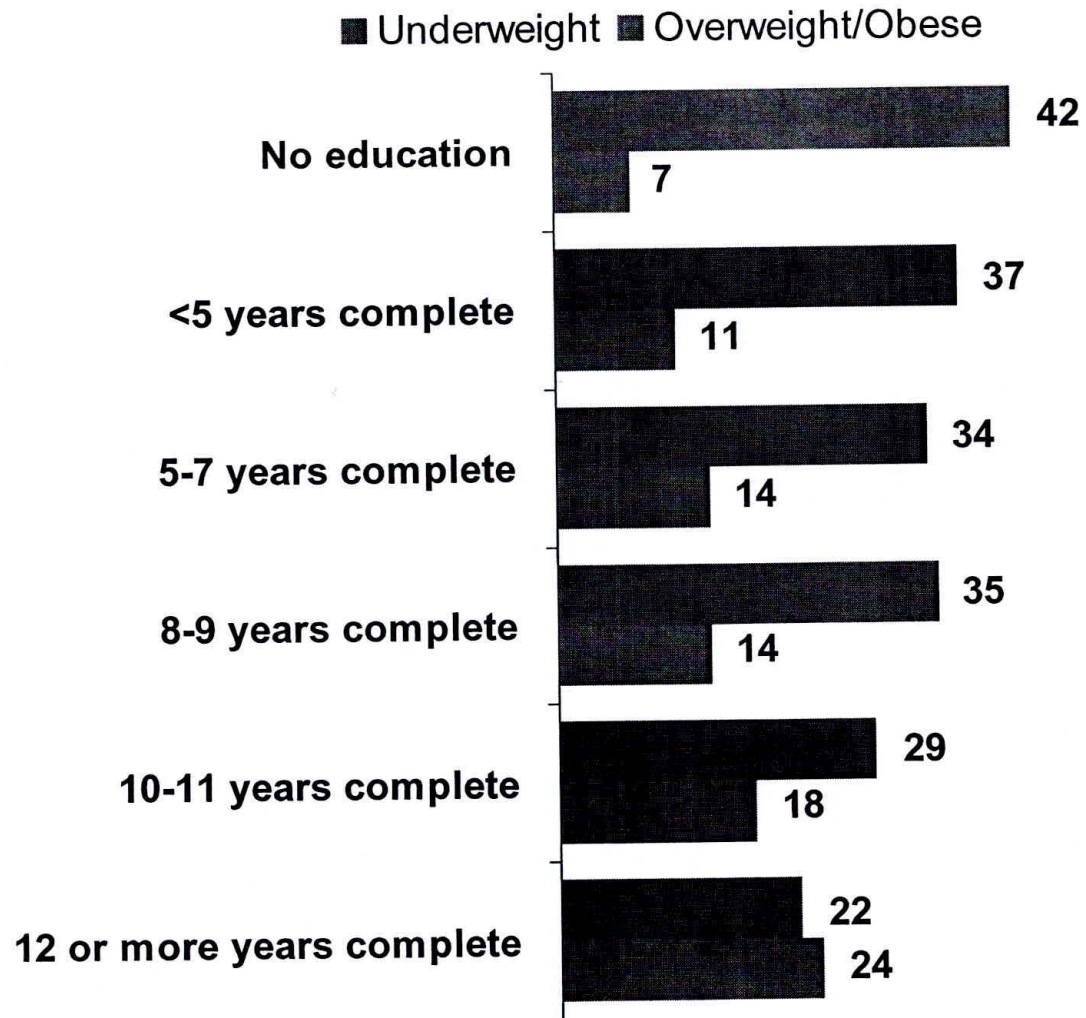
Undernutrition declines and overnutrition increases with age of women



# Underweight and Overweight/Obese Women by Education

The prevalence of under-nutrition is nearly twice higher among women with no education than those with 12 and more years of schooling.

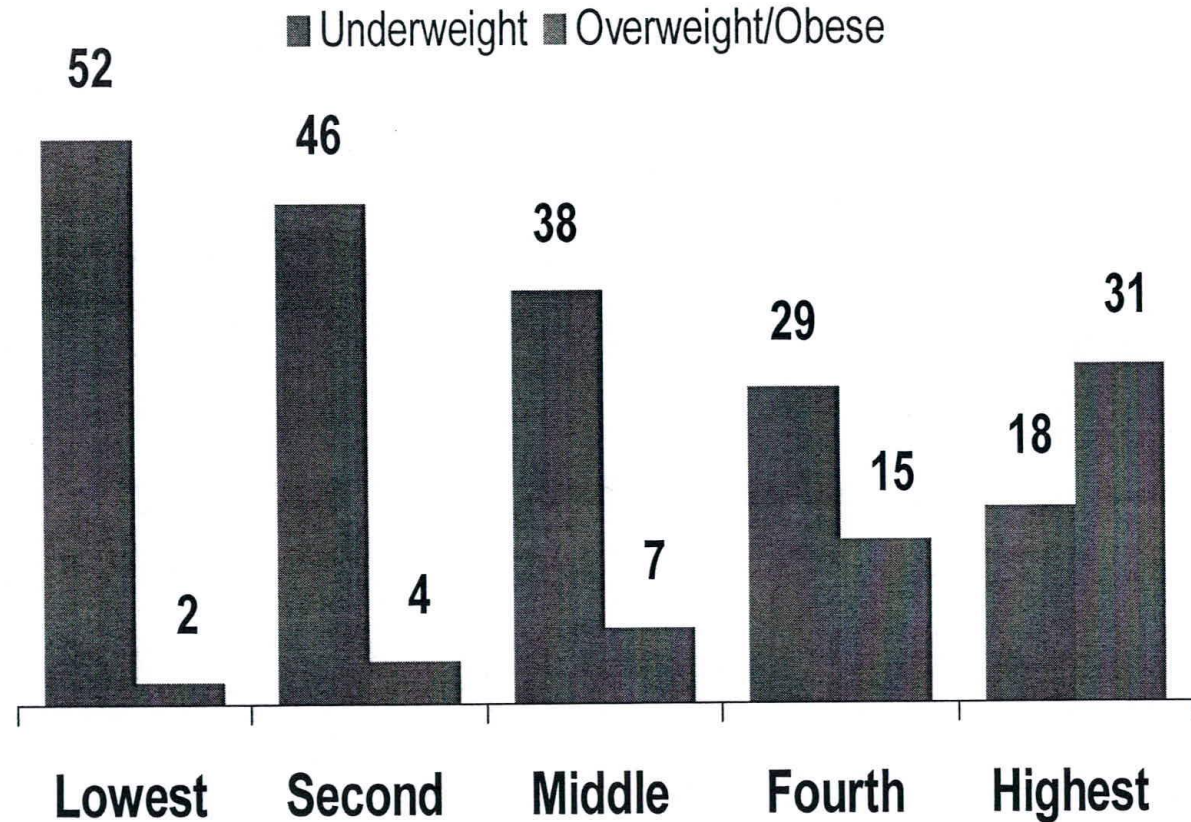
The prevalence of overweight and obesity is three times higher among women with 12 and more years of schooling than those with no education.





# Underweight and Overweight/Obesity among Women by Wealth

More than half of women in the highest income quintile are underweight. In contrast, almost one-third of women in the highest income quintile are overweight or obese.

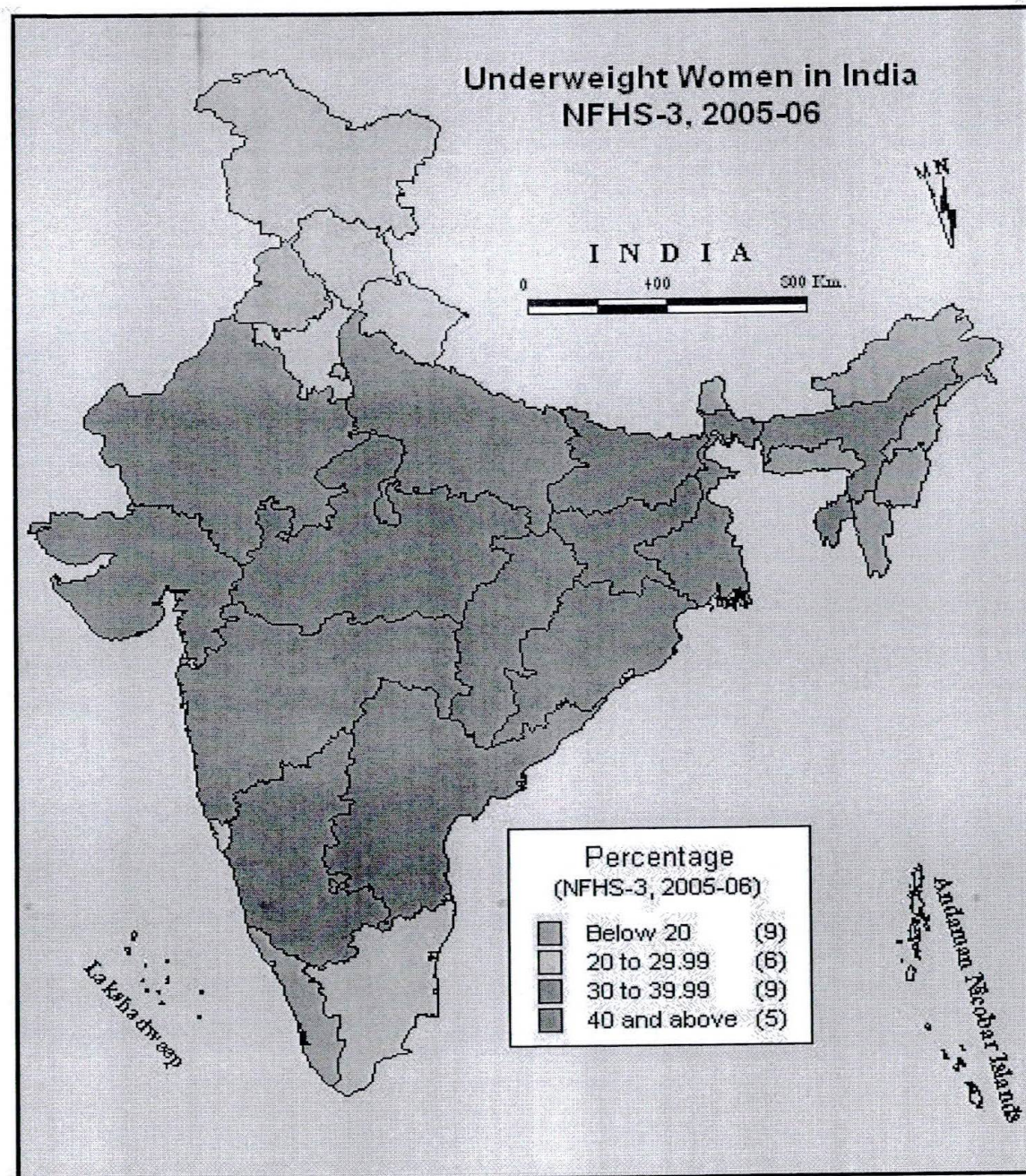


# State Variations in Malnutrition

The percentage of women who are too thin is particularly high in Bihar (45%), Chhattisgarh and Jharkhand (43% each).

Malnutrition levels are lowest in Delhi, Punjab, and several of the small northeastern states.

The percentage of women who are overweight or obese is highest in Punjab (30%), followed by Kerala (28%) and Delhi (26%)



# Underweight and Overweight/Obese Men

Similar variations are seen by state in the percentage of men who are thin and the percentage of men who are overweight and obese.

The prevalence of underweight and overweight among men shows similar variations by age, education and wealth index.

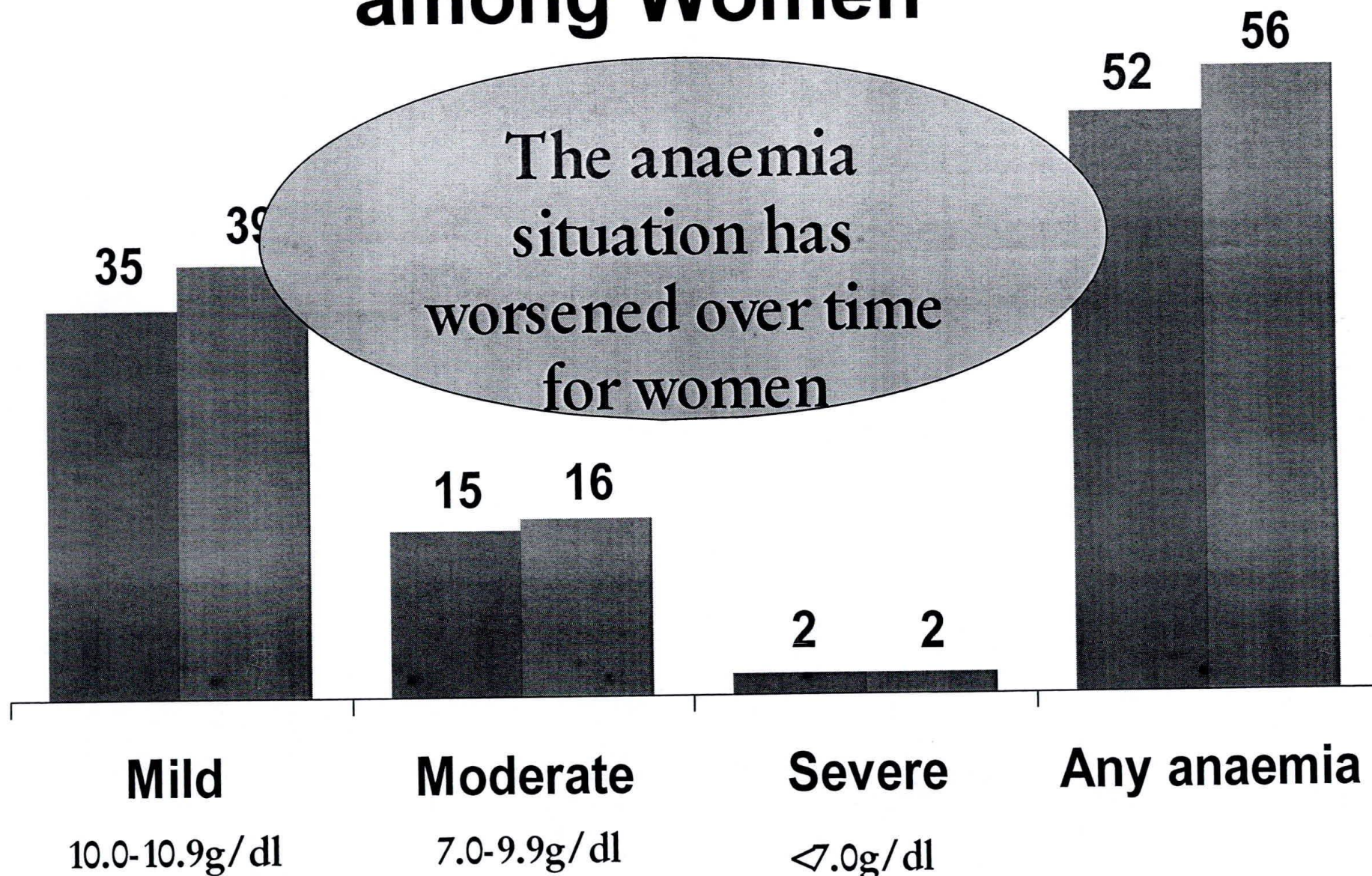
# Contents

- **Malnutrition**

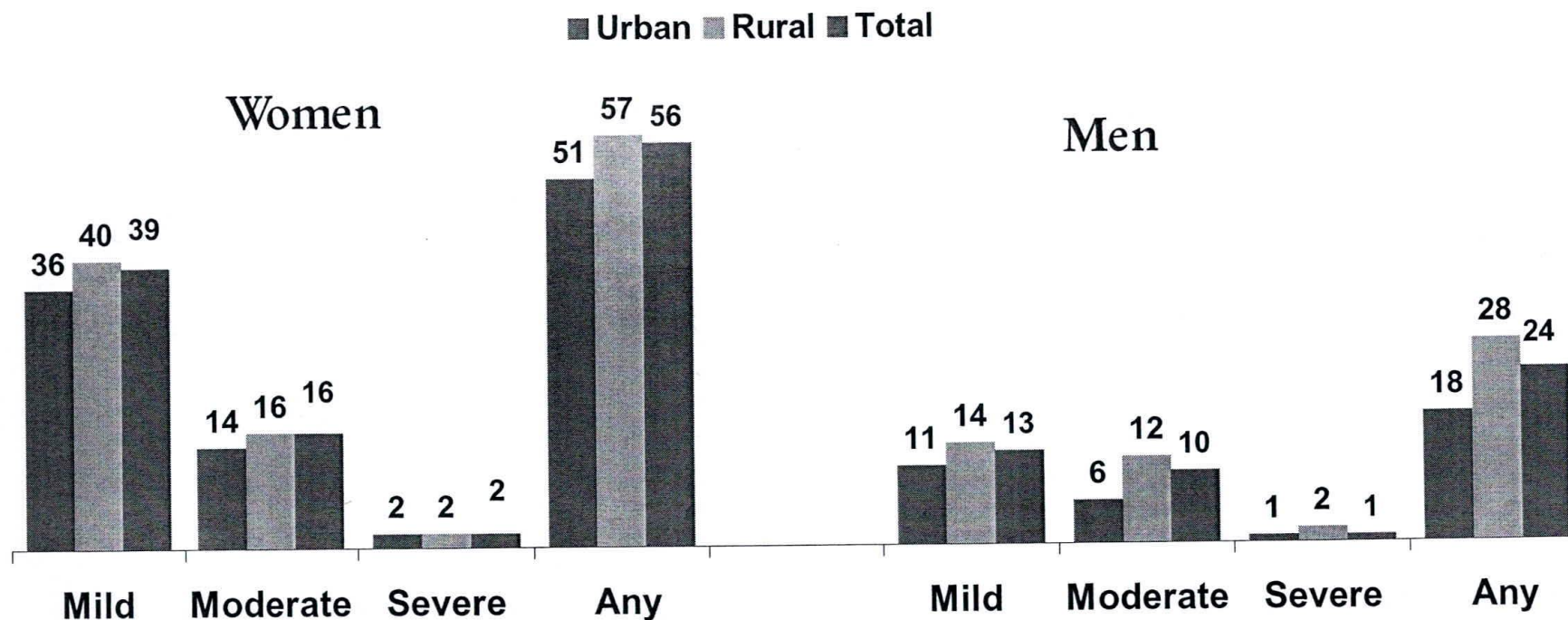
-  ● **Anaemia**

- **Micronutrient  
intake**

# Trends in Anaemia Prevalence among Women



# Anaemia Prevalence among Women and Men by Residence



The anaemia prevalence levels are more than two times higher among women than men with almost half of them with moderate to severe anaemia. This indicates the worse anaemic condition among women.

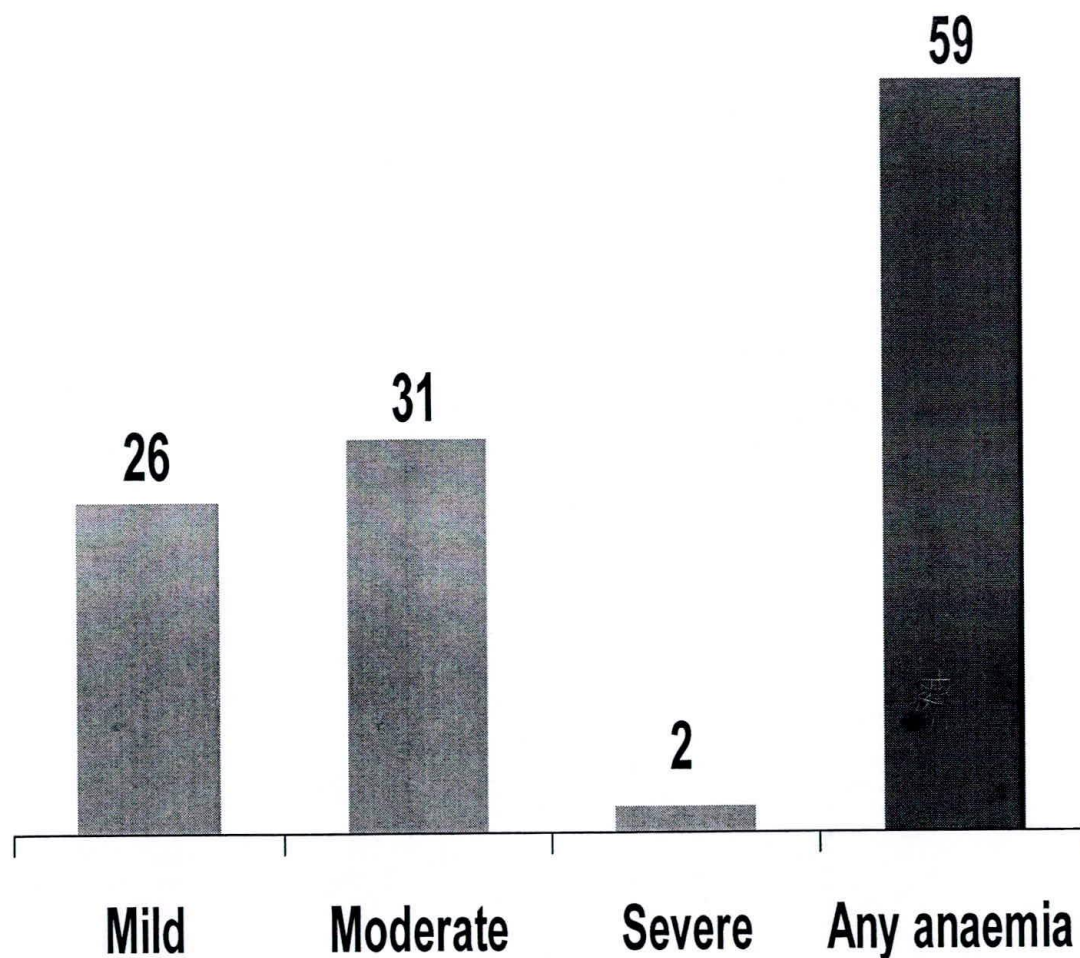
The prevalence of anaemia is marginally higher in rural than urban areas but anaemia is a common problem in both urban and rural areas.

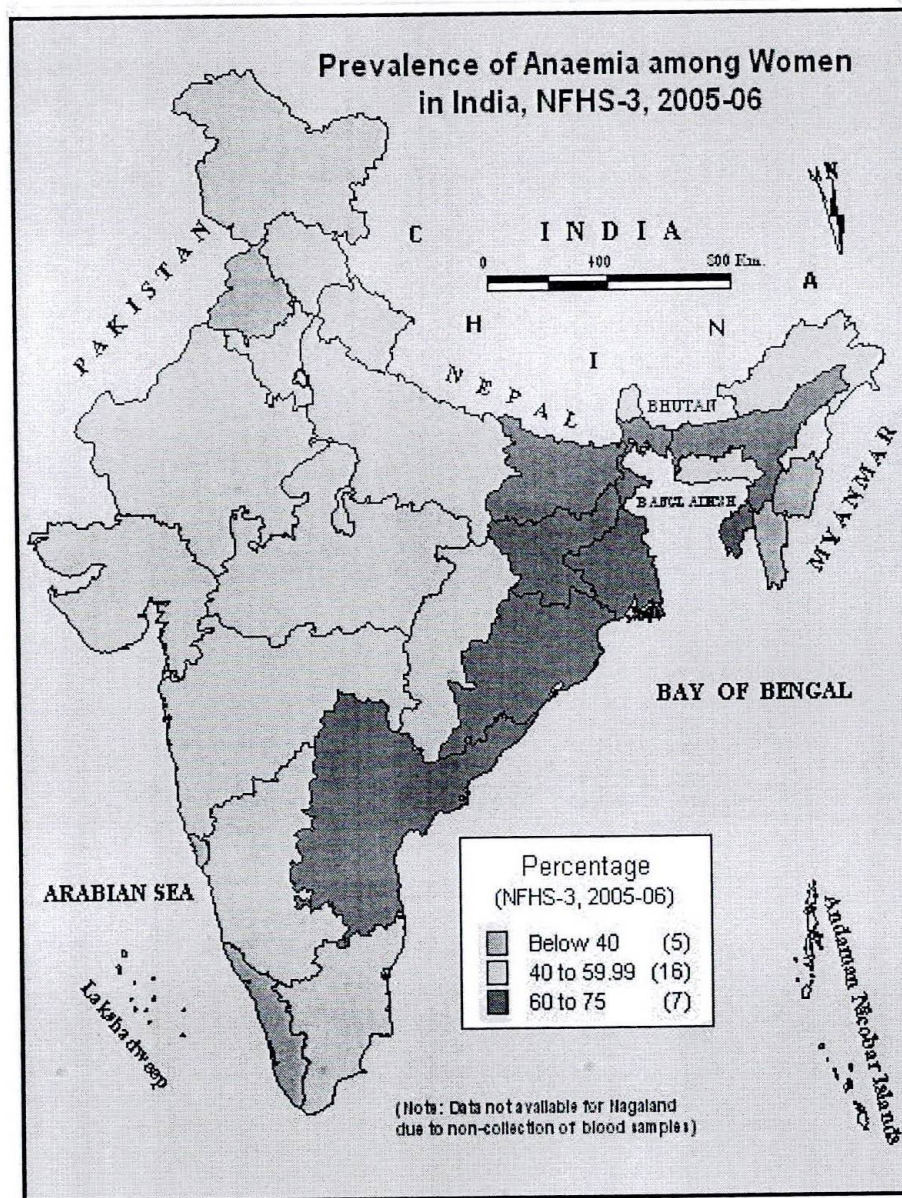
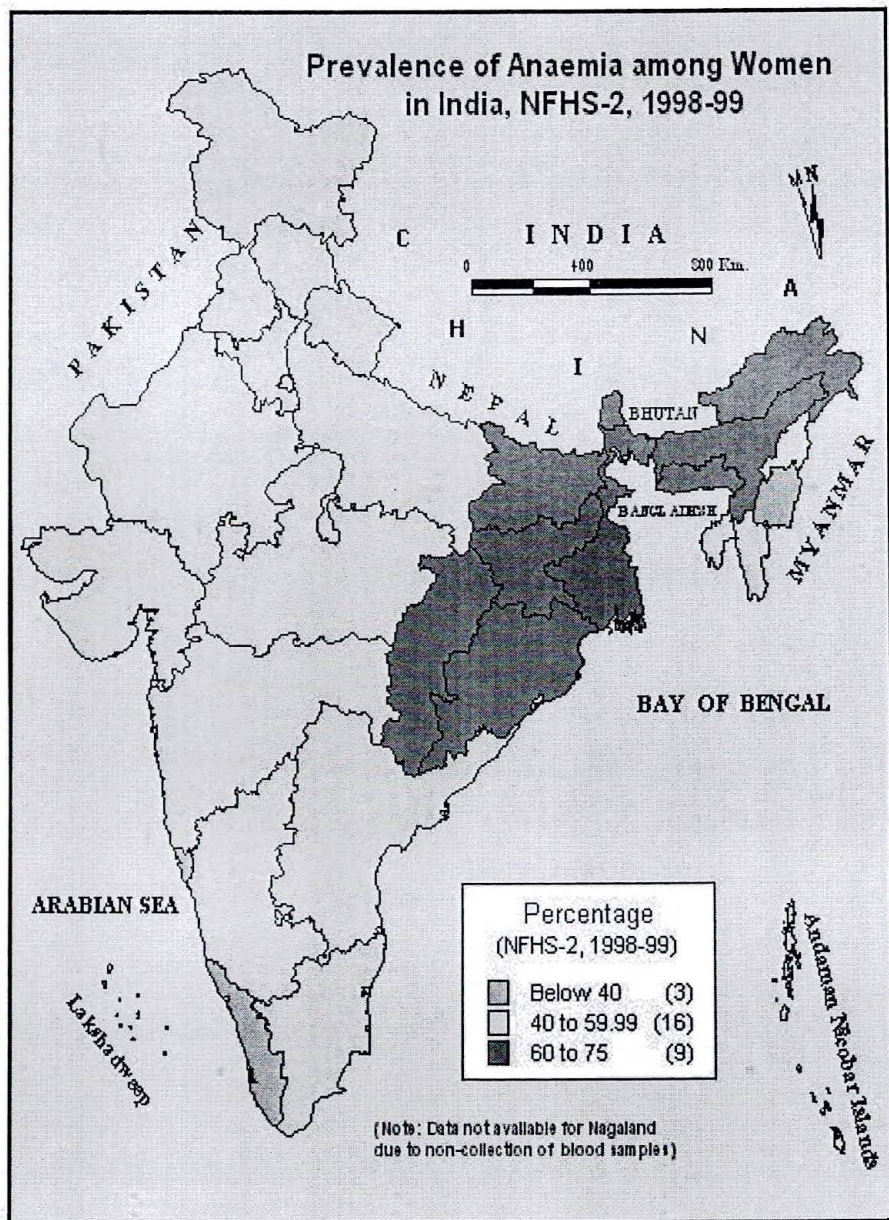
More than 50 percent of women in urban areas are anaemic with almost a third of them with moderate to severe anaemia.

# Anaemia Prevalence among Pregnant Women

The prevalence of anaemia among pregnant women is higher.

The prevalence of moderate to severe anaemia is greater among pregnant women women







# Contents

- **Malnutrition**

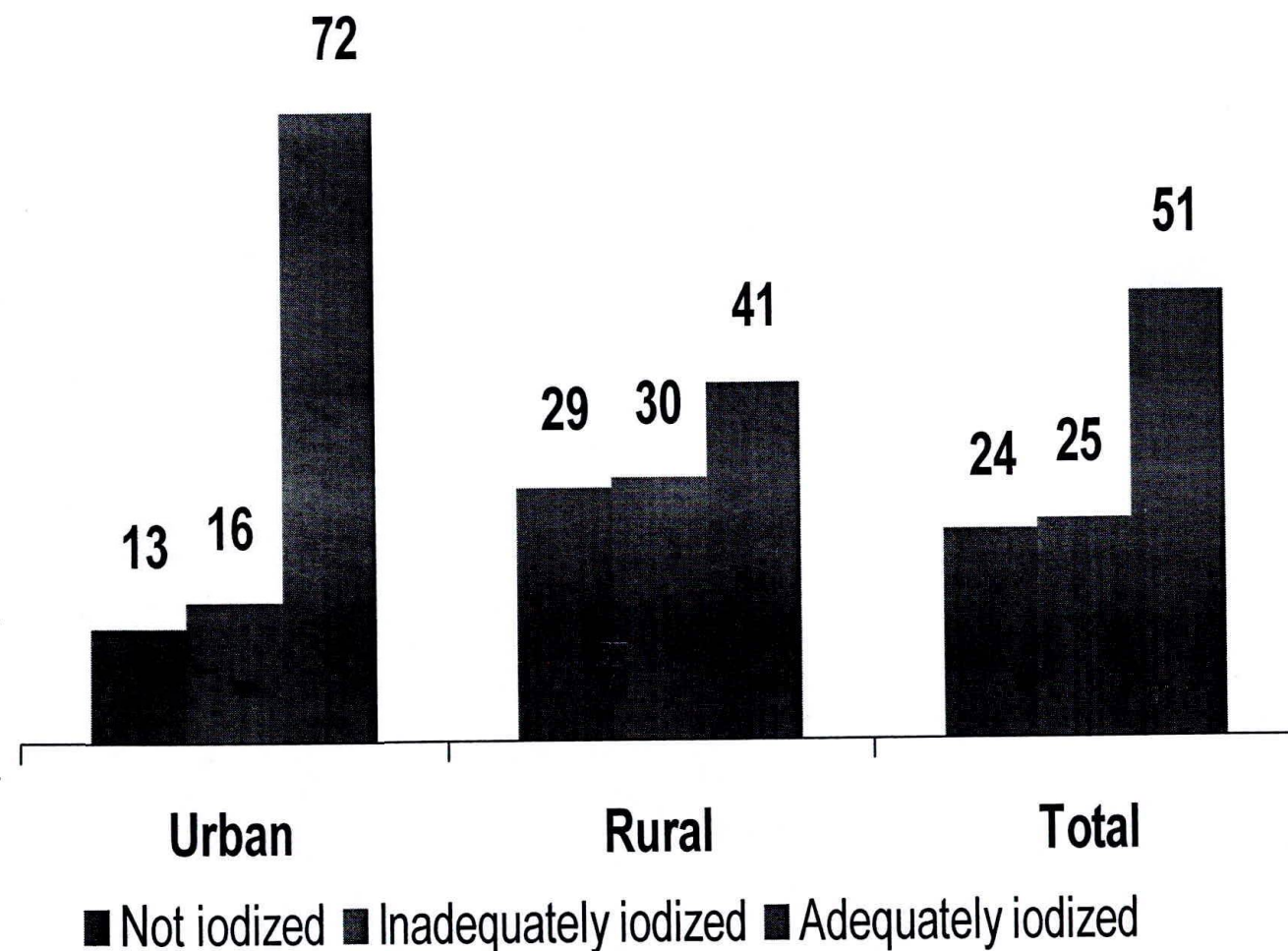
- **Anaemia**

- **Micronutrient intake**

# Percentage of Household Using Iodized Salt By Residence

Only about half of the households in India use cooking salt with adequately content

More than two thirds of urban households used adequately iodized cooking salt compared to just 41 percent in rural areas.



# Food Consumption

- **NFHS-3 asked women and men about the frequency of consuming food from different food groups: Milk or curd, pulses, fruits, dark green leafy vegetables, eggs, chicken or meat and fish**
- **33 percent of women and 24 percent of men are vegetarians**
- **Consumption of fruits at least once a week is less common. Sixty percent of women do not consume fruits even once a week**
- **The pattern of food consumption by men is similar to that of women, but men are more likely than women to consume milk or curd regularly**

# Cont...

- **Food consumption shows variation by residence, education, religion and cast and the wealth index**
- **The frequent consumption of milk and curd is most common in the Northern and Southern regions, as well as in Sikkim and Gujarat**
- **Egg, fish and meat consumption is more common in the south except for Karnataka, Northeastern states, Goa, West Bengal and Jammu and Kashmir**

# Key Findings

- **Indian women suffer a very high burden of nutritional deficiency but the prevalence of overweight and obesity are also on the rise**
- **This is a dual burden of malnutrition, with nearly half being either too thin or overweight**
- **The prevalence of overweight or obesity among women is highest in Punjab followed by Kerala and Delhi (the low fertility states)**

- **The prevalence of overweight and obesity are on the rise among women in urban areas, women who are well educated, women in households in the highest wealth quintile, and Sikh women**
- **The anaemia situation has worsened over time for women**
- **Anaemia increases with the number of children ever born and decreases with education and the household's wealth**

## 6.2 DIETARY INTAKES AND NUTRITIONAL STATUS

NNMB surveys provide data on time trends in dietary intake (by 24 hours dietary recall) and nutritional status of the population in eight states from 1975 to 2005. The NNMB and INP surveys provide information on dietary intake and nutritional status of all major states in India in mid nineties.

### Time Trends in dietary intake

Data on time trends in dietary intake in rural areas (Annexure 6.2.1) and urban slums in nine states was available from surveys conducted by the NNMB (Table 6.2.1). Data from NNMB surveys shows that over the last three decades there has been some decline in cereal intake both in urban and rural areas. Over this period there has been a substantial decline in the cost of cereals and improvement in availability of and access

	NNMB						INP (1995-96)		RDA	
	Rural					Urban Slums		Rural		Urban
	75-79	88-90	96-97	00-01	04-05	75-79	93-94			
<b>Cereals &amp; Millets</b>	505	490	450	457	396	416	380	488	420	460
<b>Dairy products</b>	116	92	85	85	116.6	42	75	126	143	150
<b>Pulses &amp; Legumes</b>	34	32	29	34	28	33	27	33	55	40
<b>Vegetables</b>										
Green leafy	8	9	15	18	16	11	16	32	23	40
Others( includes tubers )	54	49	47	57	109	40	47	70	75	60
<b>Fruits</b>	13	23	24	25	27	26	26	15	37	50
<b>Fats &amp; oil</b>	14	13	12	14	14	13	17	14	21	20
<b>Sugar &amp; jaggery</b>	23	29	21	23	14	20	22	20	22	30

*Source: National Nutrition Monitoring Bureau (NNMB), India Nutrition profile (INP). Survey Population: Rural & urban. Sample Size: NNMB, Rural, 33048 (1975-79), 14391 (1996-97), 30968 (2000-01), 32500 (1975-80), 5447 (1993-94); INP (46457)*

to cereals. The decline is therefore not due to economic constraints. Over the same period there has been a decline in the dietary intake of pulses, which are a major source of protein in Indian diets. This is partly attributable to the soaring cost of pulses and inability of the poor to purchase adequate quantity inspite of higher expenditure on pulses. In spite of massive increase in milk out put in the country, improvement in per capita intake of milk over years has been small. Intake of vegetables and fruits also continues to be very low. In rural areas there has not been any significant increase in per-capita intake of fats/oils and sugar/jaggery. Data from NNMB rural surveys suggest that dietary intake has not undergone any major shift towards increase in intake of fat/oils, sugar and processed food in rural population. However in urban slum dwellers there has been an increase in oil intake and some increase in sugar intake.

Intake of cereals and leafy vegetables are lower in urban areas; however intake of pulses, milk and milk products, fruits and fat and oils are higher in urban areas (Table 6.2.1). There are no urban rural differences in sugar and other vegetable intake. Data from NNMB and INP surveys (using 24 hour dietary recall method) show that in the mid nineties average intake of cereals were near RDA; intake of pulses, vegetables and fruits were low (Table 6.2.1, Annexure 6.2.1, 6.2.2, 6.2.4).

## **Interstate differences in dietary intake**

### ***NNMB***

Cereals and millets formed the bulk of dietaries in all states. The intake of cereals was adequate to meet the RDA in most of the states. Cereal intake was lowest in Kerala and intake of cereal and millets was highest in Orissa. Cereal and millet intake was lower in the 1996-97 surveys than that in the previous two surveys in almost all the States, with Karnataka showing the steepest fall. Intake of pulses was less than the RDA in all states, with intake in Kerala being less than 50% of the RDA. With the exception of Kerala and Gujarat, in all other states the intake of pulses has gone down between 1975-79 and 1996-97. The intake of green leafy vegetables (GLV's) is considerably lower than the RDA in all states with the exception of Orissa. Although there was an increase intake of GLV's (except in the state of Maharashtra) between 1975-79 and 1996-97, the increase was marginal. Dietary intake of GLV's is still way below the RDA in all states except Orissa where the intake met the RDA in 1996-97. The intake of other vegetables is below the RDA in almost all the states (except Kerala and Orissa), with intake in Karnataka and Andhra Pradesh being less than half the RDA. In 1996-97, a steep fall in vegetable intake was observed in Kerala and Tamil Nadu, as compared to the intake in 1975-79. Intake of roots and tubers was lowest in Andhra. Roots and tuber intake was highest in Kerala and Orissa. The intake of milk was less than the recommended level of 150 ml in all states except Gujarat. Intake of milk and milk products were highest in Gujarat and lowest in Orissa. In none of the States, the intakes of fats and oils were adequate. A marginal increase was however observed in the intake of fats and oils in 1996-97 as compared to 1975-79 (Annexure 6.2.1).

### ***INP***

The state wise data on average intake of foodstuff under INP survey is given in Annexure 6.2.2. Intake of cereals and roots and tubers, which constitute the major bulk of Indian diet, was adequate in most states and UTs. The exceptions were Chandigarh, Delhi, Arunachal Pradesh, Meghalaya, Mizoram, Goa, Maharashtra, Daman and Diu and Dadra and Nagar Haveli for cereals and Goa for roots and tubers. Average intake of pulses was inadequate in most of the states except Chandigarh, Delhi, Mizoram, Tripura, Dadra and Nagar Haveli. Average intake of green leafy vegetables was markedly below their RDAs in most of the states except in those in hill states of northeastern region (except Meghalaya) Himachal Pradesh, Sikkim and Daman and Diu. The intake of other vegetables was adequate in most of the states except in Haryana, Himachal Pradesh, Punjab, Rajasthan and Nagaland. Intake of milk and its products and fats and oils was inadequate in almost all the districts of India excepting those belonging to northern region, Haryana, Himachal Pradesh, Punjab, Rajasthan, Chandigarh and Delhi. Intake of fats and oils was adequate in Mizoram and Daman and Diu.

There were significant differences in dietary intake between NNMB states and states covered under INP surveys (Annexure 6.2.1, 6.2.2). The dietary intake of all foodstuffs



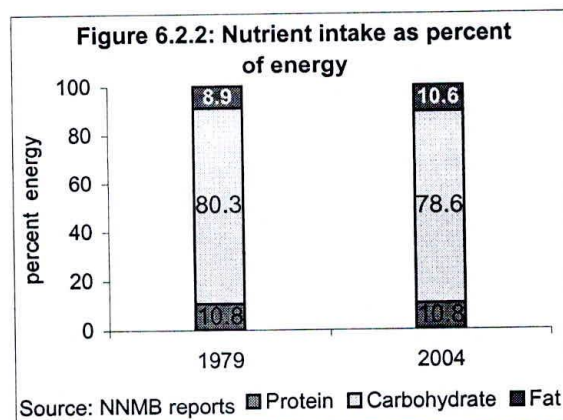
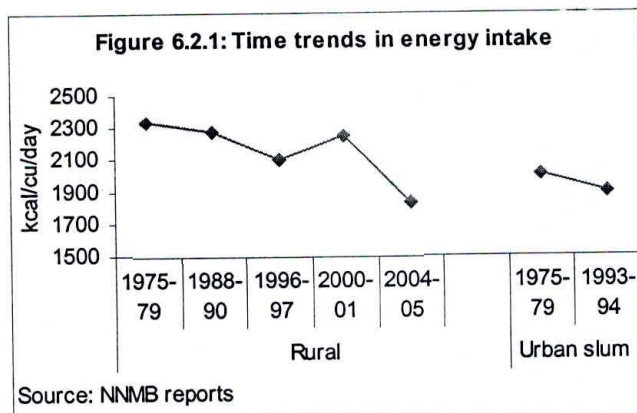
is lower in all age groups NNMB states (Annexure 6.2.3) as compared to INP states (Annexure 6.2.4); this is attributable to higher dietary intake especially cereals and pulses in the non-NNMB states, which were covered in the INP. Dietary intake was higher in some states with high per capita income (Punjab) but not in others (Maharashtra) suggesting that greater per-capita income is not always associated with higher dietary intake. Both NNMB and INP data showed that cereal intake was higher in some of the poor states (Orissa in NNMB, Uttar Pradesh in INP survey); this is perhaps because majority of the population are working as manual labourers and require high cereal intake to meet their energy requirements. NNMB surveys in 2004 indicated that as compared to 1975-80 there has been a reduction in cereal intake; pulse intake, vegetable and fruit intake remained unchanged (Annexure 6.2.3) in all age groups.

### Time trends in of nutrient intake

	NNMB						INP (1995-96)		
	Rural			Urban Slums			Rural	Urban	
	1975-79	1988-90	1996-97	2000-01	2004-05	1975-79			1993-94
<b>Energy (Kcal)</b>	2340	2283	2108	2255	1834	2008	1896	2321	2259
<b>Protein (g)</b>	62.9	61.8	53.7	58.7	49.4	53.4	46.75	70	70
<b>Calcium (mg)</b>	590	556	521	523	439	492	*	631	673.4
<b>Iron (mg)</b>	30.2	28.4	24.9	17.5@	14.8	24.9	18.96	23.2	22.3
<b>Vitamin A</b>	257	294	300	242	257	248	352.5	355	356.0
<b>Thiamin</b>	1.6	1.5	1.2	1.4	1.2	1.27	*	1.9	1.9
<b>Riboflavin</b>	0.9	0.9	0.9	0.8	0.6	0.81	0.79	1.0	1.0
<b>Niacin</b>	15.7	15.5	12.7	17.1	14.7	14.6	*	19.7	18.8
<b>Vitamin C</b>	37	37	40	51	44	40	42	55.2	62.4
<b>Folic acid</b>	*	*	153	62	52.3	*	*	*	*

*Source: National Nutrition Monitoring Bureau, India Nutrition Profile @method of estimation different \*data not available*  
*Survey Population: Rural & urban*  
*Sample Size: Rural, 33048 (1975-79), 14391 (1996-97), 30968 (2000-01), 32500 (1975-80), 5447 (1993-94), INP (46457)*

Data on time trends in nutrient intake is available from surveys conducted by the NNMB (Table 6.2.2 & Annexure 6.2.5). Data from NNMB surveys show that over the last three decades there has been a small decline in energy intake (Figure 6.2.1). There has been some decline in intake of most of the nutrients both in urban and rural areas over the last three decades. Over the past three decades there have been a reduction in percent of total energy intake from carbohydrates and some increase in percent dietary energy from fats (Figure 6.2.2). In spite of this, the proportion of dietary energy from fat remains lower than 15 %. However, these aggregate measures mask large disparities between intakes of urban and rural populations, different states and different socio-economic groups. Dietary intake of iron from Indian dietaries has always been low. The steep decline reported in iron intake in the last two NNMB surveys can be attributed to different estimation methods; newer methods showed that absorbable iron was only 50% of earlier values.



Energy intake is lower in urban areas in spite of higher intake of fats and oils because of lower cereal intake (Table 6.2.2). Data from NNMB suggests that the intake of all nutrients is lower in urban slums as compared to rural areas.

INP survey, which covered most of the major states not covered by NNMB surveys, did not show any significant difference in nutrient intake between urban and rural areas (Annexure 6.2.6). Interstate differences in nutrient intake and the fact that NNMB survey data was available only from urban slums are some of the factors that might account for the apparent differences between NNMB and the INP survey data.

### Interstate Differences in nutrient intake

#### **NNMB**

Time trends in nutrient intake in different NNMB states are given in Annexure 6.2.5. The trends in nutrient intakes in states are similar to overall trends even though there are substantial inter state differences. There was a reduction in energy, protein, iron and calcium intakes, between 1975-79 and 1996-97. Although intake of vitamin A was higher 1988-90 and 1996-97 as compared to 1975-79, but was still way below RDA. There has been a gradual increase in the intake of riboflavin between 1975-79 and 1996-97. Thiamin intake showed a decline over the same period. Intake of protein, energy, vitamin A and riboflavin were less than the RDA in almost all States. Calcium intakes were above the RDA (400 mg) in all the States except in Orissa. Iron intake (as per the revised nutritive values for Indian foods) is low. Bioavailability of iron from Indian diets is very low. Low dietary intake coupled with poor absorption is the major reason for widespread prevalence of anaemia. For the first time, NNMB computed folate content of the diets in 1997-97, the intake of which was less than RDA of 200 µg in all the States, except Gujarat. In spite of low nutrient intake, Kerala, has lowest prevalence of under-nutrition and nutritional deficiency signs. This can be attributed to a relatively more egalitarian society with equitable distribution of food based on needs and ready access to health services; high literacy rate and consequent awareness about importance of health, hygiene and sanitation and ability to access services may also have played an important role. Orissa has the highest dietary intakes of nutrients but this high intake does not lead to a better nutritional status perhaps due to inequitable

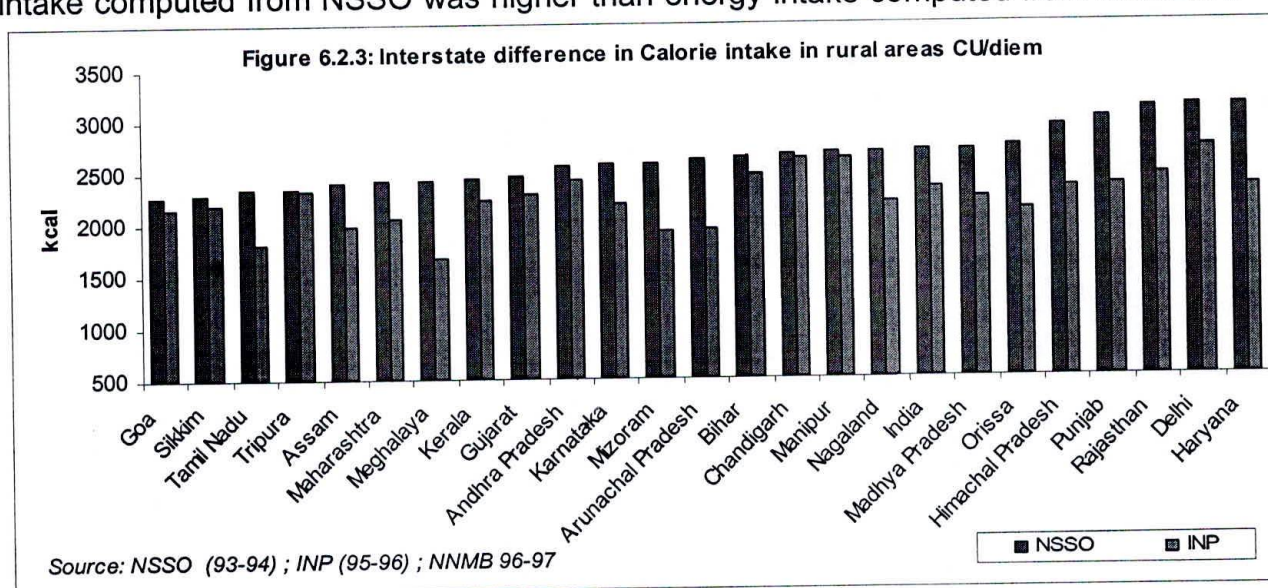
distribution of food within the state, districts, different income groups and within the family. Poor access to health care might be another factor that aggravates under-nutrition.

### INP

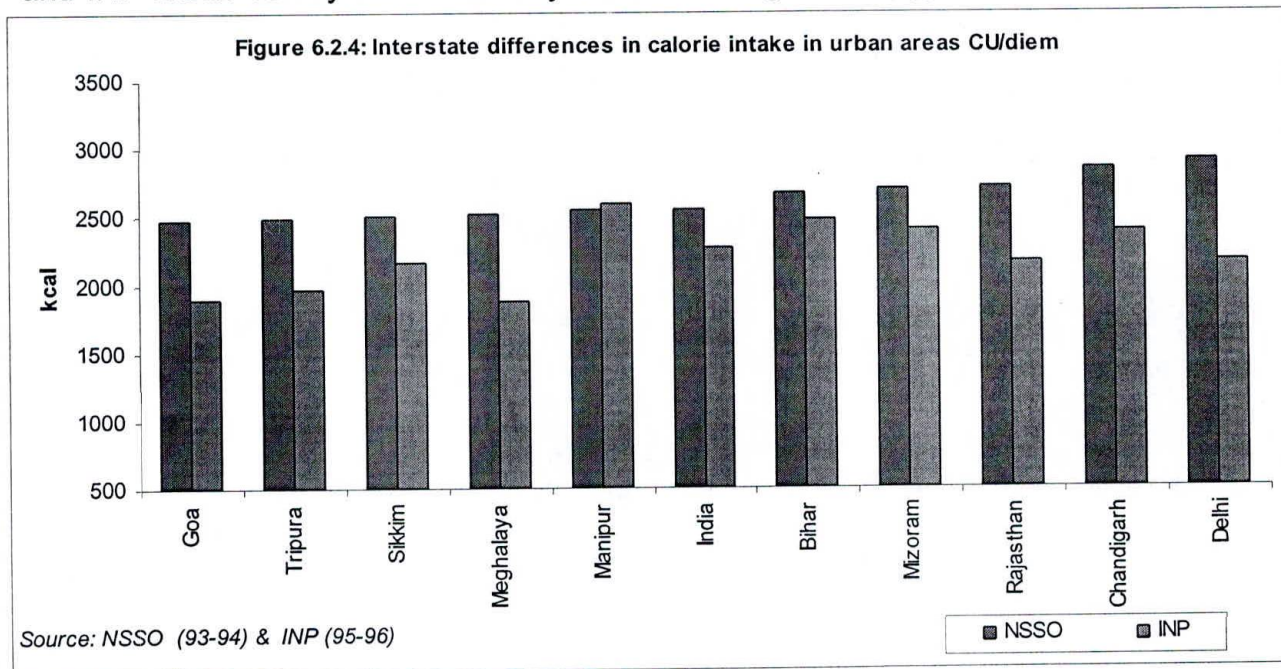
India Nutrition Profile (INP) provides data on nutrient intake in all non-NNMB states of the country in urban and rural areas. The reported nutrient intake in most of the states is higher in INP as compared to National Nutrition Monitoring Bureau (NNMB). At the aggregate national level, total energy intake was less than 2,300 kcal/ cu/ day, even in the mid-nineties (Annexure 6.2.6).

Average intake of nutrients (cu/day) for all the states covered in INP is shown in Annexure 6.2.6. The total energy intake did not meet requirements in the states except in Chandigarh, Bihar, Manipur and Daman and Diu. Intake of protein was marginally higher than NNMB states in almost all INP states. Iron intake met around or more than 70% of the recommended level, though, it was inadequate in Assam, Mizoram and Goa. However, the NIN has revised iron content of foodstuffs in the Nutritive Value of Indian; if this correction is applied to INP states iron intake is low in all the states. The poor dietary intake and low bioavailability of iron mostly from vegetable based diet are the major factors responsible for high prevalence of anaemia. Average calcium, thiamin, niacin and vitamin C intake were adequate in almost all the states surveyed; vitamin A intake was inadequate in most of the states except Arunachal Pradesh, Mizoram and Nagaland.

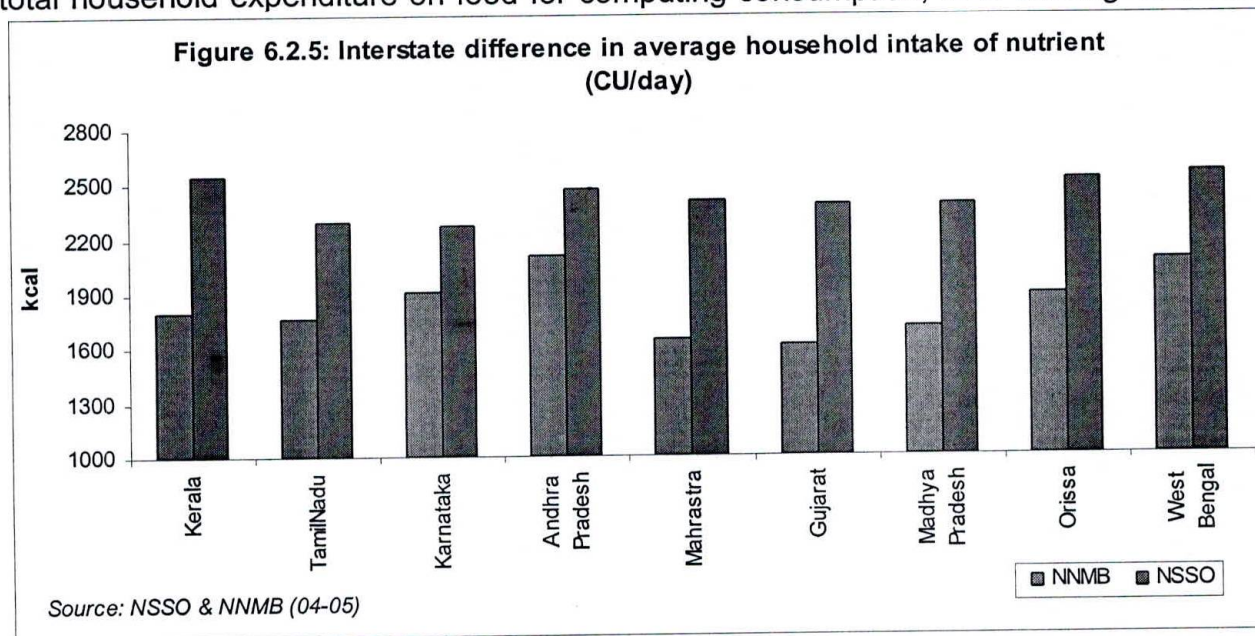
Data on energy consumption per consumption unit in different states computed from NSSO consumer expenditure survey in 1993-94 were compared with energy intake per consumption unit per day computed from NNMB survey 1996-97 and INP 1995-96 using 24 hour dietary recall method ( Figure 6.2.3, 6.2.4, and 6.2.5). In all the states energy intake computed from NSSO was higher than energy intake computed from NNMB/INP



survey. The magnitude of difference is relatively low in Goa, Sikkim, Kerala, Andhra, Bihar, Chandigarh, and Manipur. The difference in energy intake between NSSO urban and INP urban survey were relatively small. The higher energy consumption in NSSO



rural surveys might be attributable to the fact that NSSO surveys take into account the total household expenditure on food for computing consumption; food sharing between



family, guests or servants will therefore not be taken into account in NSSO surveys, but will be taken into account while computing household dietary intake in NNMB/INP surveys.

## Source of dietary energy

Data on time trends in total energy intake, % of energy intake from fat, carbohydrate and protein from NNMB (9 states) and data on in total energy intake, % of energy intake from fat, carbohydrate and protein from all the major states from INP in different age groups is given in Annexure 6.2.7. Carbohydrates remain the major source of energy in Indian dietaries. There has been no major change in % of total energy intake from carbohydrates and protein and some increase in % dietary energy from fats over the past three decades at the aggregate level. Even now the proportion of dietary energy from fat is far lower than 15% (Figure 6.2.2)

Data from diet surveys suggest that dietary intake has not under gone any major shift towards increase in intake of fat/oils, sugar and processed food. There has not been any increase in energy intake in any age group (Annexure 6.2.8 and 6.2.9). The undernutrition appears to be mainly due to improved access to health care. The reported improvement in child problem of over-nutrition in adults and health hazards associated with it appears to be attributable mainly to reduction in physical activity.

## Effect of family income on dietary and nutrient intake

**Table 6.2.3: Intake of foodstuffs according to per capita monthly income (g/Cu/Day) NNMB 1996-97**  
**Intake of foods (CU/day) based on Per Capita Monthly Income (Rs.)**

	<30	30-60	60-150	155-300	>300	RDA
Cereals and Millets	505	484	443	407	381	460
Pulses and Legumes	33	30	36	32	39	40
Green leafy veg.	19	13	11	10	6	40
Milk and milk products	51	69	103	184	284	150
Fats and oils	9	12	14	18	24	20
Sugar and Jaggery	13	21	29	30	36	40

Source: NNMB Pooled data 96-97

Data on dietary and nutrient intake from the pooled data of NNMB survey 1996-97 was analysed with respect to per capita monthly income to assess the effect of income on these parameters (Table 6.2.3 and 6.3.4). The intake of cereals and millets was highest in the lowest socioeconomic group; however, their diet lacked diversity. With increasing

**Table 6.2.4: Intake of nutrients according to per capita monthly income (g/Cu/Day) NNMB 1996-97**  
**Intake of nutrients (CU/day) as per Per Capita Monthly Income (Rs.)**

Nutrients	<30	30-60	60-150	155-300	>300	RDA
Proteins	53	54	57	59	65	60
Energy	2134	2145	2210	2283	2428	2425
Total fat	20	25	35	51	66	40
Iron	26.6	25.8	25.6	24.9	25.2	28
Vitamin A	330	257	290	306	327	600
Riboflavin	0.7	0.8	0.8	0.9	1.1	1.4

Source: NNMB Pooled data 96-97

incomes, the intake of cereals decreased but dietary diversification increased

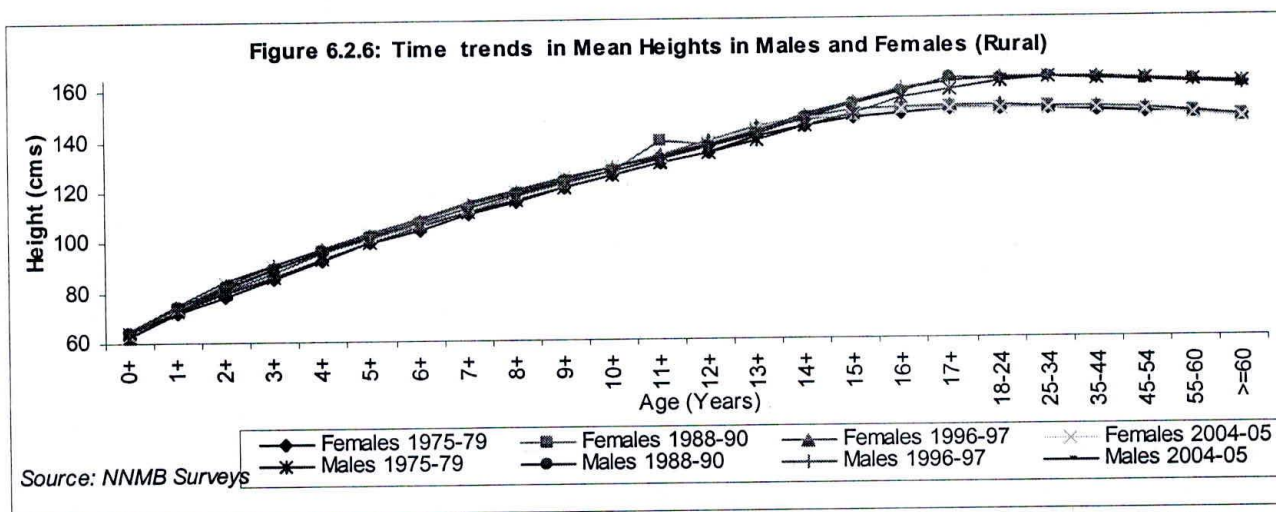
It is noteworthy that the intake of protein, energy, total fat and riboflavin increased with increase in income but iron and vitamin A intakes remained lower than the RDA in all income groups. It is therefore not surprising that over 85 % of Indians are anemic and anemia remains the most common micronutrient deficiency in the country.

### Dietary diversity

National Family Health Survey-2 (NFHS-2, IIPS, 1998-99) collected data on frequency of intake of various types of foods (other than cereals which are consumed everyday by everyone) from women (daily, weekly or occasionally) to assess dietary diversity among 90,000 ever-married women in the age group 15–49 living in 26 states; however details regarding quantity of intake were not obtained from these women. Data from the survey are presented in Annexure 6.2.10 and 6.2.11. All adult women in India consume cereals every day; their diets tend to be monotonous and there is very little dietary diversity. Fruits are eaten daily by only 8 % of women and only one-third of women eat fruits at least once a week. Almost one-third of women in India never eat chicken, meat, or fish and very few women (only 6 %) eat chicken, meat, or fish every day. Eggs are consumed less often than chicken, meat, or fish.

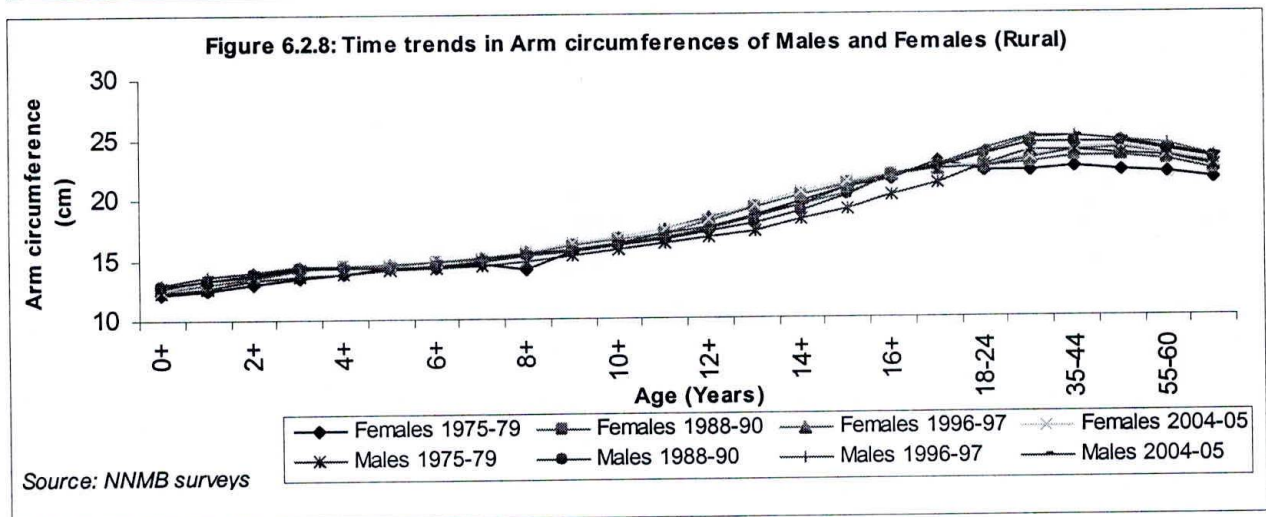
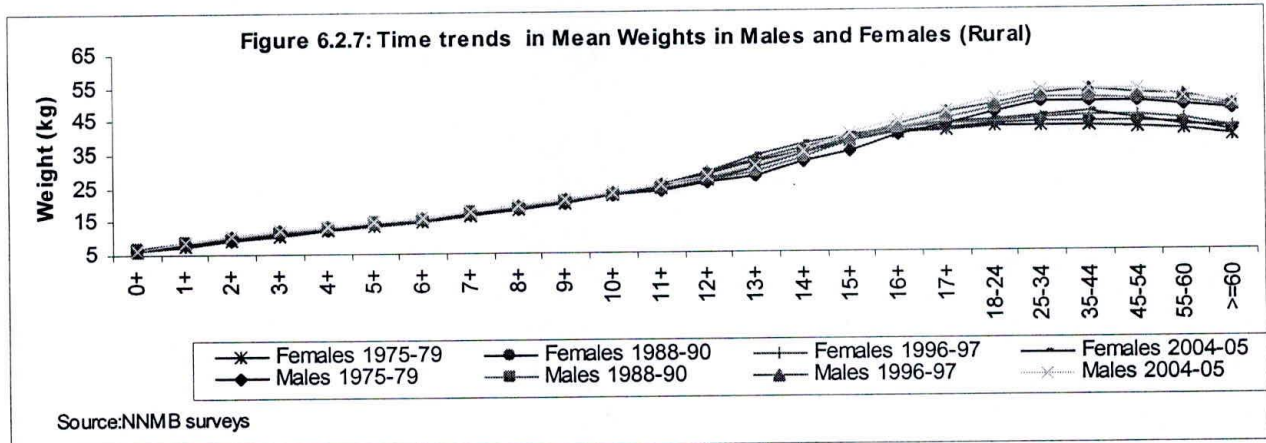
There were substantial differentials in food intake patterns by selected background characteristics. Poverty has a strong negative effect on dietary diversity. Women in households belonging to low socio-economic group are less likely than other women to eat items from each type of food group listed, and their diet is particularly deficient in fruits and milk or curd. Age does not play an important role in women’s intake patterns. Women in urban areas are more likely than women in rural areas to include every type of food in their diet, particularly fruits and milk or curd. Illiterate women have less varied diets than literate women, and seldom eat fruits. There are substantial inter state differences in intake of different types of food.

### Time trends in nutritional status

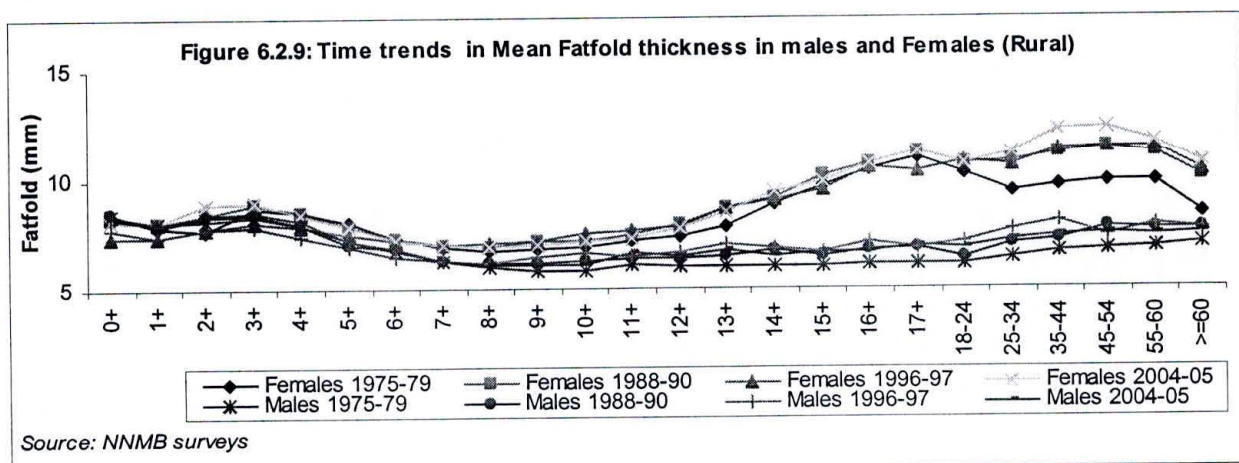


Data NNMB rural surveys on time trends in weight, mid-arm circumference and triceps fat fold thickness in all age groups is shown in Figures 6.2.6, 6.2.7, 6.2.8 and 6.2.9 respectively. Even in rural population there is an increase of about four cms in adult

height; the increase in body weight over the period is greater. This is mainly due to fat deposition as shown by progressive increase in the fat fold thickness over this period.

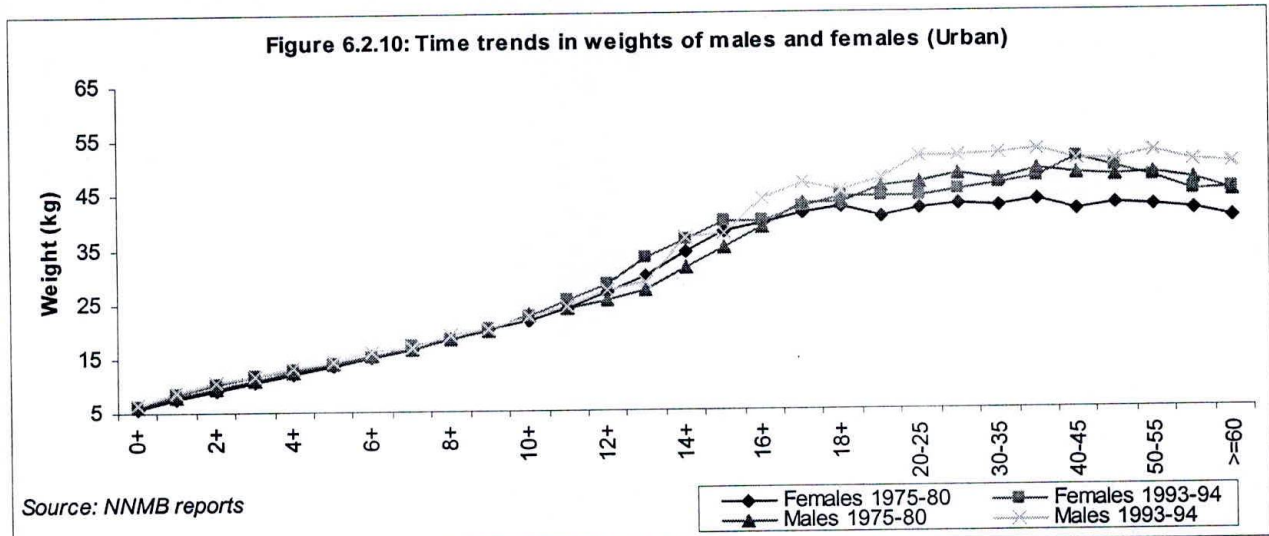


The increase in fat fold thickness begins in childhood and increases with age in both males and females. The increase is more in women.

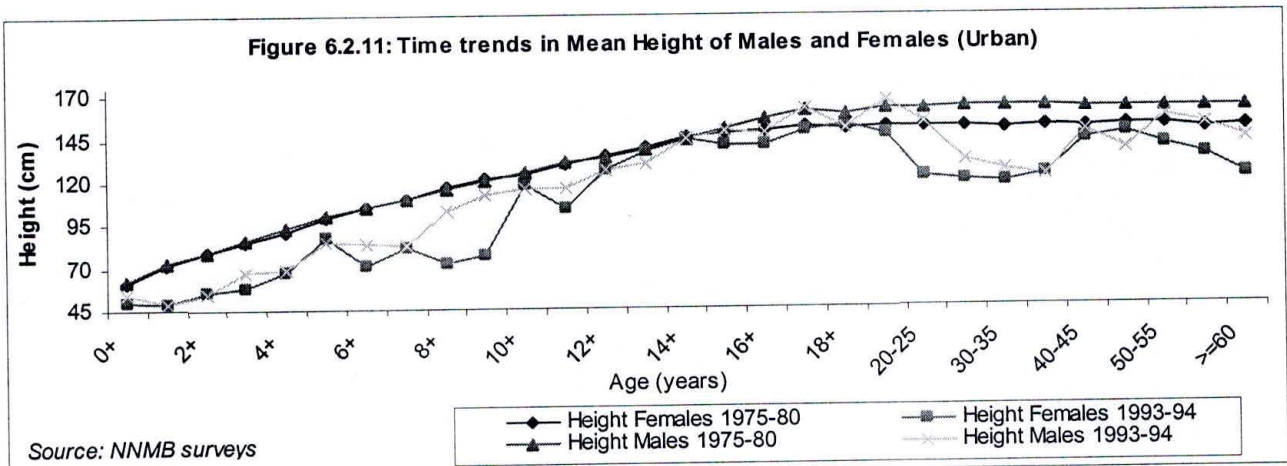


Data from NNMB surveys in urban slums on time trends in weight; mid-upper arm

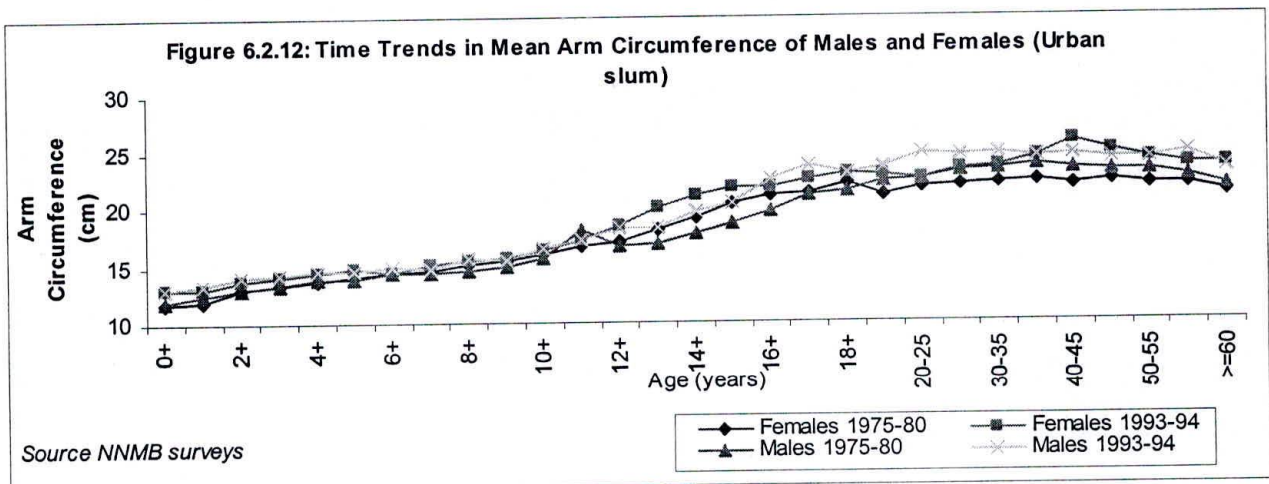
circumference and fat fold thickness at triceps are shown in Figure 6.2.10, 6.2.11, and



6.2.12. Mean body weight, mid upper arm circumference and fat fold thickness at triceps are higher in all age groups in 93 - 94. The increase in body weight is mainly due to increase fat as shown by rising fat fold thickness. Data from NNMB reports shows

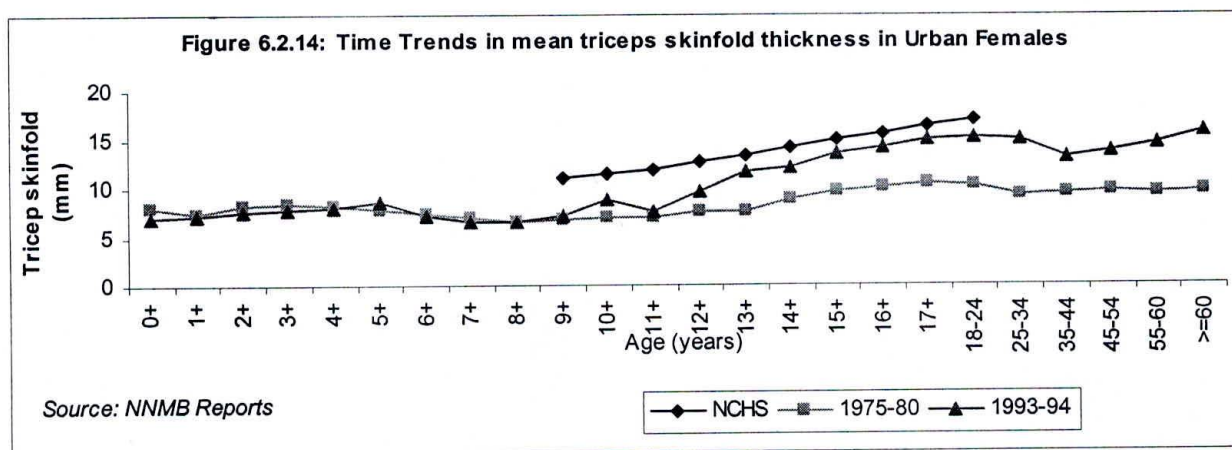
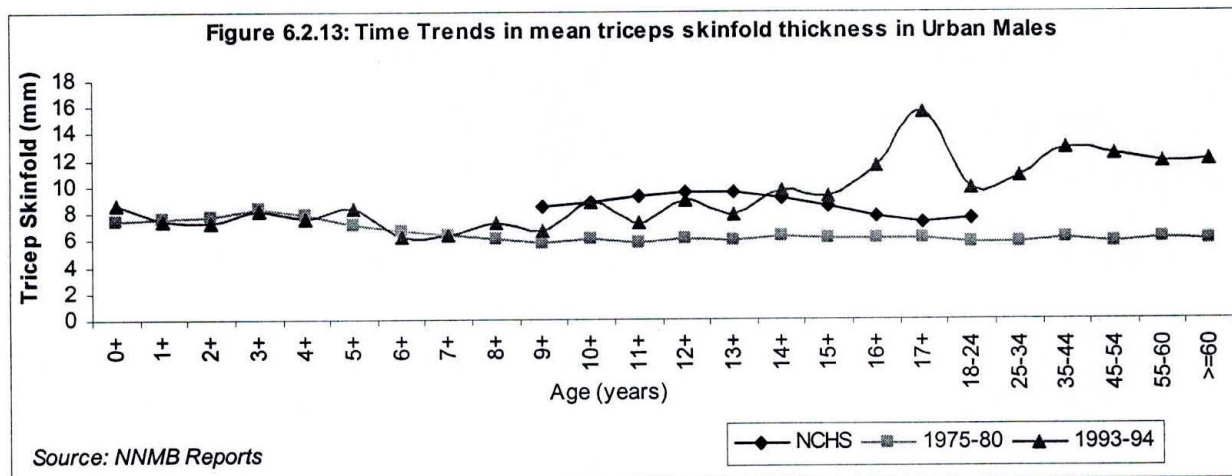


that both in men and women over years, there have been an increase in body weight





and fat fold thickness. The increase in body weight and fat fold is greater in urban slum dwellers.



To sum up data from NNMB surveys indicate that during the past three decades diets continue to be cereal based and monotonous; among poorer segments fruit, vegetable and animal food intake continues to be low. There has been

- a progressive reduction in already low pulse intake
- small increase in fats and oil intake in urban slums
- increase in dietary diversity among rural high income group

There has been reduction in energy and protein intake except among the poor; over all there has been a small decrease in total energy and protein intake in both urban and rural areas.

- some increase in dietary energy derived from fat and a reciprocal reduction in %age of dietary energy derived from carbohydrate.

Intakes of most micronutrients continue to be low. Iron intake is low; this coupled with poor bio-availability of iron from Indian diets is responsible for high prevalence of anaemia. There has been:

- small 2-4 cm increase in height over 3 decades both in urban and rural areas
- there has been a greater increase in weight, more in the urban than in rural areas

The weight gain appears to be mainly due to increase in body fat-the increase in fat fold thickness is more in urban areas

### References:

- 6.1.1 **Department of Women and Child Development.** 1995-96. *Indian Nutrition Profile*. Government of India, New Delhi
- 6.1.2 **National Family Health Survey (NFHS-2):** <http://www.nfhsindia.org/india2.html>; last accessed on 24/09/07
- 6.1.3 **National Family Health Survey (NFHS-3):** <http://mohfw.nic.in/nfhsfactsheet.htm>; last accessed on 24/09/07
- 6.1.4 **NNMB National Nutrition Monitoring Bureau.** 1979-2002. *NNMB Reports*: National Institute Of Nutrition, Hyderabad
- 6.1.5 **NSSO National Sample Survey Organization.** 1975-2000.; [http://mospi.nic.in/mospi\\_nssso\\_rept\\_pubn.htm](http://mospi.nic.in/mospi_nssso_rept_pubn.htm); last accessed on 24/09/07

(i) “Nutritional trend in Kancheepuram Block”, (ii) “Self reported hunger and surveillance for measuring acute hunger through community surveys – A note on potential use and limitations”, and (iii) “A note on indicators used by current early warning systems for assessing acute food insecurity in India and their increasing irrelevance” have been made available in hard copy format in the folders. However, since these have been prepared by PhD scholars of CSMCH as part of their ongoing PhD research, they cannot be shared more widely at this stage.

Rama Baru “Epidemics as Markers of Socio-Economic Inequalities” is awaiting author’s approval before wider circulation.

Only hard copy available with us –

1. Sheila Zurbrigg’s “The Hungry Rarely Write History, and Historians are Rarely Hungry”
2. Lalita Chakravarty “Biological Stress and History From Below: The Millet Zone of India 1970-92”
3. Ritu Priya “Health and Nutrition: People, Policies and Politics”
4. Ritu Priya “Preventing Chronic Hunger, Acute Malnutrition and Starvation: Action 2010”

## FACT SHEET

Percentage of children under age 3 yrs, who are wasted, stunted and under weight

Report	Wasting	Stunting	Under weight
NFHS-I	NA	NA	52
NFHS-II	16	46	47
NFHS-III	19	38	46

<b>State-wise Percentage of Children under age 3 years as Undernourished on Anthropometric Indices (Stunted, Wasted or Underweight) of Nutritional Status (as per NFHS-III) in India</b>			
(2005-2006)			
States/UTs	Nutritional Status of children as per NFHS III in India		
	Stunted (too short for age)	Wasted (too thin for height)	Underweight (too thin for age)
Andhra pradesh	34	13	36.5
Arunachal Pradesh	34	17	36.9
Assam	35	13	40.4
Bihar	42	28	58
Chhatisgarh	45	18	52.1
Delhi	35	16	33.1
Goa	21	12	29
Gujarat	42	17	47.4
Haryana	36	17	41.9
Himachal Pradesh	27	19	36.2
Jammu & kshmir	28	15	29.4
Jharkhand	41	31	59
Karnataka	38	18	41.1
Kerala	21	16	28.8
Madhya Pradesh	40	33	60
Maharashtra	38	35	39.7
Manipur	25	8	24
Meghalaya	42	28	46.3
Mizoram	30	9	22
Nagaland	30	15	30
Orissa	38	19	44
Punjab	28	9	27
Rajasthan	34	20	44
Sikkim	29	13	23
Tamil Nadu	25	22	33
Tripura	30	20	39
Uttar Pradesh	46	14	47.3
Uttaranchal	32	16	38
West Bengal	33	19	43.5

**Table 12: Trends in Child Nutrition: NFHS Data**

	Proportion ( per cent) of children under the age of three years who are undernourished				
	NCHS <sup>1</sup> Standards			New WHO Standards	
	1992-3	1998-9	2005-6	1998-9	2005-6
Weight-for-age					
Below 2 SD	52	47.0	45.9	42.7	40.4
Below 3 SD	20	18.0	n/a	17.6	15.8
Height-for-age					
Below 2 SD	n/a	45.5	38.4	51.0	44.9
Below 3 SD	n/a	23.0	n/a	27.7	22.0
Weight-for-height					
Below 2 SD	n/a	15.5	19.1	19.7	22.9
Below 3 SD	n/a	2.8	n/a	6.7	7.9

The data for children under five in 2005-2006 is similar to the above.

per cent of under-fives suffering from: underweight, moderate & severe 43

per cent of under-fives suffering from: underweight, severe 16

per cent of under-fives suffering from: wasting, moderate & severe 20

per cent of under-fives (suffering from: stunting, moderate & severe 48

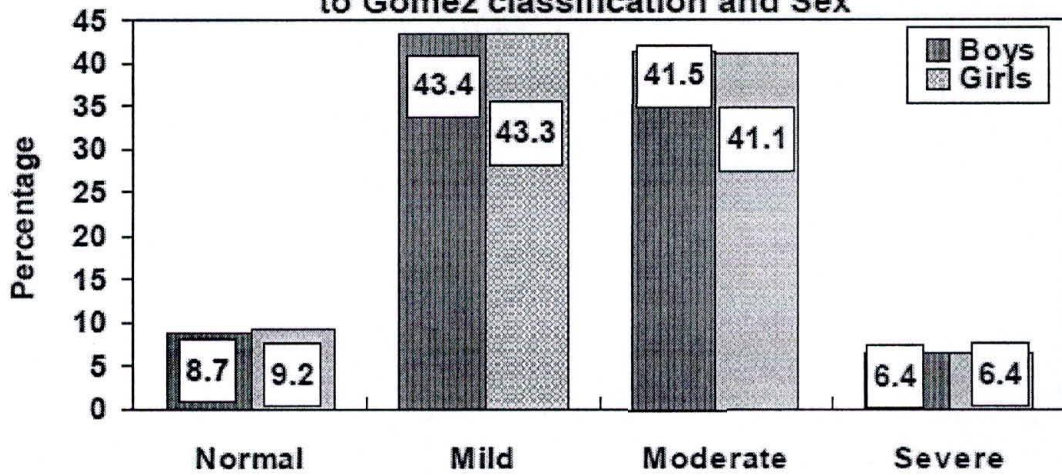
source: [http://www.unicef.org/infobycountry/india\\_statistics.html](http://www.unicef.org/infobycountry/india_statistics.html)

### Gomez Classification

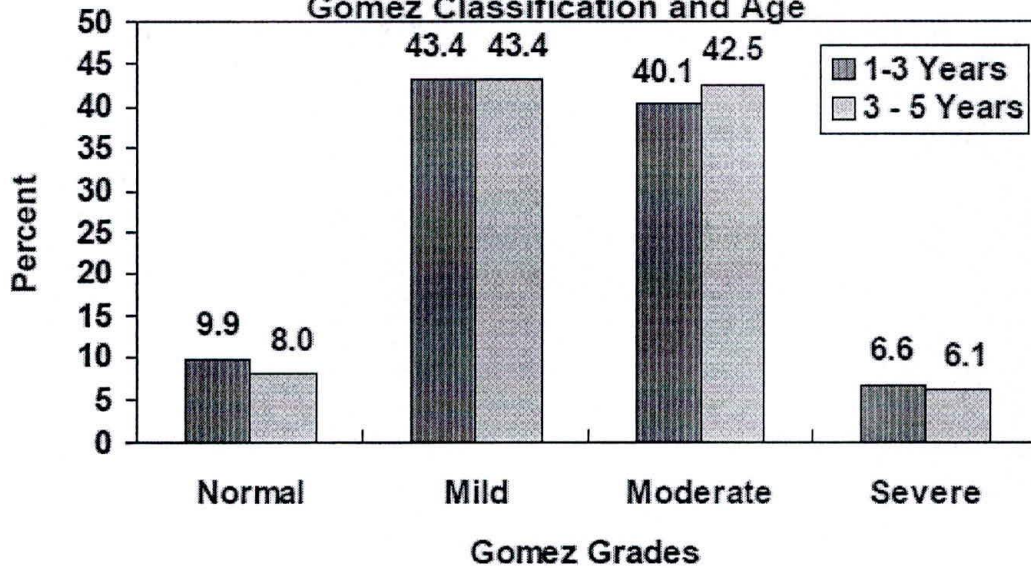
Weight for age (% of NCHS Standard)	Nutritional Grade
≥ 90	Normal
75 - 89.9	Grade I (Mild under nutrition)
60 - 74.9	Grade II (Moderate under nutrition)
< 60	Grade III (Severe under nutrition)

<sup>1</sup> Until 2006, the World Health Organization (WHO) recommended the US National Center for Health Statistics (NCHS) standard, and this was used inter alia in the first and second rounds of the National Family Health Survey. In April 2006, the WHO released new standards "based on children around the world (Brazil, Ghana, India, Norway, Oman, and the United States) who are raised in healthy environments, whose mothers do not smoke, and who are fed with recommended feeding practices" (International Institute for Population Sciences, 2007, p. 268). These new standards were used in the third National Family Health Survey.

**Fig.12 Distribution (%) of children (1-5 Years) according to Gomez classification and Sex**



**Fig.13 Distribution of Children (1-5 Years) according to Gomez Classification and Age**



**Distribution (%) of 1-5 years Children by Nutritional Status (Weight for Age) - Gomez Classification**

State	Sex	N	Nutrition Grades*			
			Normal	Mild	Moderate	Severe
Kerala	Boys	191	17.3	55.0	26.2	1.6
	Girls	184	24.5	45.7	27.7	2.2
	<b>Pooled</b>	<b>375</b>	<b>20.8</b>	<b>50.4</b>	<b>26.9</b>	<b>1.9</b>
Tamilnadu	Boys	540	10.4	51.3	34.8	3.5
	Girls	501	10.6	49.9	35.7	3.8
	<b>Pooled</b>	<b>1041</b>	<b>10.5</b>	<b>50.6</b>	<b>35.3</b>	<b>3.7</b>
Karnataka	Boys	411	7.1	44.5	46.2	2.2
	Girls	339	7.4	46.0	44.0	2.7
	<b>Pooled</b>	<b>750</b>	<b>7.2</b>	<b>45.2</b>	<b>45.2</b>	<b>2.4</b>
Andhra Pradesh	Boys	439	11.8	49.0	36.0	3.2
	Girls	398	11.1	48.2	35.7	5.0
	<b>Pooled</b>	<b>837</b>	<b>11.5</b>	<b>48.6</b>	<b>35.8</b>	<b>4.1</b>
Maharashtra	Boys	406	6.2	40.6	45.3	7.9
	Girls	341	10.6	38.4	44.6	6.5
	<b>Pooled</b>	<b>747</b>	<b>8.2</b>	<b>39.6</b>	<b>45.0</b>	<b>7.2</b>
Gujarat	Boys	390	6.7	40.8	42.6	10.0
	Girls	328	8.2	47.3	36.9	7.6
	<b>Pooled</b>	<b>718</b>	<b>7.4</b>	<b>43.7</b>	<b>40.0</b>	<b>8.9</b>
Madhya Pradesh	Boys	381	5.5	29.7	49.6	15.2
	Girls	363	6.1	31.1	48.8	14.0
	<b>Pooled</b>	<b>744</b>	<b>5.8</b>	<b>30.4</b>	<b>49.2</b>	<b>14.7</b>
Orissa	Boys	382	9.2	39.0	44.2	7.6
	Girls	392	4.3	38.8	50.0	6.9
	<b>Pooled</b>	<b>774</b>	<b>6.7</b>	<b>38.9</b>	<b>47.2</b>	<b>7.2</b>
West Bengal	Boys	319	7.8	42.9	43.9	5.3
	Girls	341	7.0	43.1	41.9	7.9
	<b>Pooled</b>	<b>660</b>	<b>7.4</b>	<b>43.0</b>	<b>42.9</b>	<b>6.7</b>

Sex	n	Nutrition Grades*			
		Normal	Mild	Moderate	Severe
Boys	3459	8.7	43.5	41.5	6.4
Girls	3187	9.2	43.3	41.1	6.4
<b>Pooled</b>	<b>6646</b>	<b>9.0</b>	<b>43.3</b>	<b>41.3</b>	<b>6.4</b>

\* : NCHS Standards

**Distribution (%) of 1-5 years Children by Nutritional Status (Weight for Age) - Gomez Classification according to age**

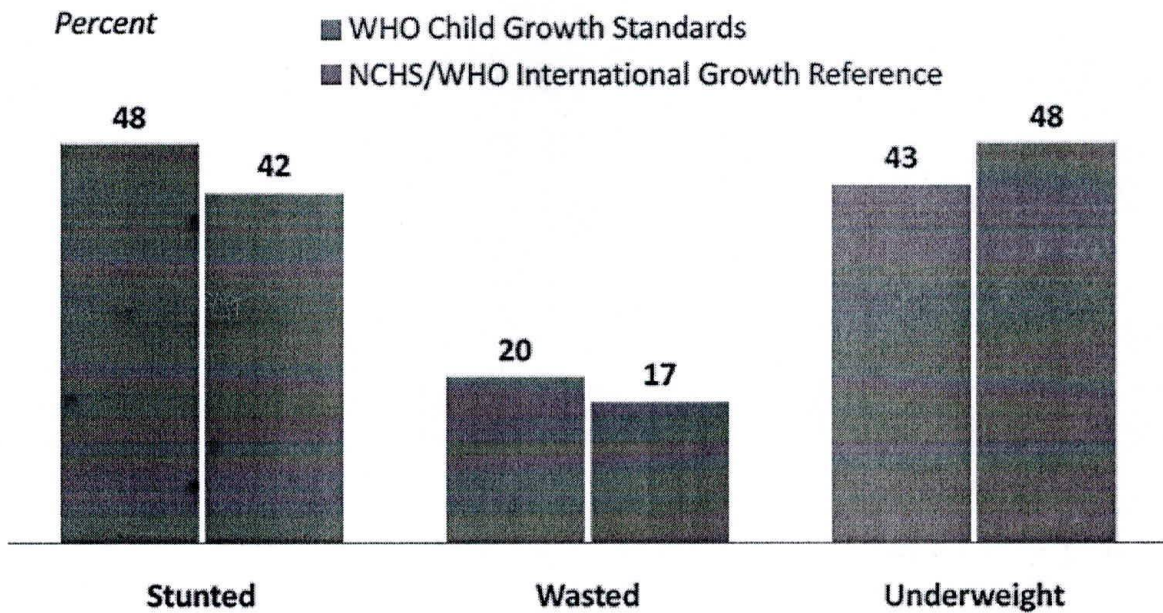
State	Age (Years)	N	Nutrition Grades*			
			Normal	Mild	Moderate	Severe
Kerala	1-3	211	24.2	46.4	27.5	1.9
	3-5	164	16.5	55.5	26.2	1.8
	<b>Pooled</b>	<b>375</b>	<b>20.8</b>	<b>50.4</b>	<b>26.9</b>	<b>1.9</b>
Tamilnadu	1-3	571	10.7	51.8	33.6	3.9
	3-5	470	10.2	49.1	37.2	3.4
	<b>Pooled</b>	<b>1041</b>	<b>10.5</b>	<b>50.6</b>	<b>35.3</b>	<b>3.7</b>
Karnataka	1-3	392	9.9	43.4	44.1	2.6
	3-5	358	4.2	47.2	46.4	2.2
	<b>Pooled</b>	<b>750</b>	<b>7.2</b>	<b>45.2</b>	<b>45.2</b>	<b>2.4</b>
Andhra Pradesh	1-3	441	12.2	48.8	34.5	4.5
	3-5	396	10.6	48.5	37.4	3.5
	<b>Pooled</b>	<b>837</b>	<b>11.5</b>	<b>48.6</b>	<b>35.8</b>	<b>4.1</b>
Maharashtra	1-3	381	9.4	41.5	42.3	6.8
	3-5	366	6.8	37.7	47.8	7.7
	<b>Pooled</b>	<b>747</b>	<b>8.2</b>	<b>39.6</b>	<b>45.0</b>	<b>7.2</b>
Gujarat	1-3	375	7.2	42.7	39.5	10.7
	3-5	343	7.6	44.9	40.5	7.0
	<b>Pooled</b>	<b>718</b>	<b>7.4</b>	<b>43.7</b>	<b>40.0</b>	<b>8.9</b>
Madhya Pradesh	1-3	360	4.2	30.6	51.9	13.3
	3-5	384	7.3	30.2	46.6	15.9
	<b>Pooled</b>	<b>744</b>	<b>5.8</b>	<b>30.4</b>	<b>49.2</b>	<b>14.7</b>
Orissa	1-3	367	6.8	36.2	47.7	9.3
	3-5	407	6.6	41.3	46.7	5.4
	<b>Pooled</b>	<b>774</b>	<b>6.7</b>	<b>38.9</b>	<b>47.2</b>	<b>7.2</b>
West Bengal	1-3	310	9.4	44.5	39.0	7.1
	3-5	350	5.7	41.7	46.3	6.3
	<b>Pooled</b>	<b>660</b>	<b>7.4</b>	<b>43.0</b>	<b>42.9</b>	<b>6.7</b>

Age (Years)	n	Nutrition Grades*			
		Normal	Mild	Moderate	Severe
1-3	3408	9.9	43.4	40.1	6.6
3-5	3238	8.0	43.4	42.5	6.1
<b>Pooled</b>	<b>6646</b>	<b>9.0</b>	<b>43.4</b>	<b>41.3</b>	<b>6.4</b>

\* : NCHS Standards



## Malnutrition Among Children Under Five Years Based on the WHO Child Growth Standards and the NCHS/WHO International Growth Reference



### Global Nutrition Scenario

**Acute malnutrition** – Recent and severe weight loss as a result of acute food shortage and/or illness. Measured by weight for height or MUAC

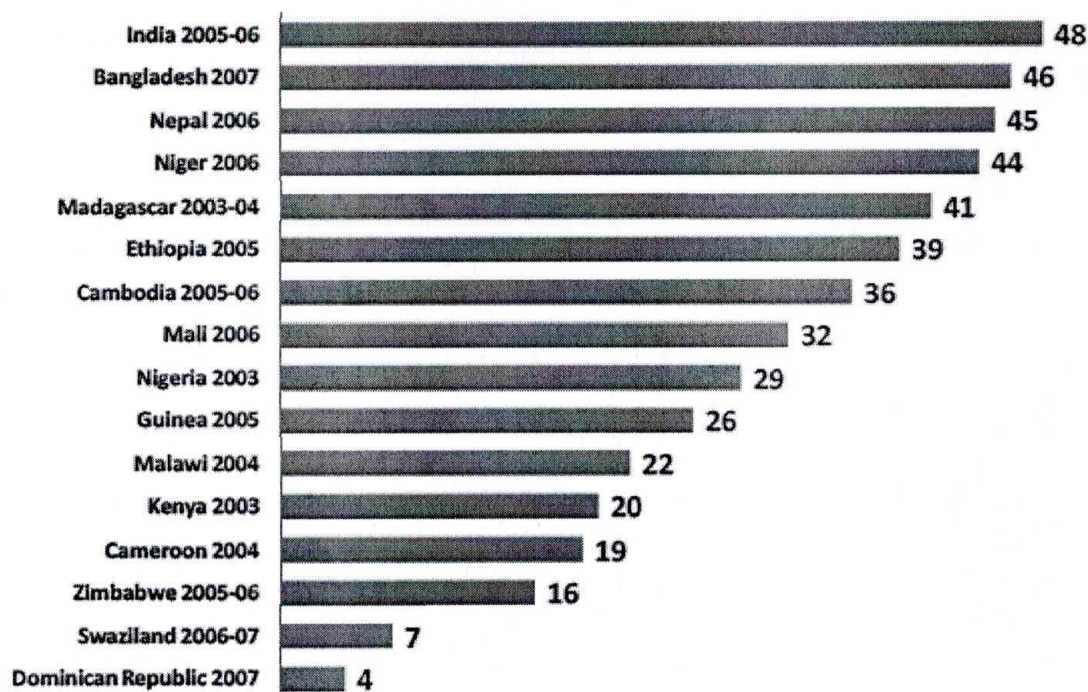
**Chronic malnutrition** – Inadequate diet persistently, over a longer period. Child is stunted (height for age) and/or underweight (weight for age)

**Global Acute Malnutrition (GAM):** Weight for height  $< -2SD$ , or weight for height  $< 80\%$  or MUAC  $< 125\text{mm}$

**Severe Acute Malnutrition (SAM):** Weight for height  $< -3SD$ , or weight for height  $< 70\%$ , or MUAC  $< 10\text{mm}$  and/or bilateral edema

### Under Nutrition among children under 5 years in selected countries

Percent underweight, based on the NCHS/WHO Growth Reference



Analysis of the worldwide burden of acute malnutrition

Region†	Under-5 population 2000 (x1000)	Wasting prevalence (%)		Wasting numbers (x1000)		Annual mortality numbers		Total
		Moderate and severe	Severe	≥2 Z scores below WFH	≥3 Z scores below WFH	2-3 Z scores below WFH*	>3 Z scores WFH†	
Sub-Saharan Africa	106 394	10	3	10 639	3 192	5 657 68	4 217 67	9 875 35
Middle East and north Africa	44 478	7	2	3 114	890	1 689 42	1 175 47	2 864 89
South Asia	166 566	15	2	24 985	3 331	1 644 950	440 201	2 085 151
East Asia and Pacific	159 454	4	-	6 378	-	4 845 28	-	4 845 28
Latin America and Caribbean	54 809	2	0	1 096	-	83 273	-	83 273
CEE-CIS and Baltic states	30 020	4	1	1 201	300	68 416	39 668	108 084
Industrialised countries	50 655	-	-	-	-	-	-	-
Developing countries	546 471	9	2	49 182	10 929	2 905 951	1 444 214	4 350 164
Least developed countries	110 458	10	2	11 046	2 209	6 712 90	2 919 18	9 632 09
Total	707 584			60 228	13 139	3 577 241	1 736 132	5 313 373

Population and prevalence of wasting from UNICEF global database on child malnutrition 2001.<sup>24</sup> CEE-CIS=Central and Eastern Europe and Commonwealth of Independent States. WFH=weight-for-height index. \*Moderate mortality rate=76/1000/year (average of nine studies range 30-148 for children with <80% weight for height or -2 Z scores).<sup>29</sup> †Severe mortality rate=132/1000/year (average of five studies, range 73-187 children with mid-upper-arm circumference <110 mm).<sup>29</sup>

Table: Worldwide burden of acute malnutrition in children aged less than 5 years

Adapted from Collins *et al.* Lancet 2006 (42)

*Adult Weights and Heights*

Table 12 presents the proportion of men and women with BMI below 18.5 (a standard cut-off conventionally associated with "chronic energy deficiency") in the nine NNMB states. The proportion of individuals with low BMI, like that of underweight children, declined steadily during the last 30 years or so. In spite of this, Indian adults today (like Indian children) have some of the highest levels of undernutrition in the world, with 36 per cent of adult women suffering from low BMI (rising to well over 40 per cent in several states). [fn 7 - International Institute for Population Sciences (2007), page 304. This is consistent with the NNMB-based figures presented in Table 12 for 9 states. The international figures are available at <http://www.measuredhs.com/aboutsurveys>.] Among 23 countries of sub-Saharan Africa for which comparable data are available from the Demographic and Health Surveys, only one (Eritrea) is doing worse than India in this respect (Table 13). In fact, the proportion of adult women with low BMI is above 20 per cent in only four of these 23 countries (Burkina Faso, Chad, Eritrea and Ethiopia), and the population-weighted average for all these countries together is 16 per cent, much less than half of the Indian figure.

**Table 12: Nutrition Status of Indian Adults, 1975-9 to 2004-5 (Body Mass Index)**

	Proportion (%) of adults with Body Mass Index below 18.5					% decline (1975-9 to 2004-5)
	1975-79	1988-90	1996-97	2000-01	2004-05	
Men	56	49	46	37	33	41
women	52	49	48	39	36	31

*Sources:* National Nutrition Monitoring Bureau (1999, 2002, 2006). These figures apply to the nine "NNMB states": Andhra Pradesh, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Tamil Nadu, West Bengal. Data for 1975-79 and 1988-90 exclude West Bengal; data for 1996-7 exclude Madhya Pradesh. See text for further discussion.

**Table 13: International BMI Data (Women Aged 15-49 Years)**

	Mean BMI	Proportion (%) of women with BMI < 18.5
<i>South Asia</i>		
India	20.5	35.6
Bangladesh	20.2	34.3
Nepal	20.6	24.4

*Sub-Saharan Africa*

Eritrea	20.0	37.3
Ethiopia	20.2	26.5
Burkina Faso	20.9	20.8

Chad	20.8	20.3
Madagascar	20.8	19.2
Niger	21.4	19.2
Senegal	22.3	18.2
Nigeria	22.3	15.2
Zambia	21.6	15.0
Congo 2005	22.9	13.2
Guinea	21.8	13.2
Mauritania	24.3	13.0
Kenya	22.7	12.3
Uganda	22.2	12.1
Benin	22.4	10.7
Tanzania	22.3	10.4
Rwanda	21.8	9.8
Ghana	23.1	9.3
Malawi	22.0	9.2
Zimbabwe	23.1	9.2
Mozambique	22.1	8.6
Gabon	23.5	6.6
Lesotho	25.1	5.7
<i>Population-weighted average for sub-Saharan Africa (23 countries)</i>	21.9	15.8

Source: "Demographic and Health Surveys" (DHS) data available at [www.measuredhs.com](http://www.measuredhs.com). The reference years vary between 2000-1 and 2005-6. India's National Family Health Surveys (NFHS) are part of the DHS series.

# Strategies for Children under Six

WORKING GROUP ON CHILDREN UNDER SIX

Development indices show that India neglects the early care and development of children, especially those under the age of six. The recently released report of the third National Family Health Survey shows that progress in the improvement of their condition is very slow. These children receive very little attention in the media, political debates or Parliament. This paper prepares a framework for the Eleventh Plan that urges the government to prioritise policies towards children under the age of six to protect their rights and ensure a better future for them.

Early childhood care and development (ECCD) has correctly been understood to be the critical foundation for overall growth and development, not only of children but of society on the whole. That it has been seriously neglected in India is amply demonstrated by the poor developmental indices that relate to the situation of children under the age of six, whether they be infant or under-five mortality rates or the prevalence of malnutrition. It is also a fact that most interventions in this issue have so far changed the situation minimally and far too slowly.

The recently released results of the third (2005-06) National Family Health Survey (NFHS-3) show not only the poor state of children under six years of age but also that the progress is very slow. Almost half (46 per cent) of all children under three are underweight (an improvement of only 1 percentage point compared to NFHS-2 which was carried out seven years earlier) and almost 80 per cent of children in the age group of 6-35 months are anaemic. Only 24 per cent of babies are breastfed within one hour of birth, and just about 46 per cent are exclusively breastfed during the first six months. Only 44 per cent of all children in the 12-23 months age group have received all recommended vaccines and only half the pregnant women had at least three ante-natal check-ups. As many as 57 of every 1,000 children die before they reach the age of one year.

On the other hand, only about 1 per cent of the total union budget is spent on children under six years of age (hereafter "children under six") [HAQ, Centre for Child Rights 2007].<sup>1</sup> These children also receive little attention in the newspapers, political debates or the Parliament. For instance, according to a recent analysis of parliamentary proceedings by HAQ: Centre for Child Rights, only 3 per cent of the questions raised in Parliament during the last four years related to children. Further, among the child-related questions, less than 5 per cent were concerned with childcare and development in the age group of zero to six years. There is, therefore, an urgent need to prioritise policies towards children under six, not only to protect their rights but also to ensure that the future generations are healthy and well.

The Supreme Court case – People's Union of Civil Liberties (PUCIL) vs Union of India and Others, Writ Petition (civil) 196 of 2001 – on schemes related to the right to food covers the Integrated Child Development Services (ICDS) scheme, a significant state intervention for children under six. An early interim order issued by the Supreme Court in the context of this case converts the benefits of these schemes, including the ICDS, into legal entitlements. This, and subsequent interim orders, have provided a fresh impetus to advocacy efforts on strategies to redress the gross neglect of this issue. A group of people related to the right to food campaign and the Peoples' Health Movement

This paper, prepared at the request of the Planning Commission, builds on a presentation made at the Commission on June 1, 2007. An earlier version, published as a discussion paper (Gupta et al 2007), includes more detailed recommendations.

The Working Group on Children Under Six was constituted for writing this paper, at the request of the Planning Commission. The group consists of Arun Gupta, Biraj Patnaik, Devika Singh, Dipa Sinha, Jean Drèze, Radha Holla, Samir Garg, T Sundararaman, Vandana Prasad and Veena Shatrugna.

– India (Jan Swasthya Abhiyan) have been engaged with this in various ways, whether it be through grassroots action, research or interventions in policy. Some of these efforts are detailed in the 'Focus on Children Under Six' (FOCUS Report), released in December 2006 [Citizens' Initiative for the Rights of Children Under Six 2006].

Simultaneously, a more positive environment has been building up in favour of children under six amongst policymakers who are beginning to acknowledge the problem and look for solutions. In several states, there have been interesting initiatives in this field (for example, related to ICDS) during the last few years, and much more can be done in this direction. This is further enhanced by the advent of complementary policy frameworks such as the National Rural Health Mission (NRHM) and Sarva Shiksha Abhiyan (SSA), which have the potential to provide much support to ECCD even though its primary responsibility lies with the ministry of women and child development.

The Eleventh Plan is a critical process of policy determination for the next phase that could put into motion fresh strategies while positively reinforcing those that have worked before. These could include interventions in the ICDS with a better focus on infant and young child feeding (IYCF) and outreach to children under the age of three years, as well as complementing strategies of crèches and maternity entitlements to women working in the informal sector. The Planning Commission also has the potential to provide the convergence and oversight that is critical to seriously addressing the intersectoral issue of malnutrition and ECCD. It is in this context that individuals associated with the campaigns referred to previously initiated a process of dialogue with the Planning Commission, which resulted in the preparation of this paper.<sup>2</sup> The interventions that are being recommended can only gain ground with continuing debate and advocacy, and it is with that intent that this publication is being placed in the public domain.

## 1 General Principles

The care of young children cannot be left to the family alone – it is also a social responsibility. Social intervention is required, both in the form of enabling parents to take better care of their children at home, and in the form of direct provision of health, nutrition, pre-school education (PSE) and related services. Interventions for children under six years or ECCD must broadly address at least three dimensions: child health, child development/education and child nutrition. These must necessarily be provided simultaneously in the same system of care. Further, while planning for provision of ECCD, it must be kept in mind that different age groups require different strategies. The three crucial age groups are generally considered to be: (1) children zero to six months of age – the period of recommended exclusive breastfeeding; (2) children six months to three years – until entry into pre-school; and (3) children three years to six years – the pre-school years, until entry into school.

This paper argues for comprehensive strategies for these groups of children, with a special focus on their nutritional needs, even though there is a close relationship between health, growth, nutrition and development in this age group and these dimensions need to be considered holistically. In fact, it is with this

understanding that the ICDS was conceived as a comprehensive programme addressing all these needs of children under six.

It is well understood that the health and nutrition of a young child is also determined by the status of the mother's health. A malnourished mother often gives birth to an underweight child who in turn grows up to be a malnourished adolescent, and in the case of girls, perpetuates the cycle of malnutrition by giving birth to a low birth weight baby. It is also important that, simultaneously, there are interventions to ensure nutrition of adolescent girls and women, and for women's access to care during pregnancy, and this has been the rationale of the "life-cycle approach". Therefore, the two aspects to addressing malnutrition, i.e., prevention of malnutrition and management of malnutrition, are both linked and complementary. Care of the malnourished child thus, also contributes to prevention through its impact on future generations.

The poor status of women has a direct correlation with malnutrition not only through its effect on birth weight but also on childcare. The "care-giver" role of women is so steeped in invisibility, so poorly understood and so much taken for granted, that interventions to provide support are largely missing even as huge bodies of work now exist to show the relationships of women's work, time, energy and power to the health of children. It is this factor that gives rise to the so-called "south Asian enigma", where populations of non-south Asian countries show a better status of child nutrition than south Asian countries even when the former are substantially poorer. This difference has been attributed to relatively high levels of gender inequity in the south Asian context [Sundararaman and Prasad 2006].

It is recognised that the overarching determinants of malnutrition include not only gender inequality, but also poverty. Poverty has an impact on malnutrition in multifarious ways – by reducing purchasing power for good quality calorie dense foods, by reducing access to healthcare, by giving rise to physical environments lacking in safe water and sanitation and by its impact on education. If this is accepted as one of the main determinants of malnutrition, there must be strategies built in to create livelihoods, reduce poverty and empower the poor. Conversely, no strategy for better nutrition should have the opposite effect.

In this paper, we restrict ourselves to looking at the strategies needed to meet the comprehensive needs of children under six, with special emphasis on nutrition. In particular, we examine the extent to which existing programmes such as the ICDS, with expanded coverage and quality improvements, can be utilised. Complementary interventions such as maternity entitlements, crèches and support to IYCF are also discussed.

### 1.1 Essential Components of Early Childhood Care

Strategies for children under six require three essential components:

- (a) A system of food entitlements, ensuring that every child receives adequate food, not only in terms of quantity but also in terms of quality, diversity and acceptability.
- (b) A system of childcare that supplements care by the family and empowers women. Such care needs to be provided by informed, interested adult carers, with appropriate infrastructure.

(c) A system of healthcare that provides prompt locally available care for common but life threatening illnesses. Such a system needs to address both prevention and management of malnutrition and disease.

## 1.2 Age 0-6 Months

According to most recent guidelines (World Health Organisation (WHO) – guidelines and national guidelines for IYCF), breastfeeding must be initiated within one hour of birth and exclusive breastfeeding should continue until six months of age. Studies have shown that exclusive breastfeeding alone provides all the nutritional requirements in this age group. It has also been shown that this is the best prevention and treatment for the major killers during the neonatal period (for example diarrhoea, pneumonia and sepsis). Recent studies have shown that starting breastfeeding within one hour of birth can help reduce the risk of neonatal mortality by almost a third. Universal coverage of exclusive breastfeeding up to six months of age can save 13 to 15 per cent of all under five deaths, i.e., about more than 3.5 lakh children each year for India [BPNI 2006]. Continued breastfeeding for two years of age and beyond, along with the introduction of adequate and appropriate complementary feeding from the seventh month onwards, can further reduce the risk of death by 6 per cent or so.

Even though breastfeeding is such a vital means of reducing deaths of young children, and ensuring their best growth and development, little emphasis is paid at the policy level to promoting and supporting mothers to breastfeed their babies adequately. India is committed to protecting, promoting and supporting breastfeeding through the IMS act.<sup>3</sup> However, there is no budget head for this in the existing child health and development programmes of the country.<sup>4</sup> The National Maternity Benefit Scheme (NMBS), which provides for a one-time payment of Rs 500 to pregnant women below the poverty line, partially addresses maternity entitlements and the nutritional requirements of pregnant women and breastfeeding children. However, this scheme is currently languishing in most of the country [Saxena and Mander 2007]. The huge gap in maternity entitlements for the majority of women who work in the informal sector needs much more public attention as an important element of social security for the well-being of women and children, and specifically for the food security of very young children.

The following are some of the interventions required to ensure exclusive breastfeeding:

**Breastfeeding Counselling and Support:** Initiating breastfeeding within the first hour and ensuring colostrum feeding requires that the mother be provided support and counselling for this immediately after the delivery. Many myths that exist, especially regarding colostrum feeding, must be countered through counselling women and their families. Awareness campaigns must be directed towards increasing society's support to mothers for exclusive breastfeeding for six months. Mothers need to be given constant support to continue breastfeeding. There should be a support system that allows a home visit twice a week during the first two weeks and once a week later, after birth, to assist and maintain exclusive breastfeeding. It should be done by an

adequately skilled and trained person at the family level, and supported by a "specialist counsellor in IYCF" at the cluster level to help solve the difficult problems that a mother may face.

**Crèches:** Ensuring exclusive breastfeeding requires that mothers stay close to their infants during this period. However, many breastfeeding women, especially poor women, often need to work outside the home, where they cannot take their infants with them. Crèches at/near workplaces to support frequent breastfeeding, flexible hours and breastfeeding breaks must be provided.

**Maternity Entitlements:** Women must be enabled to stay home to breastfeed the very young child and compensated for the loss of wages. This is not a controversial concept, since it has broadly been accepted for the "formal sector". Many women are extremely undernourished themselves. While they can still produce adequate milk to feed their infants, exclusive breastfeeding for such long periods can further jeopardise these mothers' health. Women must have access to adequate nutrition and other forms of support to enable them to exclusively breastfeed their infants without endangering either their own health or their economic status. All these, as well as entitlements to healthcare, are included in the term "maternity entitlements".

Crèches and maternity entitlements are not part of current strategy at all. Provisions need to be made for this by expanding and improving existing programmes such as the NMBS, Rajiv Gandhi Crèche Scheme and ICDS. In the current strategy breastfeeding counselling and support is expected to depend mostly upon the skills, training and time of the accredited social health activist (ASHA), who has many other tasks. Significantly, while many of her other tasks are incentivised, there are no incentives for achieving early and exclusive breastfeeding or optimal IYCF targets. It is only through adequate training and motivation of the auxiliary nurse midwife (ANM), 'anganwadi' worker and ASHA together that effective breastfeeding counselling and support can be provided.

Children in this age group also require growth monitoring, immunisation, newborn care and referral services to the health system. Details of what needs to be done, including employing a second worker at the anganwadi to work specifically on children under three years of age, are presented in the Section 2.

## 1.3 Age 6 Months to 3 Years

From six months onwards, complementary foods are to be introduced to children along with continued breastfeeding for two years or beyond. Children can eat "normal home food" (in mashed or semi-solid form), however children at this age can eat only small quantities at a time and therefore, need to be fed many (about five) times a day and need to be given food that has adequate calories, proteins and micronutrients.

Some of the interventions required for this age group are, first, ensuring that frequent meals in adequate quantity are given to the children. This food has to have adequate nutrients in the form of animal proteins (milk, eggs, meat, fish), adequate in fats, fruit and vegetables. Nutrition counselling and nutrition and health

education sessions for mothers and family members are also required. Second, nutritious and carefully designed take-home rations (THR) based on locally procured food should be provided as “supplementary nutrition” for children in this age group. Currently THRs are in the form of just grain – this is inadequate. Also, THRs must be combined with nutrition counselling to ensure that they are used for the child rather than distributed amongst the family.

Third, crèches must be provided, with trained workers, to ensure that these children are provided with adequate care and development opportunities, especially if there are no adult carers at home. Finally, further services children in this age group require include regular immunisation and growth monitoring, treatment for anaemia and worms, prompt care for fever, diarrhoea, coughs and colds and referral services for the sick and severely malnourished child.

Most of the above can be provided by the ASHA and the anganwadi worker, provided that a second anganwadi worker is available (the need for a second anganwadi worker is discussed in more detail below). However, current strategy provides neither for a second anganwadi worker nor for day care/crèches. This is in spite of the widely accepted case for increased focus on children under three for prevention and management of malnutrition. Thus, the currently-proposed new strategies for desired focus on nutrition of under threes are limited to nutrition counselling and healthcare by ASHA, that too not incentivised.

#### 1.4 Age 3 to 6 Years: Focus on Pre-school

It is well established that PSE is very significant in helping children prepare for formal schooling. PSE assists children both to enter school and to remain in the system. A child cannot fully realise her right to education unless she has access to quality early childhood care and education. The interventions required for children in the age-group of three to six years (until joining school) are one, a centre-based play-school facility with a teacher trained in conducting pre-school activities. Again, this can be provided by the anganwadi worker only if a second anganwadi worker is appointed for the community-based interventions for children under three, pregnant and lactating mothers.

Two, hot cooked meals, serving the same broad purposes as mid-day meals in primary schools. These include not only nutritional support but also enhance child attendance, promote social equity, provide income support to poor households, and act as a form of nutrition education. Three, health interventions such as growth monitoring, de-worming, immunisation, care of common illnesses, referral services etc.

The focus should therefore shift to quality PSE as the main task, with nutrition and health services playing roles similar to the Mid-Day Meal Scheme and the School Health Scheme in primary schools. Currently hot cooked balanced meals with adequate (animal) proteins, fats, fruits and vegetables are not part of the strategy for this group of children. (The “supplementary nutrition programme” under ICDS is further discussed below.)

If it is accepted that the ICDS centre (anganwadi) is to function as a proper pre-school facility then a provision has to be made for a teacher-equivalent anganwadi worker who is fully committed

to this activity while a second anganwadi worker looks after children under three in the community, as well as for anganwadi cum crèche as and where required. Many children in the three to six age group will also continue to need day care services.

From the above discussion it is clear that different strategies are required for addressing the health, nutrition, care and development needs of children under six, depending on their age. The components of the services required by the three age groups

**Table 1: Essential Components of Early Childhood Care**

	Zero to Six Months	Six Months to Three Years (until joining pre-school)	Three Years to Six Years (until joining school)
Food	Counselling and support for exclusive breastfeeding; supplementary nutrition and maternity entitlements for lactating mother.	Supplementary nutrition in the form of nutritious THRs, nutrition counselling, nutrition and health education.	Nutritious hot cooked meal at the centre.
Childcare and development	Crèches at worksites and maternity entitlements to ensure proximity of mother and child.	Crèches; expanding existing crèche schemes and creating anganwadi cum crèches.	Pre-school at the anganwadi centre; crèches/day care facilities for those who might need it.
Healthcare	Immunisation, growth monitoring, home-based neonatal care, prompt referral when required.	Immunisation, growth monitoring, prompt care for childhood illnesses, referral care for sick and malnourished children, de-worming, iron supplementation.	Immunisation, growth monitoring, prompt care for childhood illnesses, referral care for sick and malnourished children, de-worming, iron supplementation.

among children under six are summarised in Table 1.

## 2 Strategic Interventions

It is therefore seen that the following systems would be required to provide comprehensive early childhood care and development: (a) Maternity entitlements to ensure proximity of mother and child during the first six months as well as adequate care to both mother and child; (b) breastfeeding, IYCF and nutrition counselling and support services to families; (c) community-based day care services/crèches; (d) pre-school centres; (e) supplementary nutrition; and (f) healthcare services-predominantly community-based with institutional backup.

The ICDS, which is currently the only national programme to address the health, nutrition and pre-school needs of children under six years has the potential and mandate to fulfil many of these requirements. It requires expansion to reach to all children and improvements in quality. However, ICDS alone cannot provide all the required facilities and services. It should be seen as one component, among others, of a comprehensive strategy for children under six.

Specifically, such a strategy must have the following components:<sup>5</sup>

### 2.1 ICDS: Universalisation with Quality

Given the central role of ICDS in this context, and the fact that about half the child population and over 70 per cent of all poor children are malnourished, an effective strategy for children under six must include the universalisation of ICDS or more precisely, “universalisation with quality”.<sup>6</sup> The universalisation of ICDS is one of the core commitments of the National Common Minimum Programme, and is also required for compliance with



recent Supreme Court orders. In concrete terms, “universalisation with quality” would mean that (1) every settlement has an anganwadi centre,<sup>7</sup> (2) all ICDS services are extended to all children under the age of six years and all eligible women and girls, (3) the quality of services is radically improved, and (4) priority should be given to disadvantaged groups, especially residents of scheduled caste/scheduled tribe (SC/ST) hamlets and urban slums, in this whole process.

As discussed earlier adequate attention must be paid to the needs of children within the different age categories. The anganwadi worker must be trained to provide quality PSE to children in the three to six year age group. Her tasks would also include providing a hot cooked nutritious meal that is sufficient in fats and proteins, including animal proteins where culturally acceptable.

A second anganwadi worker must be provided in all anganwadi centres (other than the existing Anganwadi worker and helper), who will focus on children under three years of age, pregnant and lactating mothers. The tasks of this second anganwadi worker would include breastfeeding counselling, nutrition and health education and counselling, growth monitoring, provision supplementary nutrition to children in the six months to three years age group and pregnant and lactating mothers, motivation for ante-natal care, immunisation and related matters. On some of these tasks, she would work in coordination with the ASHA. She would also be required to help in anganwadi cum crèche centres.

Universalisation with quality also requires a range of other steps including adequate and quality training, improved infrastructure, appropriate cost norms to provide nutritious supplementary nutrition, increased community participation, convergence with the health department and so on. IYCF counselling and support should be recognised as one of the core “services” of ICDS.

## 2.2 National Rural Health Mission

There should be greater convergence between ICDS and the NRHM for prevention and management of malnutrition. At the village level the ASHA and the second anganwadi worker can work together towards promotion of breastfeeding, nutrition counselling, etc.<sup>8</sup> For this, nutrition-related tasks performed by

ASHA (such as ensuring early initiation of breastfeeding) should also be incentivised. The ASHA would further be required to provide essential home based newborn care by making three to seven visits in the first week of birth as well as prompt care on first day of fever, diarrhoea, coughs and colds. Where required, she would have to refer children to the ANM or primary health centre (PHC).

Treatment of severely malnourished children must be the joint responsibility of the health department and the ICDS. While it would be the responsibility of the ICDS to identify severely malnourished children, the health department must make arrangements at the sub-centre and PHC levels for treatment of such children. This requires setting up nutrition rehabilitation centres in PHCs in areas with high malnutrition, training of ANMs on nutrition related issues, and authorising the anganwadi worker to refer malnourished children to the health department.

Financial provision should be made to support these children's families during the period of rehabilitation.

IYCF counselling and support, while included under ICDS, should also be a mainstream intervention in reproductive and child health (RCH) and NRHM, and listed as a child survival intervention along with “immunisation”. The creation of “IYCF counselling and support centres”, run by skilled women in a cluster of 5-30 villages, should also be considered. This “service” should be made available as an entitlement.

Further, the health department must also ensure that the national programmes of immunisation, iron and vitamin-A supplementation are carried out and de-worming takes place. While the anganwadi worker would play a role in motivating children for this, the health department must ensure adequate and appropriate supplies (such as paediatric formulations of iron). A drug kit with essential drugs must be provided at the village level with either the ASHA or the second anganwadi worker.

## 2.3 Maternity Entitlements

Maternity entitlements are virtually non-existent in the country today, especially for poor women working in the informal sector. It is time that a beginning is made to correct this. Tripartite boards and funds must be set up to implement such entitlements for all sectors of informal work, so that employers contribute. An expanded and improved National Maternity Benefits Scheme must be put in place for all women left out of other schemes/provisions for maternity benefits.

A task force should be set up to look at the existing provisions for maternity entitlements in the country and make recommendations such that programmes are in place that protect the rights of the mothers and children to nutrition, rest and exclusive breastfeeding for six months. The existing laws (Maternity Benefits Act, Employees' State Insurance Act, proposed Unorganised Workers Social Security Act, etc) must be brought in line with the recommended principles.

## 2.4 Crèches

As mentioned earlier, provision of crèches is an important intervention in addressing malnutrition, as they also provide proper care and attention to children while allowing their mothers to go for work. Existing schemes such as the Rajiv Gandhi Scheme must be expanded. ICDS cum crèches must be provided as identified by need. It must be ensured that the provision under the National Rural Employment Guarantee Act (NREGA) for a crèche at the work site is implemented. Labour welfare boards as under the Building and Construction Workers Act 1996, need to be brought in for the provision of crèches.

## 3 ICDS: Specific Issues

In this section, we discuss some specific, major steps that are critical for quality improvement and better impact of ICDS.

### 3.1 Supplementary Nutrition Programme

The “supplementary nutrition programme” (SNP) under the ICDS has a crucial role to play in combating child malnutrition. Nutrition education alone is unlikely to have a major impact, in a

country unable to provide literacy to half its women, especially in the context of food shortages at the household level. Even in the US, one of the richest countries in the world, there is a substantial school breakfast and lunch programme for the country's poor (which provides bread, cheese, fruit, juices, vegetables, etc) because it is recognised that nutrition education cannot be a substitute for food.

However, in its current form the SNP under the ICDS cannot be expected to have a significant impact. For children in the age group of three to six years, the SNP consists of poor, cereal-based items that have little nutritional value. A transition needs to be made towards hot, nutritious cooked meals. The feasibility of providing nutritious cooked meals has been well demonstrated in the context of the mid-day meal programme in primary schools, and this approach needs to be extended to children in the age group of three to six years under the ICDS. As for children below the age of three years, they are virtually excluded from the SNP component of the ICDS in most states. For these children, carefully devised THR programmes, combined with nutrition counselling, are recommended.

### 1 Nutrition Aspects of SNP

As we move towards the universalisation of ICDS, it is important to learn from past mistakes relating to the SNP.

The magic figure of 300 calorie deficit for the SNP component of ICDS needs to be re-examined. The latest National Nutrition Monitoring Bureau (NNMB) data (2006-07) show that even today there is a deficit of about 500 calories in the intakes of one to three years old and about 700 calories among the three to six years old (Table 2). There are bound to be additional multiple vitamin and mineral deficiencies when there is a 40 per cent deficit in calories.

**Table 2: Nutrient Intakes of Pre-schoolers**

Age (years)	Intake (Calories)	RDA (Calories)
1-3	791	1240
3-6	1020	1690

RDA - recommended daily allowance.  
Source: National Nutrition Bureau (2006).

It is, therefore, not surprising that the current nutrition supplements of 300 calories, consisting mainly of cereals, often fail to result in better weights and heights of children (though their nutrition status might have been even worse in the absence of these limited

supplements). The ICDS programme must incorporate the above information on actually existing food deficits in the country and increase the SNP amounts to 400-500 calories in two sittings.

The SNPs under the ICDS have tended to concentrate on providing a "least cost" source of proteins and calories for children. Pulses were chosen as a source of cheap protein but well known foods like milk, eggs and meat have been ignored. It is known that even small quantities of meat help iron absorption from the diet. In addition, the quality of meat protein is many times superior to cereals and pulses. Milk contains protein, calcium and other nutrients like vitamin A, etc, and egg yolk contains many other nutrients in the right proportion. Over the years even the cereal-pulse recommendation was corrupted to 300 cal from cereals alone, resulting in massive deficiencies of all nutrients, including micronutrients.

It is known that children have small stomach capacities and are only able to eat small volumes at a time. This they would be unable to get all the calories they require from cereals, which are

bulky foods and do not have high concentration of calories. The WHO advises that 30-40 per cent of calories should be derived from fats, thus cutting down volumes and assuring energy densities. Currently, the SNP has no component of fats and oils.

Another important point to consider is that foods like vegetables and fruits are an important source of vitamins and other nutrients. They also contain newly identified protective compounds such as anti-oxidants and phytonutrients, which are protective against cancers and chronic diseases.

Providing a hot, cooked, nutritious meal consisting of cereal, pulse, eggs and vegetables is essential for the SNP to have an impact. The provision of good quality balanced meals also has a demonstration value from the point of view of nutrition education.

**Table 3: Possible Components of SNP**

Source	Quantity/Frequency	Calories	Nutrients
Egg	1 on alternate days	120	Vitamins A, N3, fats, proteins
Oil	10 ml	90	Fats, vitamin E
Rice/wheat	60gm	240	Calories, proteins
Vegetables	Carrots, greens, tomatoes, beans, others		Vitamins, minerals, protective compounds, etc
Groundnut	20gm	140	Calories, proteins, calcium
Sugar	10-15 gm	60	Calories
Pulse	25gm on alternate days	100	Protein, calories, vitamins, minerals
Dairy product			Protein, calcium, vitamin A

As an example of improved SNP menus, the food items in Table 3 may be used in different combinations over the week to provide a varied, tasty and energy-dense meal every day. For example:

Day-1: egg, rice, oil and vegetables

Day-2: pulse, rice, vegetable and oil

Day-3: wheat, groundnut, sugar and oil

Day-4: egg, rice, oil and milk

Day-5: groundnut, sugar and pulse

### 3.1.2 On Take Home Rations

Available experience suggests that THRS are the best option for providing food supplements to pregnant and lactating women as well as to children under the age of three years. This is because a pregnant woman or a very young child, may not be able to come all the way to the ICDS centre every day just to receive food supplements. Further, centre-based nutrition programmes such as cooked meals are often not well suited to the needs of young children, who need frequent feeding throughout the day.

THRS are often distributed on fixed days that may correspond to the ANM's visit or to health and nutrition activities such as ante-natal care or immunisation. This is a useful arrangement, which helps to ensure regular and transparent distribution of THRS and facilitates these complementary activities.

Though the concern has been articulated that THRS find their way into the family pot rather than the stomachs of the children they are intended for, it is considered (and substantiated by collective experience) that THRS can be effective when combined with nutrition counselling and support at the family level (this, again, requires the involvement of a second anganwadi worker).

As with nutrition supplements provided at the anganwadi, current THRS have also tended to be cereal-based only. It is

recommended that THRS comprise of fats/oils and proteins in addition to cereals and pulses at Rs 3 per child per day (plus food-grains) to be most effective.

Of course, pregnant or lactating women and children under three who prefer to come to the centre on a daily basis should receive hot cooked meals as discussed above.

### 3.1.3 Food Fortification and Micronutrients

Fortified foods and micronutrient supplements, mixed in different vehicles such as 'atta', rice, biscuits, candies, etc, are rapidly spreading in the SNP under ICDS, even when they have questionable nutrition value.<sup>9</sup> Often this happens under pressure from various lobbies and commercial interests. These processes and technologies promote centralised production and procurement of food stuff and detract from local control and autonomy over diets. Sometimes they even displace local livelihoods such as milling. They certainly promote the notion that special, "medicalised" and expensive food is required to deal with micronutrient deficiencies. Where there is, on the one hand, a decision not to spend on more expensive "natural foods" like milk or eggs, there is no hesitation to spend much more on micronutrient supplements of this variety.

To illustrate, consider the case of atta fortification. When this form of fortification is adopted for our local atta the phytates tend to precipitate the iron making the fortification ineffective. This is even more likely to happen when a long shelf life is required as in the case of programmes like ICDS and the public distribution system (PDS). Large-scale micronutrient and fortified distribution to populations with malnutrition may not only be ineffective but also have hazardous effects.

However, all these concerns have not compelled the creation of a government policy on micronutrients and food fortification. Thus, it is critical to constitute a regulatory framework for fortification and micronutrients in India. Such a framework must address the following issues: first, any large-scale micronutrients fortified food distribution should be preceded by a process of documenting and researching its implications.<sup>10</sup> Second, any request for a trial of micronutrients and food fortification with undernourished populations should be placed before an appropriate authority, constituted by the government of India. The trial should be continuously monitored and recorded by an independent monitoring group, so as to record any adverse effects.

It is the responsibility of the state to provide wholesome balanced food to children rather than a package of chemical nutrients. Micronutrient deficiencies in India exist because of massive macronutrient deficiencies, and if adequate food is supplied, most micronutrient deficiencies will disappear. There are already three national programmes pertaining to micronutrient deficiencies of vitamin A, iodine and iron. These should be carried out effectively. Thus, the ICDS programme must focus on a meal-based strategy rather than a pill-based strategy for micronutrient deficiencies.

There is an urgent need therefore to constitute a regulatory body which approves all usage of micronutrients only after proper scientific scrutiny and after the efficacy of the micronutrients has been established over and above the many

benefits of providing hot cooked good quality meals as detailed in the section above.

### 3.1.4 Diverse Roles of SNP

Before concluding on the SNP, it is worth pointing out that the provision of nutritious food to young children under ICDS' SNP serves a range of important purposes, including – but not restricted to – nutritional goals. Indeed, this programme can serve at least seven important purposes:

(1) It provides quantitative supplementation by increasing children's food intake, and in particular their calorie intake.<sup>11</sup> Children aged three to five years who are attending the anganwadi for pre-school activities for a period of three hours most certainly require to be fed at least once in that duration to prevent "classroom hunger".

(2) It enhances the quality of children's diets by giving them nutritious and diverse food items they may not get at home, such as vegetables, eggs, fruit, etc.

(3) The provision of nutritious, cooked meals at the anganwadi is a form of "nutrition education" – it helps to convey what a nutritious meal looks like, and to spread the notion that children require a regular and balanced intake of various nutrients.

(4) The provision of nutritious food at the anganwadi helps to ensure regular attendance.<sup>12</sup> This provides an entry point to all the other comprehensive health and development services that the ICDS offers.

(5) The SNP is a form of implicit income support and an intervention in poverty, since it saves feeding costs to the parents.

(6) The sharing of cooked meals at the anganwadi, irrespective of caste and class, helps to break traditional social prejudices, and to impart egalitarian values to children at a young age. This is an important start to the kind of socialisation required to bring about social change.

(7) Finally, aside from these instrumental roles, nutritious meals at the anganwadi have intrinsic "enjoyment value". They can bring a touch of colour and well-being in the lives of poor children, especially when they are shared in a welcoming environment.

The SNP needs to be seen in the light of these diverse roles of nutritious meals. A narrow focus on "quantitative supplementation" (important as it may be) tends to miss the rich opportunities presented by this programme. This is, indeed, an important lesson from India's recent experience with mid-day meals in primary schools.

### 3.2 Priority without Targeting

The suggestion is often made that nutrition programmes (or other components of ICDS) should be "targeted" at specific groups of children. For instance, an early draft of the Sarva Bal Vikas Abhiyan proposal<sup>13</sup> suggested that the SNP under ICDS should be "operationalised as follows for the management of underweight":

– "Children with mild underweight: Caregivers/mothers would be advised to take care of the children with available foods at home.

– Children with moderate underweight: Single ration would be provided along with appropriate nutrition and health advice.

– Children with severe underweight: Double ration would be provided along with appropriate nutrition and health advice and referral service.”

This targeted approach, however, is problematic for several reasons. First, this issue has to be seen in the light of the massive reach of undernutrition among Indian children. As mentioned earlier, nearly half of all Indian children are undernourished based on standard “weight-for-age” criteria, and nearly 80 per cent are anaemic (NFHS-3). Thus, only a small proportion of children could be “safely” excluded from nutrition programmes. The financial savings involved in excluding this small minority are unlikely to justify the efforts, costs and risks associated with targeting – especially the risk of inadvertent “exclusion” of many undernourished children.<sup>14</sup>

Second, this approach focuses exclusively on the “management” of undernutrition, at the cost of “prevention”. Providing nutritious food to all children (through take-home rations at an early age, and nutritious cooked meals from the age of three) helps to ensure that most of them do not fall in the category of “moderate or severe underweight” in the first place. This is much better than trying to extricate them from this predicament after they have lost weight – repairing that damage can be quite difficult, increasingly so as the child gets older. (The notion that children with mild underweight could be effectively protected by advising their mothers to “take care of the children with available foods at home” is wishful thinking.)

Third, targeting is a slippery slope. It paves the way for gradually narrower eligibility restrictions, possibly leading to the “dismantling” of the programme (recent experience with the public distribution system is quite sobering in this regard). Targeting is also divisive and undermines social solidarity. As it is, political commitment to ICDS is quite weak. Targeting would further undermine this fragile support for the programme, as the better off sections of the population would no longer have a stake in it.

Finally, the targeting issue has to be assessed bearing in mind the diverse roles of the supplementary nutrition programme, discussed in the preceding section. For instance, a universal SNP has much greater “socialisation” value than a targeted programme. Similarly, a universal programme is likely to have stronger incentives, in terms of promoting regular attendance.

Thus, in many different ways, the targeting of nutrition programmes is fundamentally at variance with the “rights approach” advocated in this paper. Having said this, it should be clarified that we are not arguing for identical treatment of all children. Universalisation does not mean “uniformity”. For instance, intensive rehabilitation of severely undernourished children is essential, and this involves a limited form of targeting. We have also argued, elsewhere in this paper, for giving priority to disadvantaged groups (for example, residents of scheduled caste/scheduled tribe hamlets and urban slums) in the process of universalisation. Special financial allocations for deprived areas may also be advisable in some circumstances. Thus, we are not ruling out some differentiation of entitlements between different groups. But the basic entitlements (for example, to a nutritious cooked meal, in the case of

children in the age group of three to six years) should have universal coverage.

### 3.3 Need for Second Anganwadi Worker

The ICDS programme through the anganwadi centre aims to provide a package of comprehensive services addressing the health, nutrition, growth and development needs of children under six. For this to be done effectively, each anganwadi centre must have two anganwadi workers and a helper. The second worker is required because the number of women and children to be covered by an anganwadi is too large to be handled by a single anganwadi worker. The number of children being covered by a typical anganwadi would be around 100.<sup>15</sup> Added to this, the anganwadi centre would also have to reach out to pregnant and lactating mothers and adolescent girls. It is impossible for a single anganwadi worker to provide effective services to such a large number of women and children.

Secondly, as discussed earlier, the services required by the different age groups (namely, zero to six months, six months to three years, and three to six years) entail diverse strategies. While children under three mainly require community-based services,<sup>16</sup> children in the three to six-year age group require centre-based services. In the present scenario of having one anganwadi worker, neither of these two groups is being effectively reached. While many have pointed out the neglect of children under three by the ICDS, studies have also shown that the ICDS has failed in providing quality pre-school education to children in the age group of three to six years. Therefore, having two workers and a helper at each anganwadi is essential to ensure that all ICDS services are provided effectively to the different age groups. The three of them could work as a team with one anganwadi worker focusing on children under three and the other on providing pre-school education. Both the workers would have to be given basic training on the entire range of issues.

One anganwadi worker would focus on providing community-based services for children under three, pregnant and lactating mothers. Her tasks would include the provision of supplementary nutrition to pregnant and lactating mothers, breastfeeding counselling and support for families of zero to six month old children, growth monitoring of children under three, distribution of take-home rations, and nutrition education and counselling for families with children under three. Further, she would have to identify severely malnourished children and sick children and refer them to the health system. She would motivate families for immunisation, update the “mother and child card” and work along with the ASHA. This worker would be key to convergence between NRHM and ICDS.

The second anganwadi worker would run the anganwadi centre for children in the three to six years age group. She would be a teacher-equivalent worker who provides quality pre-school education to the children attending the anganwadi centre. Further, she would have to ensure that pre-school children are provided with a nutritious hot cooked meal everyday and health check ups as with the school health programme.

The anganwadi helper would be responsible for fetching the children, cooking and serving the food in the anganwadi centre, keeping the centre clean and helping children and anganwadi

worker in play activities. In anganwadi-cum-crèches, the team would be responsible for running the crèche services for young children.

Other than these three workers of the ICDS programme, the ASHA under the NRHM would also have a role. The ASHA is responsible for the promotion of an early initiation of breastfeeding within one hour of birth, colostrum feeding and follow up support for the first two weeks. She would also be responsible for home-based neonatal care by making home visits during the first month after birth. These tasks of the ASHA must be incentivised. The ASHA cannot however replace the need for a second anganwadi worker as she has many other responsibilities such as mobilising the community towards local health planning, help in developing a village health plan, escort women and children requiring medical treatment, provide primary medical care, promote construction of household toilets and so on.<sup>17</sup>

Table 4 summarises the main tasks of different workers in the proposed approach.

Another benefit of the two-worker model is that it would enhance the accountability of anganwadi workers and improve their work environment. The disempowering work environment of anganwadi workers is one reason for the poor quality of ICDS services in many states. The fact that the anganwadi worker has to cope on her own with all the challenges of looking after up to 100 children, with little support (if any) from her supervisor, is one aspect of this disempowering environment. The two-worker

model, on the other hand, makes room for mutual support as well as peer monitoring.

The “two-worker” model is often resisted on the grounds that it is too expensive. This view fails to appreciate how “cost-effective” this model actually is. To illustrate, under the current salary norms (Rs 1,000 per month), posting an additional worker in each of the country’s 8.5 lakh anganwadis would only cost about Rs 1,000 crore per year. This is a very small price to pay for a measure that could make a big difference. Of course, both the number of anganwadis and the salary norms are likely to increase during the Eleventh Plan. But even posting a second worker in 14 lakh anganwadis, at twice the current salaries, would cost just Rs 3,360 crores per year. This is not much more than what India spends every year to defend the Siachen glacier.

Further, these figures refer to financial costs, and the “real” economic costs are likely to be much lower. Indeed, to a large extent, the labour of an anganwadi worker is an efficient substitute for much greater expenses of labour on the part of the children’s mothers. For instance, when the anganwadi worker and helper provide a mid-day meal to the children, their work “saves” a lot of work to the mothers, who don’t have to cook for the children at home. While the anganwadi worker’s work is paid, the mothers’ work is unpaid, and this creates the impression that a “cost” is involved but in fact, resources are being saved! This would be reflected in the financial costs if mothers’ work were paid, and it is the absence

**Table 4: Role of Anganwadi Workers, ASHA and ANM (in Relation to Children under Six, Pregnant and Lactating Mothers)**

Focus Group	AWW 1 Focus on under-3s	AWW 2 Pre-school Teacher	ASHA Community-based	ANM Sub-Centre Based with Field Visits
Zero-six months	Supporting exclusive breastfeeding. Motivating for immunisation. Growth monitoring and encouraging early initiation of breastfeeding.		Providing new born care, supporting management of low birth weight and sick babies. Weighing at birth and recording birth weight, assist in beginning breastfeeding within one hour, and establishing exclusive breastfeeding as an accepted community norm, establishing complete immunisation as a community norm.	Providing immunisation services and timely curative & referral services for sick new borns. Assists in beginning breastfeeding within an hour (if she is conducting delivery) Management of severely undernourished children
Six-36 months	Growth monitoring, providing supplementary nutrition in the form of THR. Motivating for complete immunisation, vitamin supplementation. Nutrition rehabilitation of severely undernourished children and referral		Positively influencing complementary feeding practices of families and at the community level, encouraging adoption of hygienic practices regarding water and sanitation, early detection and management of childhood illness especially management of diarrhoea. Counselling and follow up of families with severely undernourished children	Providing timely curative and referral services. Management and referral of severely undernourished children
Three-six years		Pre-school education, growth monitoring, organising cooked mid-day meal, nutrition rehabilitation of severely undernourished	Identification and referral of sick children. Counselling and follow up of families with severely undernourished children	Health check ups and curative services, management and referral of severely undernourished children
Pregnant women	Growth monitoring and supplementary nutrition		Working with women, families and the community to ensure adequate weight gain through appropriate nutrition, reduction in workload, rest and accessing timely health services especially supporting clean and institutional delivery	Antenatal care, promoting delivery by trained birth attendant, promoting and supporting institutional delivery
Nursing mothers	Supplementary nutrition, breastfeeding support		Postnatal care, encouraging early initiation of breastfeeding	Postnatal care, immunisation
AWW-cum-crèche (0-6 years) (10% of all AWWs)	Both the anganwadi workers to be full-time workers where they continue to perform their regular duties and also share the responsibility of running the crèche.			
Anganwadi helper (full-time in case of AWW-cum-crèche)	<ul style="list-style-type: none"> <li>Cook and serves food in the crèche</li> <li>Help children and AWW in play activities</li> </ul>			

Source: This table is adapted from Sundararaman and Prasad (2006).

of any payment for domestic work that creates the illusion that anganwadi workers are “expensive”. Further, reduction in household work would contribute to better health and nutrition for women, which is closely linked to the status of health and malnutrition of children. Taking all this into account, the economic cost of the two-worker model is likely to be much lower than the financial cost, and good economics requires us to focus on the former.

This conclusion would be reinforced by a proper accounting of the benefits of having additional anganwadi workers. It is not just that the children will be healthier, better nourished and better prepared for school. Anganwadi workers are also useful role models and agents of change in a fairly conservative and patriarchal rural society. In many villages, the anganwadi worker is the only woman who has a paid and dignified job, with opportunities to develop her creativity and talent. Her presence can greatly help, in many different ways, to give younger girls a sense of possibility and to secure a better deal for women in society (in some states, for instance, anganwadi workers have played an active role in recent campaigns against domestic violence and sex-selective abortion). All this adds to the social value of anganwadi workers. As the largest employment programme for women in

India, with a potential to employ as many as four million women everyday, ICDS also has a very significant contribution to make to women's empowerment.

In short, the two-worker model is not just enlightened social policy but also sound economics. India has a “comparative advantage” in labour-intensive provision of social services; large-scale mobilisation of educated women as anganwadi workers would be an excellent use of this comparative advantage.

#### Learning from Thailand's Experience

Thailand (1980s)	India (2007)	How to Close the Gap
Able to halve child malnutrition levels in 1980s	Child malnutrition rate stagnant for last five years	Strengthening ICDS
Coverage – universal, very high coverage ensured	Coverage – low, two-thirds children left out	Increase no of AW centres Increase no of workers in each AWC to two to enhance outreach
SNP- Strong universal SNP provision, provided 450 kcal in 100 grams by providing pulses and fats	SNP – 300 kcal, mainly cereal	Raise SNP norm in ICDS to Rs 3 per child/day plus 80 gram grain. Provide oil, pulses in take home rations for under 3s, Provide hot cooked meals with eggs/milk for three-six year olds
High manpower intensity: 1 nutrition worker per 20 children, helps to ensure very high coverage of under-6s and *ive nutrition education on tfeeding, complementary feeding	Worker: child ratio at 1:100, single part-time worker per centre unable to devote time to home visits	Having two AW workers each in 14 lakh centres will enable a ratio of 1 worker per 25-30 children and effective nutrition education and coverage
Universal iron, vitamin supplementation –successful in reducing anaemia	Supplementation part of strategy and policy but huge gaps in providing it - absence of pediatric iron tablets Irregular IFA supply for pregnant women	Ensure regular supplies of iron supplements to women and children
Strong linkage with health	Weak linkage with health so far, malnutrition not seen as any department's responsibility, but NRHM present as an opportunity	ICDS-health convergence at all levels from ASHA onwards Regular drug kits to AW centres Clinical support for Grade 3 and 4 children needing institutional check-up or care

Source: Garg and Nandi (2007).

### 3.4 Making ICDS Work

In moving towards universalisation with quality, one major challenge is the management of a large public service delivery programme.<sup>18</sup> Much of the hesitation to sanction such an expanded scheme stems from the past experience with implementing ICDS.

Poor capacities to manage such a large public programme, poor governance, high leakages, lack of local accountability, low motivation levels and poor community ownership are some of the problems that have plagued ICDS.

An understanding of poor ICDS performance as stemming mainly from operational problems often leads to a search for “contracting out” solutions, where commercial and not-for-profit non-governmental institutions are asked to organise the services. But since the central problem behind the inefficiency of state-run ICDS is mis-governance and not merely lack of capacities, any attempt at contracting out part or all the functions usually leads to even greater problems of governance – but now without the built-in checks and balances that public service delivery has.

Thus, the operational issues of managing such a large and expanding programme as a public service need to be faced. Some of the key operational issues are discussed below.

#### 3.4.1 Decentralisation and Community Participation

Decentralisation and the involvement of communities is the first key aspect that must be considered. For instance, the selection of anganwadi workers must be done by the gram panchayat but through a supervised process that involves the community. It should not be left to the whims of the local elite who often control the panchayat but nor should it disregard the central authority of the panchayat, for the alternative is usually an unacceptable process where selection is left to the bureaucracy or the local legislative member. What is said for selection is also applicable to the process of accountability and of monitoring and support – primarily by the panchayat but not passively left to it.

There is very little community involvement in the current programme. Except for rare instances like the Mitani programme in Chhattisgarh or the work of the Rajmata Jijau Mission in Aurangabad, the involvement of communities and panchayats has rarely gone beyond subcontracting tasks (like the cooking of the meals) with very little real financial or other powers. Yet there are large areas of untapped potential for community contribution.

Informed and involved communities can have a major impact on nutrition practices and outcomes. For instance, one of the barriers in the fight against undernutrition is the gross social under-recognition of this issue. Community mobilisation can play a critical role in influencing the way society perceives undernutrition and create a social will to fight it.<sup>19</sup>

Community mobilisation can also play a major role in supporting behaviour change in long-standing childcare practices, and in achieving improvements in the utilisation of ICDS services.

For instance, there may be a variety of genuine reasons for a mother not sending her child to the anganwadi (for example, distance from the centre, irregular opening hours, low-quality food, lack of trust in the anganwadi worker). In such a situation, a stand-alone behaviour change communication (BCC) message to

the mother, asking her to send her child to the anganwadi may not work but the community may be able to tackle some of the underlying issues. Community mobilisation is needed to create an enabling atmosphere for more appropriate childcare practices and empowerment of the local community, especially families facing marginalisation or social exclusion. Community monitoring of ICDS can also help in ensuring greater regularity and quality, and in building a more functional relationship between the anganwadi worker and the community.

The ASHA is one of the key agents in achieving active community participation and in promoting equity of access at the village level. Some of her roles have been discussed earlier but it is important to recognise that the ASHA is also a significant link between the community and the government (particularly the health system). Other important tools of community mobilisation arising from the NRHM include the monthly "health and nutrition day" and the village health committee (VHC). These committees are initiated by the ASHAs with the help of the anganwadi worker, and they are also intended to link with existing community institutions such as mahila mandals, youth clubs, self-help groups (SHGs) and panchayati raj institutions. VHCs can be an important part of community mobilisation, by motivating parents to send their children to the anganwadi, monitoring undernutrition levels in the village, drawing out an action plan, spreading awareness of health-related issues, helping anganwadi workers in ECCD and VCC tasks, helping remote hamlets to access ICDS services, and monitoring anganwadis, among many other possible activities. They can also act as forums through which women become more aware of their rights and fight gender discrimination in health, nutrition and other fields. Other community-based groups and forums (such as mahila mandals, SHGs, gram sabhas and youth clubs) can play similar roles, in collaboration with ASHAs and anganwadi workers. Adequate budgetary provision should be made for supporting such community mobilisation processes.

Another useful aspect of decentralisation would be district-specific planning. Different districts have different technical and administrative requirements. They need to tailor communication materials, training programmes and nutrition schemes to suit their specificities. District planning designs (and then fund allocations based on such plans) is an operational challenge but the effort can be quite rewarding, and requires little additional resources. However, district level planning needs to proceed "bottom up", based on village-level and panchayat-level planning. Panchayat-level planning can be used as a mechanism for bringing the various aspects of ICDS together, as well as for achieving local convergence between ICDS, the ASHA programme and Sarva Shiksha Abhiyan. The plans should clearly outline the roles of different sectors in contributing towards the elimination of undernutrition and the provision of comprehensive child care.

### 3.4.2 Developing Human Resources

Human resource issues are critical to the success of the ICDS. An effective human resource policy must be created for the same. To start with, anganwadi workers should be recognised as regular, skilled workers and their concerns should be

addressed, particularly those relating to work overload, inadequate remuneration, delayed salary payments and poor working conditions. Avenues must be made available for promotion, skill enhancement and accreditation. Anganwadi workers should not be recruited for non-ICDS duties and their official job description should be adhered to.

Urgent action is needed to address the shortage of ICDS staff at all levels. Women should be better represented among supervisors, child development project officers (CDPOs) and other ICDS staff above the anganwadi level. Programme management structures should also be strengthened by inducting subject-matter specialists, especially women (example for pre-school education, health and nutrition) at the district, state and central levels. This could be facilitated by building linkages between local colleges of home science and social work and training institutions.

An essential element for securing better operational results is better capacity-building. About 5 to 10 per cent of expenses must be earmarked for capacity-building of the anganwadi workers and other staff on a regular basis. Continued capacity-building also requires the creation of adequate institutions for this purpose.

This involves re-examining the existing modes, means and sites of training and development of training content and material. The inadequacy of present arrangements is reflected in the fact that the government of India allocated a sum of just Rs 87 crore in the last financial year for training activities, in a programme that has more than a million workers and helpers. Nearly a fourth of this money apparently remained unutilised.

Training, both initial ("pre-service") as well as ongoing ("in-service"), is usually recognised as an important component of programme implementation. Unfortunately, the current training system appears to be quite divorced from field reality and practitioner experience. Most training institutions have neither any field sites nor directly run anganwadi centres, which could enable them to make the training more practice oriented. Ongoing field-based training is almost absent as most supervisors focus mainly on registers, attendance, salaries and numbers rather than processes.

One reason for the disjunct between training and field reality is that training curriculum, syllabus and material are usually centrally determined. This information is then transmitted down the chain to the anganwadi worker who is expected to convert it into practice and improve child development indicators for the entire programme. Building more lively and effective training programmes, linked with ground realities, would require: (i) building crucial linkages between training, programme implementation and review, and child development knowledge and practice; and (ii) building technical and institutional capacity in the ICDS programme to develop into a learning system.

The following steps would be useful in this regard: first, decentralised development of training curriculum, approaches and material (say, at the state or district level) based on national guidelines. Second, convergence of ICDS and NRHM training, not simply by training the respective staff together but also through joint development of the training modules. Third, allocating anganwadi training centres (AWTCS) for capacity-building at the district or sub-district level. Fourth, recognition of pre-school

education and nutrition counselling as essential components of training programmes. Fifth, developing a system for continuous field level support (for instance, identifying a relatively accessible anganwadi and developing it as a local resource centre, where the supervisor/trainer can facilitate peer learning through monthly cluster-level meetings). Sixth, upgrading mid-level training centres (MLTCs) and AWTCS, not only as training centres but also as local resource and research centres. Seventh, enabling MLTCs and AWTCS to directly run anganwadis in their campus/vicinity.

### 3.4.3 Governance Reforms

The ICDS suffers from high levels of corruption and mis-management. It is essential to define standards and norms for access and quality of services and to monitor and support the programme to ensure that these standards are attained and sustained. Output and outcome indicators, and a reliable monitoring system, also need to be put in place so that the progress of ICDS in each district is known.

In addition, wide-ranging action is required to restore transparency and combat corruption in the entire system. All ICDS-related information should be in the public domain. The provisions of the Right to Information Act, including proactive disclosure of essential information, should be implemented in letter and spirit in the context of ICDS. All agreements with private contractors (if any) and NGOs should be proactively disclosed and made available in convenient form for public scrutiny. All AWCS should be sign-posted and the details of ICDS entitlements and services should be painted on the walls of each anganwadi. Social audits of ICDS should be conducted at regular intervals in gram sabhas and/or on "health and nutrition day".

Effective indicators of good governance need to be developed for ICDS for the adequate evaluation of the scheme at every levels. Decentralisation, adequate space for public participation, greater attention to human resources and transparency are important steps towards building a responsive and accountable administration and these need to proceed apace with the greater devolution of funds for the programme.

## 4 Financial Requirements

Budgetary allocations have been one of the key factors responsible for the limited impact of the ICDS and related programmes so far. For instance, the current allocation for ICDS is only around one rupee per child per day (on average, for all children under six). This level of expenditure is utterly inadequate to ensure effective and universal programmes. Much higher allocations are needed for actually making a real dent on malnutrition, ill-health and gaps in psycho-social development.

Table 5 (p 99) presents estimates of what is required for fair implementation of the framework proposed in this paper during the Eleventh Plan. The reference year for these estimates is the "terminal year" of an expansion phase, by the end of which (1) ICDS would reach universal coverage, and (2) substantial progress would have been made towards providing other support structures such as maternity entitlements, crèches and supplementary nutrition for adolescent girls. The terminal year of this

expansion phase is not specified, but it would have to be, at any rate, within the Eleventh Plan.<sup>20</sup>

The estimates in Table 5 are based on the following assumptions:

(1) The number of AWCS: This has been fixed at 14 lakh, in line with Supreme Court orders as well as with independent estimates of the number of AWCS required to implement improved norms for the creation and placement of anganwadis. Of these, we assume that 10 per cent (1.4 lakh) will have the status of "anganwadi-cum-crèche" in the reference year (as a step towards wider outreach of crèche facilities).

(2) The number of children: It is estimated that there are currently about 14 crore children under six in the country, of which 10 crore live in rural areas and 4 crore reside in urban areas. It is further estimated that about 1 crore children live in urban slums [Government of India 2007: 1]. Allowance has to be made for the fact that not all parents may wish to enrol their children at the local anganwadi. Assuming that about 75 per cent of children in rural areas and urban slums are enrolled, the budget estimates are for 8 crore children under six. Of these 8 crore children, 10 per cent (0.8 crore) would be enrolled in anganwadi-cum-crèche centres.

(3) SNP: The SNP allocation here is similar to the enhanced norms that have been proposed to the Planning Commission for the mid-day meal scheme [Sundaram 2007] i.e., Rs 3 per child per day (in addition to 80 grams of grain).

(4) Second anganwadi worker: As explained earlier, a second anganwadi worker is essential to provide adequate care to children below the age of three years along with food supplements and quality pre-school education for those in the age group of three to six years. Thus, a provision has been made for implementation of the two-worker model in all AWCS.

(5) Remuneration of anganwadi workers and helpers: Our estimates assume that central government's contribution to the remuneration of anganwadi workers is raised from Rs 1,000 per month to Rs 2,000 per month (for four hours of skilled work per day for around 25 days a month). For anganwadi helpers the corresponding contribution would be Rs 1,000 per month.

(6) Anganwadi-cum-crèche centres: These centres would require higher allocations, for both staff and food. The two anganwadi workers and helper would have to be paid for full-time work, and children attending the crèche will have to be given adequate food. Thus, we have made an allowance for higher remuneration of anganwadi workers and helpers at anganwadi-cum-crèche centres (Rs 3,000 and Rs 1,500 per month, respectively), and doubled the provision for supplementary nutrition.

(7) Maternity entitlements: For maternity entitlements, we propose a national scheme on the lines of the Dr Muthulakshmi Reddy Maternity Benefit Scheme in Tamil Nadu. This involves cash support of Rs 1,000 per month for six months for care during pregnancy and after delivery. We recommend that, as a first step towards eventual universal coverage of maternity entitlements, 25 per cent coverage should be achieved in the reference year. Other schemes would also need to be developed to cover the range of circumstances of women working in the informal sector.



Under these assumptions, the proposed plan of action would cost around Rs 33,000 crore (at 2006-07 prices) in the reference year, including "recurrent costs" of Rs 30,000 crore per year. If

the Indian economy grows at 8 per cent per year on average during the Eleventh Plan, this financial requirement will represent about one half of 1 per cent of India's GDP five years from now. This is a

very reasonable price to pay to protect 14 crore children from hunger, ill-health and related deprivations.

**Table 5: Financial Requirements**

ICDS: Universalisation with Quality					
Assumptions		Number			
Total under six children covered		8 crore			
Children covered by AWC-cum-crèches		80 lakh			
Pregnant, lactating women covered		1 crore			
Total anganwadi centres (AWCs)		14 lakh			
Anganwadi centres also working as crèches (10 per cent of total centres)		1.4 lakh			
Anganwadi buildings to be built and equipped per year		2 lakh			
Budget Required (Rs crore)		No	Rate (Rs)	Frequency of Cost per Year	Amount (Rs crore)
<b>Recurring Costs</b>					
1 Supplementary nutrition					
1.1	SNP children (@ Rs 3/day for 300 days/yr)	7,20,00,000	3	300	6,480
1.2	SNP pregnant/lactating women (@ Rs 3/day for 300 days/yr)	1,00,00,000	3	300	900
1.3	SNP for children in AWC cum crèches (@ Rs 6/day for 300 days/yr)	80,00,000	6	300	1,440
1.4	Rice/wheat (80 gram per child per day)	8,00,00,000	0.8	300	1,920
2 Education/health kits					
2.1	Pre-school education kits for AW centres (Rs 1,000 per AWC per year)	14,00,000	1,000	1	140
2.2	Medicine kits for AW centres (Rs 1,000 per AWC per year)	14,00,000	1,000	1	140
2.3	IEC materials (Rs 25,000 per project per year)	6,000	25,000	1	15
3	Untied grant to AWCs (Rs 5,000 per AWC per year)	14,00,000	5,000	1	700
4 AWC rent (till such time that centres don't have their own buildings)					
4.1	Rural	6,00,000	200	12	144
	Urban	2,00,000	1,000	12	240
- Honorarium for AWWs/helper					
5.1	AWW 1 honorarium (at Rs 2,000 per month)	12,60,000	2,000	12	3,024
5.2	AWW 2 honorarium (at Rs 2,000 per month)	12,60,000	2,000	12	3,024
5.3	AW helper/cook (at Rs 1,000 per month)	12,60,000	1,000	12	1,512
5.4	Workers in AW cum crèches (3 full-time workers at Rs 3,000, Rs 3,000 and Rs 1,500)	1,40,000	7,500	12	1,260
6 Training					
6.1	Existing anganwadi workers (six days of training @ Rs 150/day)	7,50,000	150	6	67.5
6.2	New AWW1 (10 days of training @ Rs 150/day)	6,50,000	150	10	97.5
6.3	AWW2 (10 days of training @ Rs 150/day)	1,40,00,000	150	10	210
6.3	CDPOs (eight days of training per year at Rs 300 per day)	6,000	300	8	1.44
6.4	District POs (eight days of training at Rs 300 per day)	600	300	8	0.14
6.5	State officials (three officials per state, eight days of training at Rs 600 per day)	90	600	8	0.04
7 Salaries and office expenses					
7.1	State office	30	12,00,000	1	3.6
7.2	District office	600	10,00,000	1	60
7.3	Project/block office	6,000	7,00,000	1	420
8 Contingencies					
8.1	Project	6,000	30,000	1	18
8.2	District	600	60,000	1	3.6
8.3	State	30	1,00,000	1	0.3
9 Fuel					
9.1	Project	6,000	1,00,000	1	60
9.2	District	600	1,00,000	1	6
9.3	State	30	1,00,000	1	0.3
A Sub-total (recurring)					2,188.7
Non-recurring costs (capital expenditure)					
10	Equipment and furniture for AWCs	2,00,000	5,000	1	100
11	Anganwadi buildings (@ Rs 1.30 lakh materials cost per building with unskilled labour component of Rs 40,000 from NREGA) and assuming 2,00,000 centre buildings will be constructed per year	2,00,000	1,30,000	1	2,600
B Sub-total (Non-recurring)					2,700
C Total (ICDS)					24,587
Maternity benefits					
(Rs 1,000 per month for six months, for 65 lakh women [25 per cent of all pregnant women] to begin with – see text)					
		65,00,000	1,000	6	3,900
SNP for adolescent girls					
Covering five crore adolescent girls (at Rs 3 per day for 300 days)					
		50,00,000	3	300	4,500
D Grand total					32,987
Components from other programmes					
NRHM					
ASHA incentives (Rs 100 per family counselled (four neonatal visits) assuming 1 crore families will get counselling per year)					
		1,00,00,000	100	1	100
NREGA					
Labour component of AW building construction (assuming 2 lakh buildings will be constructed per year)					
		2,00,000	40,000	1	800

## 5 Summary of Key Recommendations

In this paper we have tried to present a broad framework of action for "children under six" in the Eleventh Plan. Before concluding it may be useful to summarise some of the key elements of this framework.

### 5.1 General Principles

The general principles are the following:

**Rights Approach:** This framework recognises that childcare, health-care, nutrition and development are basic rights of all Indian children.

**Age-specific Interventions:** Attention has to be paid to the varying requirements of different age groups (specifically, zero to six months, six months to three years, and three to six years), and to the need for corresponding interventions.

**Three Core Interventions:** These interventions involve the integration of three related systems, focusing respectively on: (i) food and nutrition; (ii) health services; and (iii) childcare.

**Role of ICDS:** Many of these interventions can be taken care of through the ICDS, provided its initial vision is revived.

**Complementary Strategies:** However, other institutional arrangements are also required, including (i) maternity entitlements; (ii) crèches and childcare arrangements; and (iii) institutionalised support for "infant and young child feeding" (especially breastfeeding).

**Convergence:** Effective strategies for children under six also require

active “convergence” between core programmes, especially ICDS, the NRHM and Sarva Shiksha Abhiyan.

**Decentralisation:** A decentralised approach is required, fostering participatory planning, community ownership, responsiveness to local circumstances, and the involvement of panchayati raj institutions.

**Community Action:** Various forms of community action need to be promoted. These include monitoring and supporting the local anganwadi, selection and evaluation of anganwadi workers, participatory planning, use of untied grants, etc. This process should be adequately planned, budgeted for and institutionalised. The ASHA needs to be empowered to play the critical facilitation role between the communities, panchayati raj institutions and the programme.

**Capacity-Building:** Major investments in capacity-building and training are required at all levels, all the more so as ECCD is poorly understood. Programmes of such scale and complexity as ICDS cannot succeed without extensive investments in improving management skills and practices.

**Human Resources:** Anganwadi workers should be adequately remunerated and they should be recognised as regular skilled workers. A human resource policy needs to be put in place for anganwadi workers.

**Administrative Reforms:** Capacity-building and decentralisation are essential but not sufficient conditions of improved governance. There needs to be a central mechanism that sets standards, maintains quality, safeguards equity concerns, redresses uneven development and allocates (and accounts for) resources in a transparent and equitable manner. This would require improved institutional frameworks, improved workforce management policies and professionalisation of management. Accountability at senior levels of administration and governance needs to be measured through appropriate mechanisms, subjected to public scrutiny.

**Overseeing Mechanism:** A high-level overseeing mechanism (for example, empowered steering committee along the lines of the NRHM) should be created to ensure convergence and accountability in the range of interventions concerned with child nutrition.

## 5.2 ICDS: Key Recommendations

The following are the key recommendations regarding the ICDS:

**Universalisation with Quality:** “Universalisation with quality” should be the overarching goal for ICDS in the Eleventh Plan. This would include raising the number of anganwadis to a minimum of 14 lakhs (with priority to disadvantaged groups), extending all ICDS services to all children under six and all eligible women, and improving the quality of services.

**Focus on Children under Three:** ICDS should give much greater priority to children under the age of three years. This would

include providing adequate incentives to ASHAs for the relevant services (including home-based neonatal care, breastfeeding and nutrition support), provision of nutritious THRS, better training on issues related to children under three, and the adoption of the “two-worker” model.

**Two-Worker Model:** Adequate care of children under three combined with effective pre-school education for children aged three to six years cannot be achieved without the involvement of two anganwadi workers (along with the anganwadi helper).

**Anganwadi-Cum-Crèches:** Crèches ensure that adequate care and development opportunities are available to children whose mothers go for work outside the home (especially if there are no adult carers at home). Crèches are required for children, in both the zero to three and the three to six age groups, for the entire day. To begin with, we recommend that 10 per cent of all anganwadis be converted to anganwadi-cum-crèches. This would mean that these centres are open full time, both the workers are present all day and are given additional training on running a crèche.

**Pre-School Education:** For children aged three to six years, pre-school education should be the primary focus of ICDS activities. Aside from adoption of the two-worker model, this requires appropriate training, infrastructure, equipment, supervision and support.

**Nutrition Programmes:** For children in the age group of three to six years, the SNP should be based on hot, cooked, nutritious meals, along the same lines (and with the same financial norms) as the “mid-day meal” scheme in primary schools (with a minimum financial norm of Rs 3 per child per day in addition to grains). For younger children, it should be based on carefully-designed THRS, combined with nutrition counselling.

## 5.3 Other Recommendations

The other recommendations are:

**Maternity Entitlements:** A national scheme for maternity entitlements in the informal sector, on the lines of the Dr Muthulakshmi Reddy Maternity Benefit Scheme in Tamil Nadu (including cash support of Rs 1,000 per month for six months for care during pregnancy and after delivery), should be introduced. A national task force should be created to further investigate the modalities of universalising maternity entitlements to all working women. All existing laws – MBA, ESI Act, all labour laws, proposed unorganised workers social security act, etc, should be brought in line with recommended principles.

**Crèches:** Apart from the creation of anganwadi-cum-crèches on a pilot basis (in 10 per cent of all anganwadis), there should also be a major expansion and improvement of crèche facilities under the Rajiv Gandhi National Crèche Scheme. The provision for a crèche at all NREGA worksites, as provided for under the act must be implemented so that women can avail of employment

opportunities as well as have a safe place to leave infants where their basic needs are addressed.

**Infant and Young Child Feeding:** Infant and young child feeding counselling and support should be recognised as one of the core “services” both in ICDS and NRHM, with a clear budget head. This should include skilled counselling and support (incentive based) for initiating breastfeeding within the first hour of birth, continued counselling and support in the form of home visits for maintaining exclusive breastfeeding for six months, and counselling and support for continuing breastfeeding for two years or more, along with adequate and appropriate complementary feeding.

**Financial Commitments:** Fair implementation of the above recommendations would require a recurrent budget of around

Rs 30,000 crore at 2006-07 prices, to be reached in a phased manner within the Eleventh Plan. By the end of the Eleventh Plan, this is likely to represent just over one half of 1 per cent of India's gross domestic product (assuming a growth rate of 8 per cent per year). This is quite reasonable, considering that children under six account for 15 per cent of the population, and represent the future of the country.

Children under six have been grossly neglected for a long time in Indian planning, and the country is paying a heavy price for this today. The Eleventh Plan presents an opportunity to correct this bias and give children their due. However, this cannot be done through marginal expansion or superficial “reform” of existing child development programmes. It requires bold initiative, new strategies and – not least – a massive increase in financial allocations for children under six.

## NOTES

- 1 The share of child development (which includes ICDS and the crèche scheme) and child health in the total union budget is 1.3 per cent.
- 2 Since we had been specifically requested to analyse the experience of countries like Thailand during the developmental phase when they were most akin to India, a companion paper on Thailand's experience has also been prepared [Garg and Nandi 2007] and is summarised in a table in this paper.
- 3 The full name of this act is the Infant Milk Substitutes, Feeding Bottles and Infant Foods (Regulation of Production, Supply and Distribution) Act, 1992, as amended in 2003 (IMS act).
- 4 The Supreme Court directive of Rs 2 per day per child for supplementary nutrition covers all children, including infants zero to six months old. However, these infants do not need any supplementary nutrition, they only need breastmilk. The money meant for this group of children (Rs 2 per child born for 180 days) can be used for protecting, promoting and supporting breastfeeding through a separate budget head created for this purpose.
- 5 Detailed recommendations consistent with what follows are presented in the FOCUS Report (2006) and Gupta et al (2007).
- 6 For further discussion see the collection of articles on ICDS published in *Economic & Political Weekly* on August 26, 2006.
- 7 Specific directions on this are included in the Supreme Court's judgment of December 13, 2006 which also establishes a right to “anganwadi on demand”: “...rural communities and slum dwellers should be entitled to an ‘anganwadi on demand’ (not later than three months) from the date of demand in cases where a settlement has at least 40 children under six but no anganwadi”.

See Sinha (2007) on convergence with NRHM on malnutrition, need for a second anganwadi worker to reach out to the households and role of the anganwadi worker and ASHA in behaviour change communication.

- 9 In a recent unpublished meta-analysis by H P S Sachdeva (presented at the National Institute of Nutrition, April 2006), the impact of iron fortified foods on anaemic populations was studied. Only an increase of 0.4 g in existing haemoglobin levels was found.
- 10 In fact, the Prevention of Food Adulteration Act currently does not allow fortification of foods with anything else besides iron and iodine.
- 11 Though the concern is sometimes raised that the SNP may displace food provided by the family, there is evidence that this rarely happens [Jacoby 2002]. If any substitution does happen, it is typically less than one-to-one, so that there is some “net” quantitative supplementation. Qualitative supplementation through the programme can only add to the net gains to the child. There is thus the real potential of augmenting a largely cereal-based home meal with good quality more expensive foods as part of an SNP.
- 12 The fact that the provision of cooked food has considerable effects on child attendance is well-documented

in the context of mid-day meals in primary schools [see e.g. Drèze and Goyal 2003 and Khera 2006]. If anything, the attraction of nutritious food is likely to be even higher for younger children. The FOCUS survey found that the provision of cooked food at the local Anganwadi raised the probability of regular attendance of an average child by nearly 50 percentage points (FOCUS Report 2006: 61).

- 13 Government of India (2007). More recent versions of this document, however, do not include this approach.
- 14 There is much evidence of poor reporting of weight-for-age data under ICDS as things stand. Anganwadi workers are often under pressure to “hide” undernutrition (especially severe undernutrition), and the official figures often underestimate the number of malnourished children [see for example Garg 2006].
- 15 This would be the case when the new norms of one anganwadi centre per 800 population comes into force assuming about 80 per cent of children use ICDS services.
- 16 As mentioned in previous sections many of these children also require that crèche/day care services are provided at the anganwadi centre.
- 17 For ASHA's roles and responsibilities, see the web site of the ministry of health and family welfare ([www.mohfw.nic.in](http://www.mohfw.nic.in)).
- 18 This section draws on an earlier discussion note for the Planning Commission prepared by Patnaik, Deshpande, Zaidi and others (2007).
- 19 On this issue, see for example Garg (2006) and Sinha (2006).
- 20 In this connection, it is also important to remember that the Supreme Court judgment of December 13, 2006 on ICDS directs the government to expand the number of anganwadi centres to 14 lakhs by December 2008.

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Government of Maharashtra

# **Child Deaths Evaluation Committee**

Second and the final report  
(24<sup>th</sup> March 2005)

**Recommended Measures  
On Child Mortality and Malnutrition**

(Executive Summary)

# Executive Summary

## A) The Child Mortality Evaluation Committee

As announced in the legislative house, the government of Maharashtra established the 'Child Deaths Evaluation Committee' on the 12<sup>th</sup> of December 2003 (GR No BMS / 2003 / P K 281/2003, K K 3, dated 12/12/2003).

Dr. Abhay Bang is the chairman of the committee which started off with 13 members and with new members joining in January 2005, its final strength was 17 members.

**The Scope of Work** of the committee includes

1. Assessing infant and child deaths in the state.
2. Reviewing malnutrition amongst children in the tribal areas.
3. Reviewing all schemes that have been designed for reducing child mortality, infant mortality, maternal mortality, malnutrition etc and recommending measures to remove the lacunae within these.

## B) Focus of the two reports of the Committee

**The first report**, submitted on the 24<sup>th</sup> of August 2004, focused on the magnitude and causes of child mortality and malnutrition in Maharashtra. It also looked into the implementation of various orders earlier issued by the government.

**The second and final report**, (submitted on the 24<sup>th</sup> of March 2005) concentrates on recommending measures to the government to reduce malnutrition and child mortality.

## C) The Challenge of Child Mortality and Malnutrition

- Government of India's estimates (Sample Registration System, SRS) place the infant mortality rate (IMR) in Maharashtra at 45, (2002) with very little improvement in the last seven years.

- According to these estimates, nearly 120,000 children under the age of 5 years die each year in Maharashtra. The voluntary organizations put this estimate at 175,000.
- 5.4% of all children in Maharashtra, i.e. nearly 800,000 are severely (grade 3+4) malnourished (NNMB). An additional 21%, nearly 3.2 million children are moderately (Grade 2) malnourished.

## **D) Goal**

Maharashtra has adopted a population policy with a goal of reducing the Infant Mortality Rate, from the present rate of 45, to 15 by the year 2010.

Most child deaths occur due to a combination of malnutrition and diseases caused by infections. Neonatal deaths, pneumonia and diarrhoea cause 80% of all child deaths in the state. These three causes can be addressed by simple measures. It is therefore reasonable to expect that the goal of reducing child deaths can be achieved.

## **E) Boundaries and the Focus**

The committee is aware that social and economic conditions are important determinants of child deaths. However, since the committee has been formed to primarily look into health and nutrition related issues, it has focused on recommending immediate measures in these two areas so that child deaths and malnutrition can be rapidly reduced in the next five years.

## **F) Measures and Recommendations**

The **main directions** of these recommendations are

- A) The government must accord a high priority to the problems of child deaths and malnutrition and allocate necessary funds to solve the problems along with introducing an accountability system at the all levels of administration. The committee has suggested the deprived groups and high priority geographic areas.
- B) Each village, habitat, hamlet or slum should have an Anganwadi for nutrition program and a local community health worker. These two

workers should reach out to every household with the recommended health and nutrition measures.

- C) An essential package of technical interventions to reduce child mortality and malnutrition has been recommended.
- D) The need to regularly monitor and evaluate government activities has been emphasized and measures have been suggested for people's participation in this war against child mortality and malnutrition.

## **1. State Policy**

- i. Reducing child deaths and malnutrition must be a matter of immediate priority for government. A time-bound campaign lead by the highest leadership in government should be launched.
- ii. Children constitute 14% of the population of the state. Which means nearly 15 million children are at risk. Government needs to allocate on priority basis separate funds in the budget for alleviation of malnutrition and child deaths.
- iii. The government should identify deprived districts in the state based on the infant mortality rate and proportion of malnutrition. These districts along with the tribal blocks and vulnerable communities should get proportionally additional financial and human resource support for alleviation of child deaths and malnutrition.

The committee recommends that the following areas / community groups in Maharashtra be treated as the deprived and vulnerable groups. These areas / groups should receive the top priority for any intervention that is planned.

- (1) All tribal talukas in the state.
- (2) All rural areas in the districts in which the infant mortality rate is higher than the state average.
- (3) Remote talukas and villages in the remaining districts.
- (4) Urban slums and pavement dwellers.
- (5) Population groups who temporarily migrate for the livelihood.

- iv. Designed and planned on the lines of the very successful 'Sant Gadgebaba Gramswachchata Abhiyaan', Government should launch a state wide competition with prizes for 'Child Death Free Village' and 'Malnutrition Free Village'. The competition should be widely publicized with attendant public education on the issue. Gram panchayats and women's savings groups should be given the opportunity and finances for the activities to reduce malnutrition and child deaths.
- v. The various government programmes to reduce maternal and child mortality and malnutrition should be implemented primarily through the state government's 'Rajmata Jijau Mother and Child Health and Nutrition Mission' and the Health and Family Welfare department. The objectives of the proposed mission should include reducing child mortality on priority basis.

## **2. Administrative Measures**

- i. Preventing child deaths must be the highest priority of the health department. This must reflect prominently in the performance review and appraisals of health department personnel across all levels.
- ii. Incidence of child mortality must be an integral part of the reviews periodically conducted by the Chief Executive Officer of the Zilla Parishad and the Divisional Commissioner. It should also be part of their own performance appraisal.
- iii. A system of performance accountability on the issue of child deaths and malnutrition must be introduced across all levels of the health department and Integrated Child Development Scheme (ICDS).
- iv. For such monitoring and evaluation, 100% and accurate recording of births and deaths is necessary. This will mean that the Management Information System (MIS) of the health department will have to be immediately improved to record and report all child deaths. This can be done by implementing the recommendations made by this committee in the first report.



- v. It is recommended that a transparent policy and clear guidelines should govern appointments and transfers of health system personnel including doctors and nurses. These have been delineated in the report.
- vi. Government implements various schemes addressing maternal mortality, malnutrition and child deaths. It is necessary to develop a mechanism by which the implementation of these schemes will be evaluated and the impact assessed against the financial cost incurred. This evaluation should be done every two years by a capable and reputed agency outside the government system. To begin with, the following activities need such immediate evaluation
  - (1) Iron-folic acid tablets that are distributed to pregnant women.
  - (2) The monetary incentive scheme for safe delivery.
  - (3) Supplementary nutrition provided to children in the 3-6 year age group through the anganwadi.
  - (4) The Management Information System (MIS) of the health department.
  - (5) The current and future interventions to reduce child mortality.
- vii. Monitoring mechanisms of the health system should be decentralized. People's participation should be elicited and obtained in the monitoring committees that can be set up from the village to the state level. These committees can be given the responsibility of monitoring implementation of health schemes.

### **3. Improving the ICDS to address malnutrition**

- i. The coverage of the ICDS must be increased to cover all children in the state. (The Union government has already doubled the budgetary provision for the same in the 2005 budget)
- ii. The focus of the ICDS must be altered from the current near exclusive focus on feeding children of 3-6 years age to :
  - Neonates, children in the 0-2 year group, pregnant and lactating mothers and adolescent girls must form the target group for the ICDS.

- Health education, neonatal care, diagnosis and treatment of sick children and supplementary nutrition education must be the important interventions.
  - Instead of the anganwadi centre merely becoming a distribution point for food, it should take these services to each doorstep.
- iii. The figures and data on malnutrition reported by the ICDS does not seem to be reliable. These data must be verified and the methods of measurement corrected and validated regularly with the help of the National Nutrition Monitoring Bureau (NNMB) of the central government.
  - iv. Rather than initiating treatment after a child is severely malnourished, the earlier manifestation of growth faltering should be detected and immediate remedial action started.
  - v. Along with supplementary nutrition, health education and treatment of select diseases of children should be available at the anganwadi center.
  - vi. There should be special emphasis on improving health of adolescent girls and preventing child marriages.

#### **4. Addressing malnutrition in tribal areas**

- i. The gramsabhas in tribal villages must be involved in the planning and implementation of development schemes.
- ii. To ensure integrated development and co-ordination amongst various departments, senior officers from the administrative services must be appointed as the project officer.
- iii. Effective implementation of the employment guarantee scheme and better access of the tribals to forests will result in poverty alleviation.
- iv. Extensive public education campaigns should be initiated to educate the tribals on health issues and eradicate superstitions.
- v. One health worker should be trained in every village / hamlet. She will then be the conduit for taking health services to everyone in the village.

- vi. Providing supplementary nutrition twice a day to the children should be tried on experimental basis.
- vii. Effective and rigorous implementation of various other measures suggested in this report.

## **5. Health interventions for reducing child deaths**

Simple public health interventions can prevent two third of the current child deaths. These interventions should therefore be incorporated into the state health programmes.

- i. Effective health education to improve knowledge and practices of both parents.
- ii. The highly effective and proven 'Home Based Neonatal Care' method to be taken to scale.
- iii. Treating children's illnesses such as pneumonia, diarrhoea, malaria, measles and worms in the village itself by a trained health worker.
- iv. Hospitalization wherever needed.

## **6. Interventions to reduce maternal mortality**

- i. Normal deliveries should take place at the PHC and high risk deliveries at the rural / district hospitals. At both these places the necessary emergency services must be made available round the clock.
- ii. No economic incentives should be offered to women for delivering in the government health facilities. Instead, the quality of care and the behaviour of the staff should become better and humane.
- iii. In order to ensure safety in home deliveries, the traditional birth attendants should be trained and provided with kits.
- iv. To enable quick transfer of a case of difficult delivery to the hospital, a 'vehicle and delivery fund' should be made available at the village level. This fund should be entrusted to a 'mothers support group' in the village.
- v. Private obstetrics services should be monitored and regulated in order to ensure good quality.

## **7. Interventions to make health services effective**

The health services should be responsible to make available various measures suggested to reduce child mortality in the state. For that purpose :

- i. A community health worker (CHW) should be present in every village / hamlet / slum. She should be selected properly, trained well, motivated, provided with adequate supplies, supervised and monitored well. Help can be sought for the same from non governmental organizations in the state.
- ii. This CHW should not be made a government servant. Her control should be in hands of a village health committee.
- iii. Such a CHW is a part of the 'National Rural Health Mission' that has been announced by the Central Government. Efforts should be made to include Maharashtra in this mission.
- iv. The health interventions suggested above (under 6) to address child deaths should be implemented in two phases (details in the report) in a time bound manner in the entire state.

## **G) Action on the recommendations and the follow-up**

- i. Regular monitoring of the actions on the recommendations made by the committee in the first and second report is essential. A high powered group should be established for this purpose.
- ii. Information on the implementation of the recommendations and the impact on child deaths and malnutrition should be published each year.

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We thank France Gagnon, Julian Higgins, John Ioannidis, and Muin Khoury for helpful comments. We are co-authors of the STREGA statement and are involved in other reporting guideline initiatives, including CONSORT, STROBE, and the EQUATOR Network. Maja Zecevic, North American Senior Editor at *The Lancet*, was part of the STREGA group.

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## New WHO growth standards: roll-out needs more resources

See Comment page 94

On May 22, WHO and UNICEF issued a statement endorsing new case definitions of severe acute malnutrition based on the 2006 WHO growth standards.<sup>1</sup> Before the global food crisis, a 2006 review estimated that 13 million children had such malnutrition.<sup>2</sup> By January, 2009, aid agencies reported about 19 million affected.<sup>3</sup> Calls were made for the disease-burden demand to be met with increased supply of treatment services.<sup>3</sup> Increases in the prevalence of severe acute malnutrition associated with adoption of the new case definitions have been noted,<sup>4</sup> but balances in treatment-service supply and demand are also crucial and need to be urgently addressed.

Numbers of children diagnosed as malnourished vary greatly depending on which case definition is used. Each has advantages and disadvantages, and is useful for particular purposes. Malnutrition for admission to feeding programmes was originally defined by

low weight-for-age.<sup>5</sup> This definition was changed to weight-for-height<sup>6</sup> to better identify children who would benefit most from treatment. Weight-for-height expressed as Z scores is useful for surveys, yet many treatment programmes admit children with conceptually simpler %-of-median measures. (Minus 1 Z score=1 standard deviation below a normally distributed population median. Nutritional oedema is also part of the case definition for severe acute malnutrition.) More recently, focus has been on mid-upper-arm circumference.<sup>7</sup>

WHO growth standards are an international gold standard describing how children should grow when measured by weight and height.<sup>8</sup> Previously, severe acute malnutrition was defined as weight-for-height <70% or <-3 Z scores below the National Centre for Health Statistics (NCHS) median. The new case definition is weight-for-height <-3 Z scores below the WHO growth standards median. The diagnostic threshold of mid-upper-arm circumference has also been changed from 110 mm to 115 mm. Increases in the diagnoses of severe acute malnutrition with the new WHO weight-for-height criteria have been noted.<sup>9-11</sup> However, until now there has been no documentation of which case definition countries are using, and therefore the size of the expected change in prevalence estimates for severe acute malnutrition.

In the table, we present treatment admission criteria in 22 countries where severe acute malnutrition is

	Number of cases
<70% of median weight-for-height (NCHS)	14
<70% of median weight-for-height (NCHS), or <-3 weight-for-height Z scores (NCHS)	7
<-3 weight-for-height Z scores (WHO)	1

Asia, 4; Eastern Africa, 8; Middle Africa, 1; Northern Africa, 2; Western Africa, 6; Southern Africa, 1. Guidelines include versions marked as final or draft. All protocols classify oedematous malnutrition as severe acute malnutrition, and all accept mid-upper-arm circumference <110 mm as defining such malnutrition.

Table: Case definitions of severe acute malnutrition in 22 national guidelines

prevalent. Most countries currently use %-of-median. Changing from <70% median (NCHS) to <-3 Z scores (WHO) results in particularly dramatic increases in the prevalence of severe acute malnutrition (times eight in one study<sup>10</sup>). This finding contrasts with 1.5–3-fold increases when switching from <-3 Z scores (NCHS) to <-3 Z scores (WHO).<sup>9,11</sup> The widespread use of %-of-median has not previously been appreciated.<sup>12</sup>

If treatment capacity were unlimited, increased diagnosis would represent major opportunities: more children treated, at an earlier stage of severe acute malnutrition, with better outcomes likely. However, supply/demand considerations reveal important challenges. First, treatment supply is insufficient for even current demand. Action Contre la Faim and Médecins Sans Frontières estimate only 9% of children with severe acute malnutrition currently receive treatment.<sup>3</sup> Demand increases exacerbate this mismatch.

Second, substantial financial investments are needed to create and sustain programme expansion. Availability of specially formulated ready-to-use therapeutic food—increasingly central to treatment for severe acute malnutrition—is often the largest cost component for care in feeding programmes. Resources are also needed to maintain logistics and supply chains for such food, and to research and develop local stand-by alternatives for periods when there are failures in the supply chain. Even more is needed to support the health systems and staff directly delivering treatment.

Third, demand can change overnight with new case definitions for severe acute malnutrition. By contrast, increasing treatment supply takes time, even if financial resources were unlimited. Community-based management of acute malnutrition is simple, effective, and the current internationally favoured treatment strategy.<sup>13,14</sup> Yet even such community-based management takes time to build up to full capacity in often fragile, local health systems.

Short term, if admissions for severe acute malnutrition increase too rapidly due to the combined effects of food shortages and new case definitions, treatment capacity risks being overwhelmed. In this situation, limited resources might not necessarily go to the most vulnerable children. It is important to anticipate and address such possible adverse scenarios.

Strategic roll-out planning is essential for both community-based management of acute malnutrition

and the WHO growth standards. The new growth standards represent great opportunities for national and international nutrition programmes: indicators can be harmonised and their purpose more clearly articulated (eg, identification of children at highest risk of mortality who benefit most from treatment). Ultimately, more children can be treated at an earlier stage of the disease and greater public health impact achieved. However, for this to happen, policy makers must be fully aware of the varied effects, and possible side-effects of change. They must ensure adequate resources to increase supply of treatment for severe acute malnutrition. Strategies and practicalities for feeding programmes and roll-out of the WHO growth standards must be harmonised. Immediate efforts should prioritise roll-out of effective evidence-based community programmes.<sup>14</sup> Horizontal health-systems approaches, with extensive local buy-in and integration with existing services, take extra time initially but often pay off longer term. Once treatment supply increases, coping with extra demand will be easier. Even when focusing on the short-term needs from the food crisis, long-term vision is vital.

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Our views and do not necessarily reflect the positions of our organisations. AW works for and MK's PhD research was funded by Valid International, which provides technical consultancies for CMAM nutrition programme roll-out and from which arose Valid Nutrition, a registered charity which manufactures RUTF.

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A photograph fixes a moment of time in a way that few other media can. Once that moment is captured, it can add emphasis and insight to reality—we can be moved, manipulated, inspired, outraged, delighted, surprised, or even educated by a photograph. In the last issue of this year *The Lancet* will publish a selection of photographs taken by our readers during 2009 that capture the reality of international health in any of its manifold contexts—from global health to clinical medicine, from the individual person to populations, from Bangladesh to Barcelona.

We welcome submissions of photographs that have not been published previously from anyone with experience of, or training in, a health-related field. *Lancet* editors will pick a selection of images to publish that reflect a range of subjects in global medicine from different geographical locations; submissions from professional photographers will not be selected.

For photographs of people or patients, the person's written consent to publication, or that of the next of kin, must be obtained. We require you to send a statement you have signed confirming that you have obtained consent from the person; please use *The Lancet's* patient's consent form. To accompany the photograph we would like 300 words that put the image in context. Colour or black and white photographs and text should be submitted through the journal's electronic submission system, specifying *Lancet* Photograph as the article type. Photographs will need to be high-resolution images. If using a digital camera, set your camera to the highest quality setting and supply JPEG files. If using a film camera, supply an 8×11 inch glossy print, which can be posted to *The Lancet*. The deadline is Oct 5.

Joanna Palmer

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