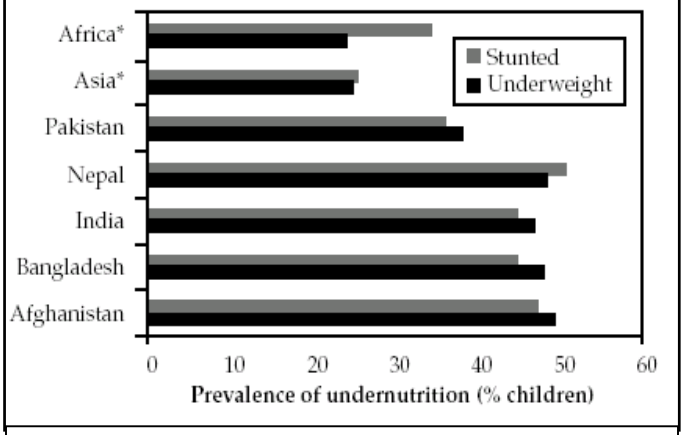
7.5 NUTRITIONAL STATUS IN INFANCY AND EARLY CHILDHOOD

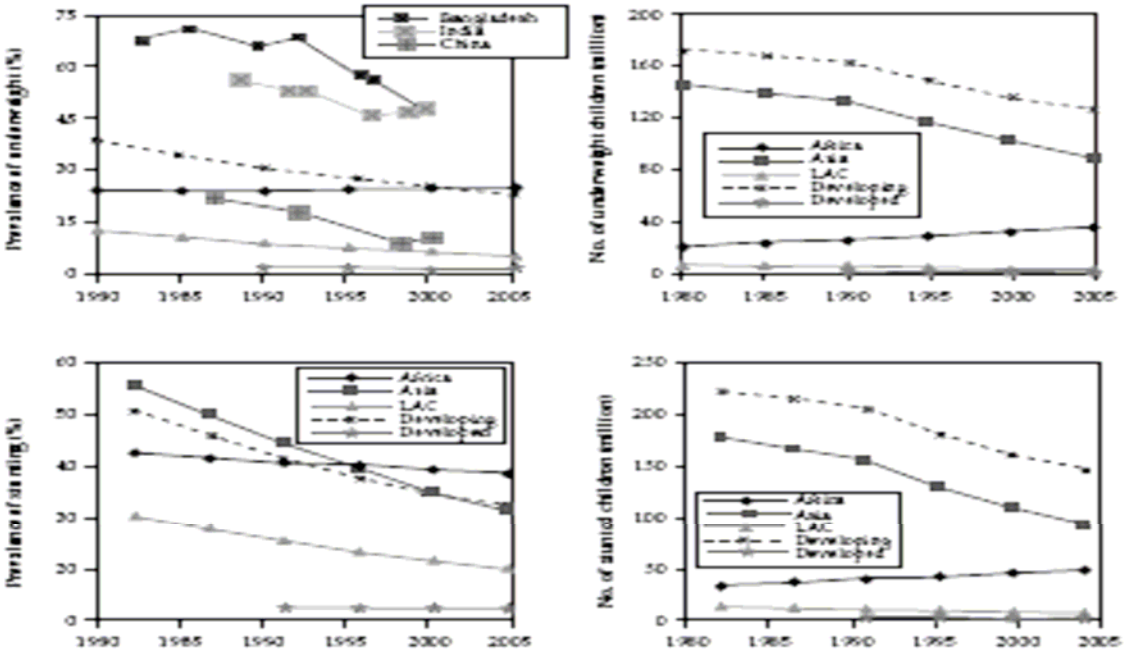
Preschool children are one of the most nutritionally vulnerable segments of the population. Nutrition during the first five years has an impact not only on growth and morbidity during childhood, but also acts as a determinant of nutritional status in adolescent and adult life. Global comparative data indicate that contrary to common perception, prevalence of underweight and stunting is highest in South Asian children (Figure 7.5.1,Annexure 7.5.1). Time trends in undernutrition in under five children in different regions/ countries is shown in Figure 7.5.2

Figure 7.5.1: Undernutrition prevalence in South Asian countries is much higher than in Africa



Source: Reference 7.5.12

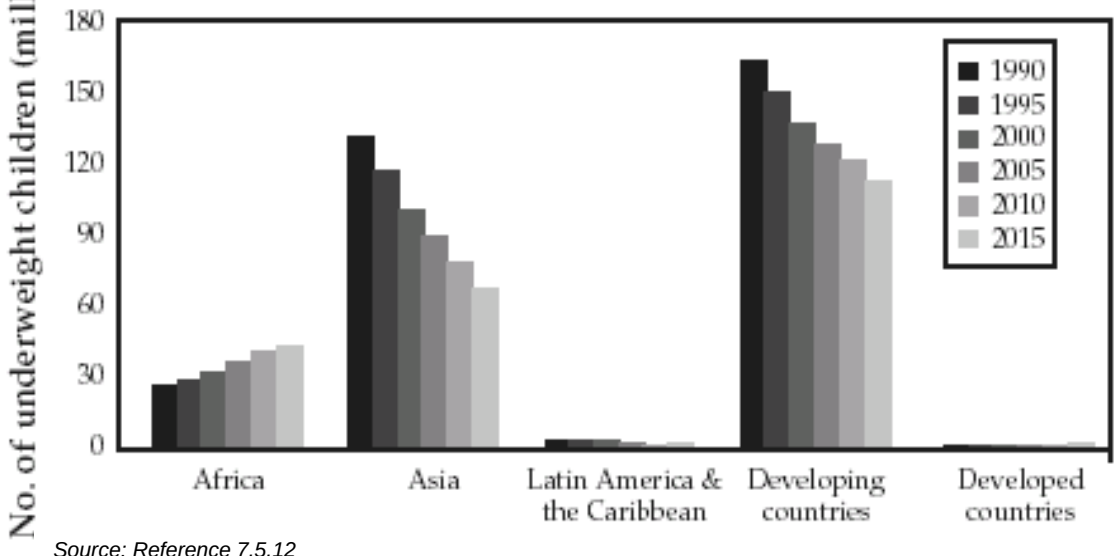
Figure 7.5.2 Prevalence of under nutrition in under five children



Source: Reference 7.5.12

India is home to the largest number of underweight and stunted children in the world. Projected trends in number of underweight under five children is given in Figure 7.5.3. In South Asia, especially India there will be a substantial reduction in undernutrition rates; but Asia and India will continue to have by far the largest

Figure 7.5.3: Current estimates of underweight and projected numbers of underweight children under age five, 1990–2015 (WHO)



Source: Reference 7.5.12

number of underweight children in the world in 2015. Time trends in poverty, undernutrition and mortality in developing countries is shown in Table 7.5.1. Over the last four decades there has been a progressive reduction in poverty, increase in energy intake and undernutrition and infant and under five mortality in the developing countries.,

Table 7.5.1: Time trends in poverty, undernutrition and mortality in developing countries.

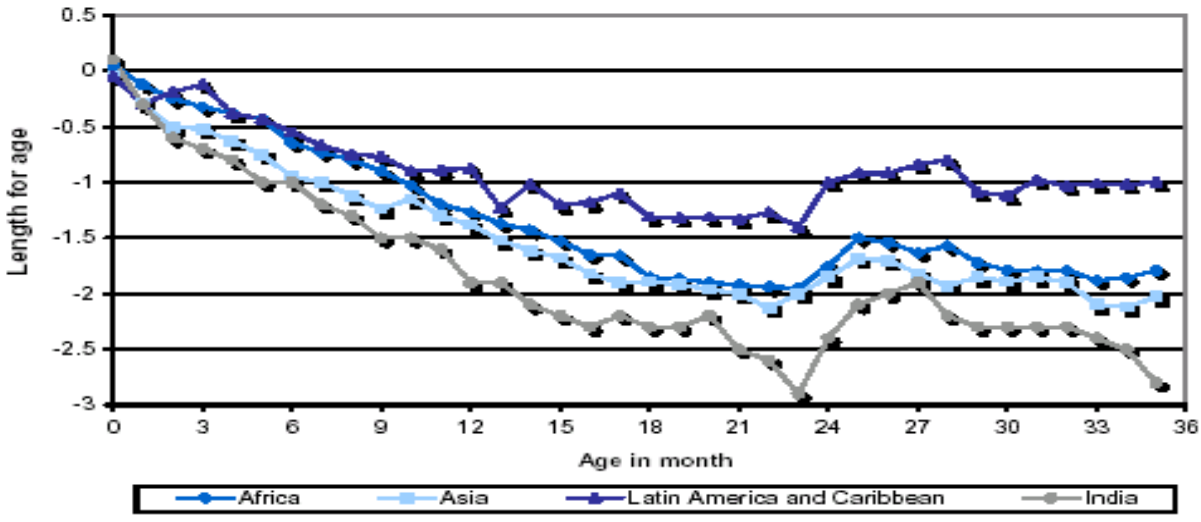
	1970	1975	1980	1981	1984	1985	1987	1990	1993	1995	1996	1999	2000	2001	2002	2003	2005	ARC
IMR (/1000)	108		88					71		67			62			60		-1.8
U5MR (/1000)	167		133					105		98			91			87		-1.99
Energy availability (Cal)	2110	2146	2308			2444		2520		2602			2654					0.83
Underweight (%)			37.6			33.9		30.1		27.3			244				22.7	-2.99
Stunting (%)			48.6			43.2		37.9		33.5			29.6				26.5	-2.03
Poverty headcount (%)				40.4	32.8		28.4	27.9	26.3		22.8	21.8		21.1				-2.45

Source: Reference 7.5.12

Note: ARC : Annual rate of change ; per capita energy availability is an average of three years

Global pattern of undernutrition in relation to age in preschool children is shown in Figure 7.5.4. Approximately 30% of children in India are born with low birth weight; and the rest of the damage happens during the first two years of life. By the age of two years most growth retardation has already taken place and the

Figure 7.5.4: Nutritional Status in relation to ages



Source: Reference 7.5.2

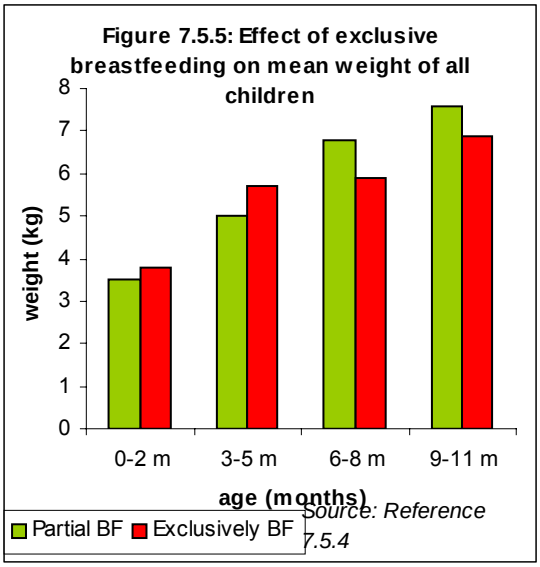
linear growth retardation appears to be irreversible.

Infant feeding and infant nutrition

Factors affecting infant nutrition

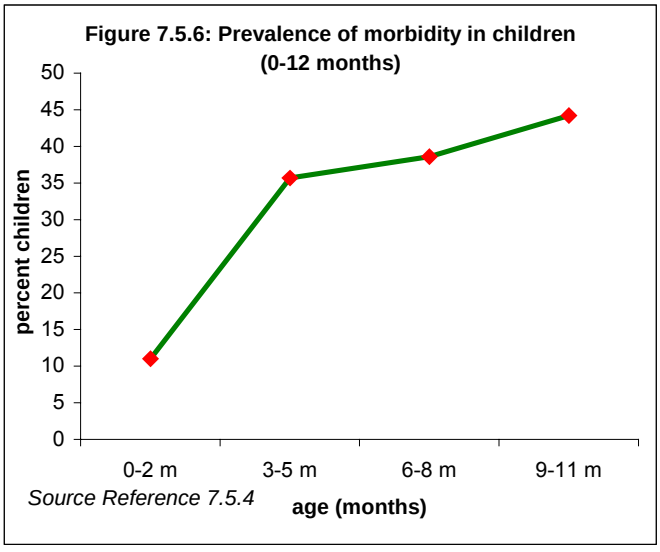
Growth during infancy and childhood depends on birth weight, adequacy of infant feeding and absence of infection. Available data from studies, over the last five decades clearly indicate that in India exclusively breast-fed infants thrive normally during the first six months of

Figure 7.5.5: Effect of exclusive breastfeeding on mean weight of all children



Source: Reference 7.5.4

Figure 7.5.6: Prevalence of morbidity in children (0-12 months)



Source Reference 7.5.4

life; however continued exclusive breast-feeding beyond six months is associated with poor growth (Figure 7.5.5) There is a progressive increase in morbidity due to infections with increasing age and introduction of milk and semisolid food to breast fed infants (Figure 7.5.6). Prevalence of undernutrition is higher in infants who had morbidity during the last fortnight (Figure 7.5.7).

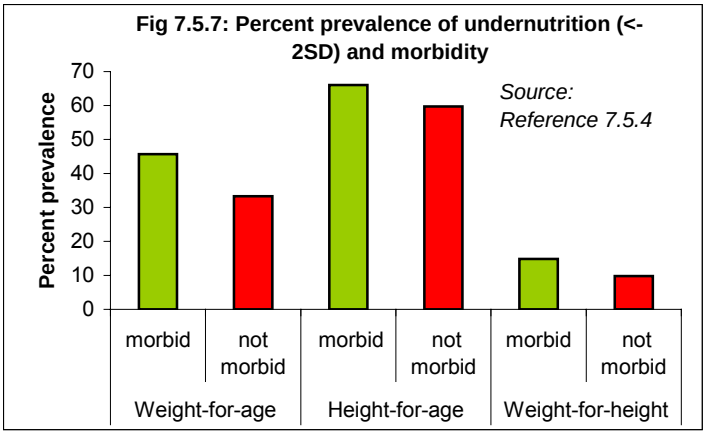


Fig 7.5.7: Percent prevalence of undernutrition (<-2SD) and morbidity

Time trends in infant feeding and infant nutrition

All major nutritional surveys in India have focused on dietary intake and nutritional status of preschool children. Data on infant and young child feeding practices and nutritional status of children under 6 years are available from NNMB, NFHS, DLHS. NFHS and DLHS provide data at national and state level; in addition DLHS provides district wise data which may help in decentralized district based planning, monitoring and evaluation. All these surveys have shown that in India, steps taken for the protection and promotion of breast-feeding have been effective and breast-feeding is almost universal; mean duration of lactation is over 2 years. However, the message that exclusive breast-feeding up to six months and gradual introduction of semisolids from six months are critical for the prevention of undernutrition in infancy has not been as effectively communicated. Exclusive breast-feeding among infants in the age group of 0-6 months continues to be low. NFHS-3 shows that inspite of the all IEC efforts on the need for timely introduction of complementary food, only about half the children in the age group

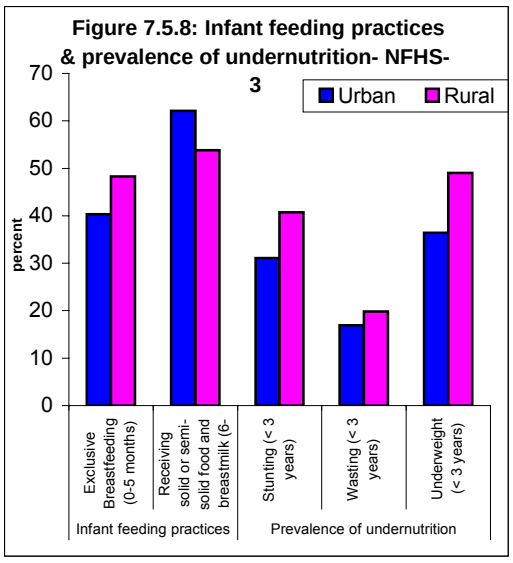


Figure 7.5.8: Infant feeding practices & prevalence of undernutrition- NFHS-3

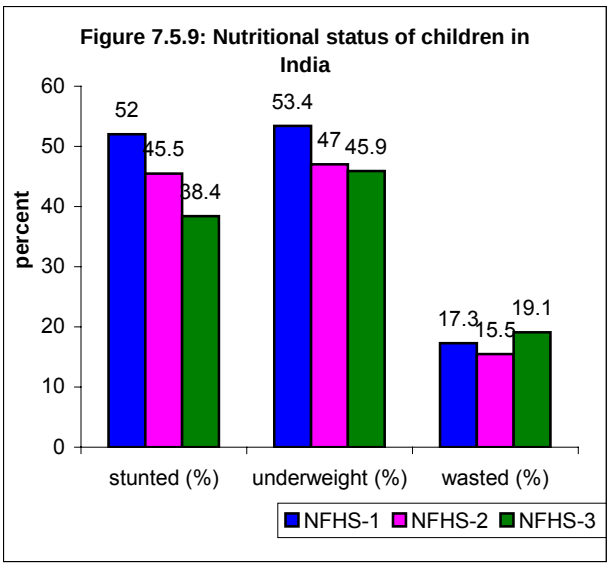
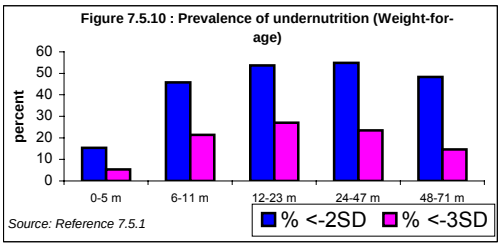
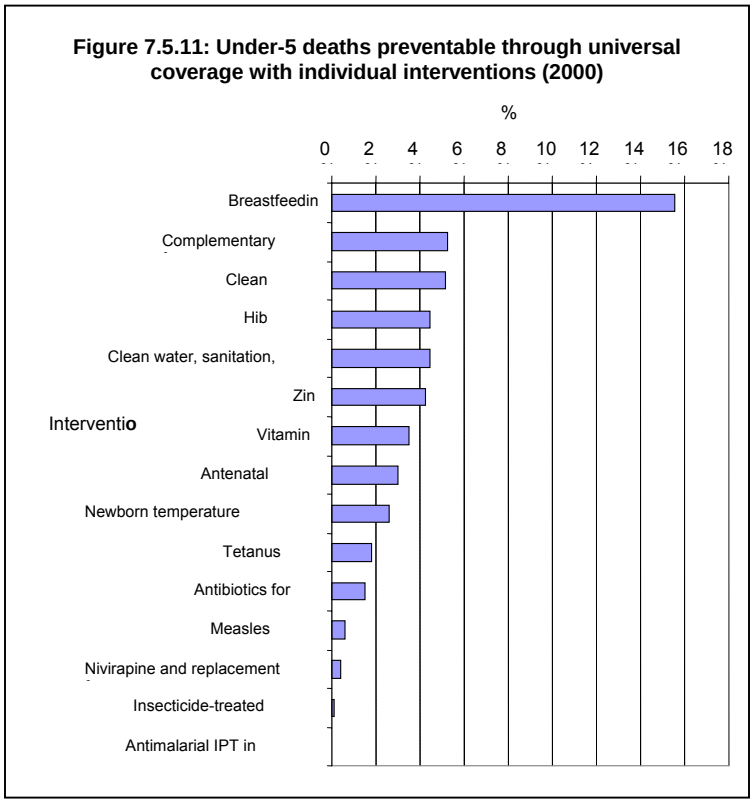


Figure 7.5.9: Nutritional status of children in India

of 6-9 months receive semisolid food. As a result undernutrition rates continue to be high in the 0-3 year age group (Figure 7.5.8). There has been some reduction in underweight rates between NFHS 1 and 2 but not much change between NFHS 2 and 3. There were small but not consistent differences in the stunting and wasting rates between the three surveys. Inappropriate infant and young child feeding and caring appears to be responsible for the relatively slow reduction in undernutrition rates between the three NFHS surveys (Figure 7.5.9). As a result of the faulty infant and young child feeding practices, there is a steep increase in the prevalence of undernutrition from 15.4 % at less than 6 months to 52.6 % in the 12- 23 months age group (Figure 7.5.10). Correction of these faulty infant feeding practices through nutrition education will prevent the steep increase in undernutrition in the critical 6-24 months age group.



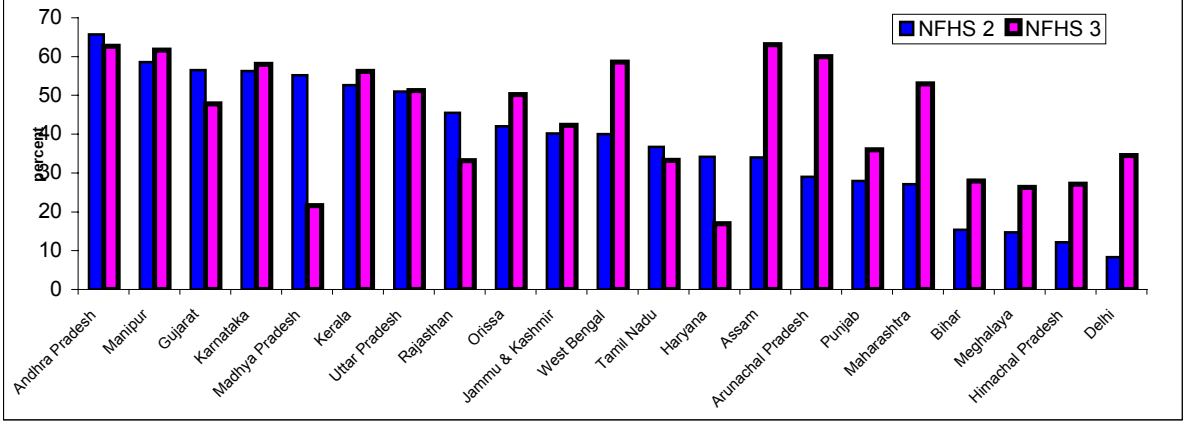
Too early introduction of milk substitutes and too late introduction of complementary food are associated with increased risk of infection. If infections are not detected and treated effectively in the primary health care settings, they will result in undernutrition; severe infection may lead to death. It is computed that exclusive breast-feeding and appropriate complementary feeding will lead to a 20% reduction in IMR (Figure 7.5.11). Improvement in IYCF through coordinated efforts of ICDS and NRHM can thus result in substantial improvement in nutrition and health status and survival during the critical first year of life.



Interstate differences in infant feeding

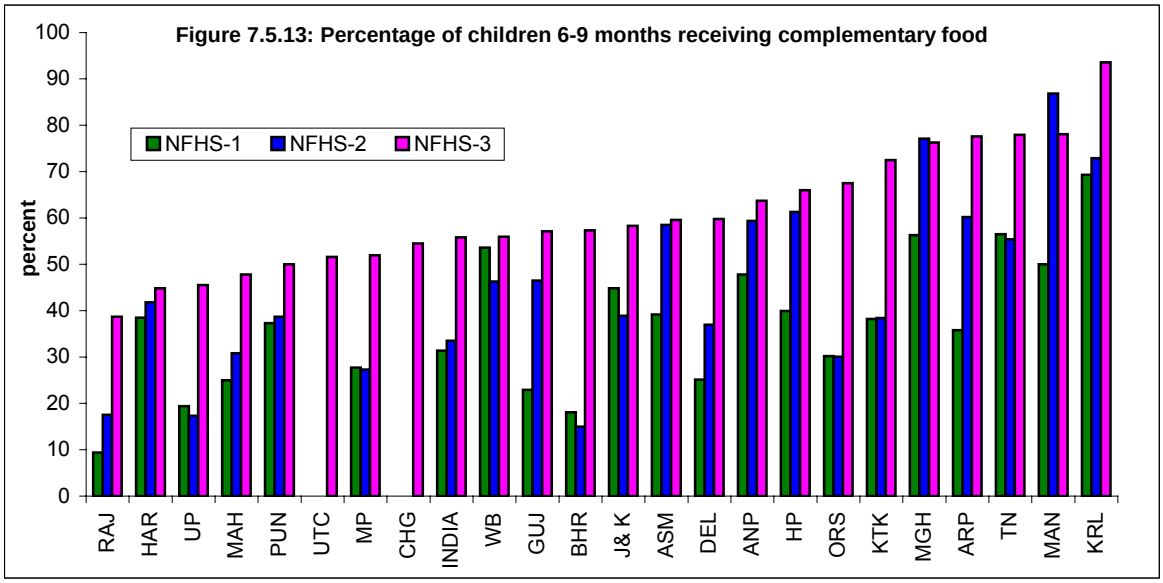
NFHS 1, 2 & 3 show that the substantial inter-state differences in exclusive breastfeeding and timely introduction of semi-solid foods still persist. Andhra Pradesh and Kerala fare well in terms of appropriate infant feeding practices. Too early introduction of supplements is a major problem in states like Delhi, Himachal Pradesh and Punjab and too late introduction of supplements is the problem in Bihar, Uttar Pradesh, Madhya Pradesh, Rajasthan, and Orissa Figure 7.5.12 & 7.5.13. Both these faulty feeding practices are associated with increased risk of undernutrition and infection. Comparison of data from NFHS-2

Figure 7.5.12: Infants 0-5 months exclusively breastfed



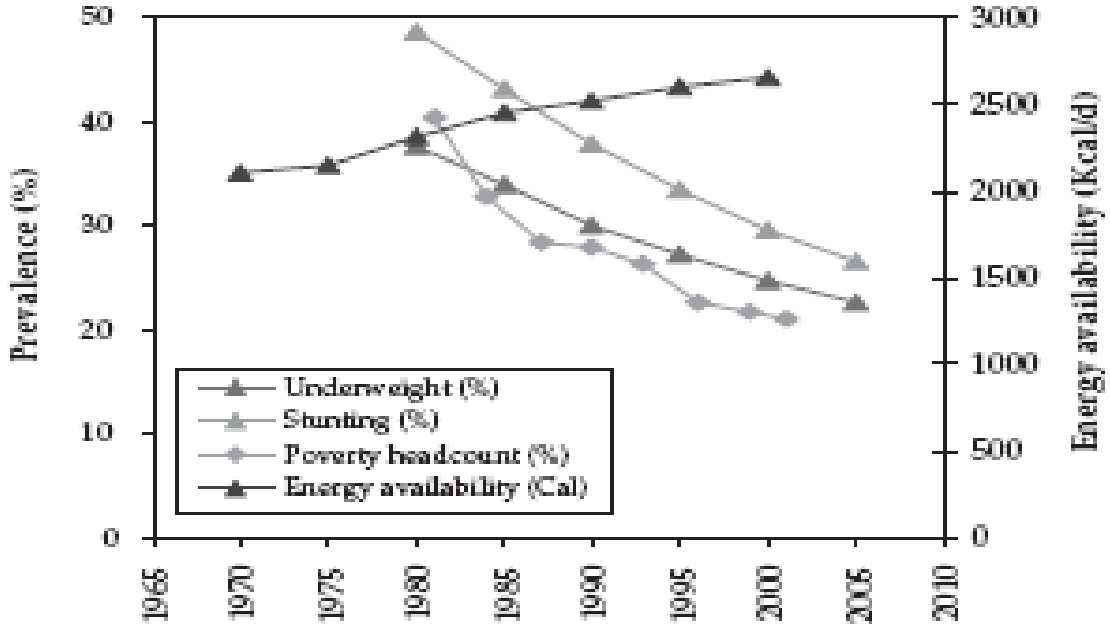
and NFHS-3 shows that exclusive breastfeeding has significantly decreased in states like Madhya Pradesh and Haryana (Figure 7.5.12). West Bengal, Assam, Maharashtra, Himachal Pradesh and Delhi, have shown improvement in exclusive breast-feeding rates. In states like Karnataka, Orissa, Madhya Pradesh, Rajasthan and Uttar Pradesh, the percent of infants (6-9 months) receiving solid/semi-solid food and breast milk has improved (Figure 7.5.13).

Figure 7.5.13: Percentage of children 6-9 months receiving complementary food



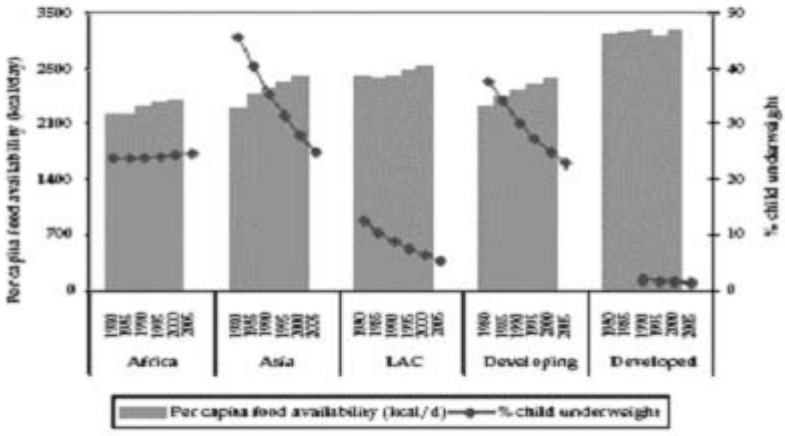
Dietary intake in preschool children

Figure 7.5.14 Time trends in poverty, energy availability& undernutrition rates in developing countries



Time trends in poverty, energy availability and under weight and stunting rates in developing countries is shown in Figure 7.5.14. There has been a relatively steady but slow decline in poverty, improvement in food availability and reduction in underweight and stunting over the last five decades. There are substantial differences in energy intake and undernutrition in preschool children in developing countries in different regions. Energy availability in developing countries is lower in developing countries. Energy availability and undernutrition rates have remained unchanged in Africa; Asia showed the steepest increase in energy availability and undernutrition rates (Figure 7.5.15).

Figure 7.5.15 Energy availability& undernutrition



Source: Reference 7.5.12

Dietary intake in Indian preschool children

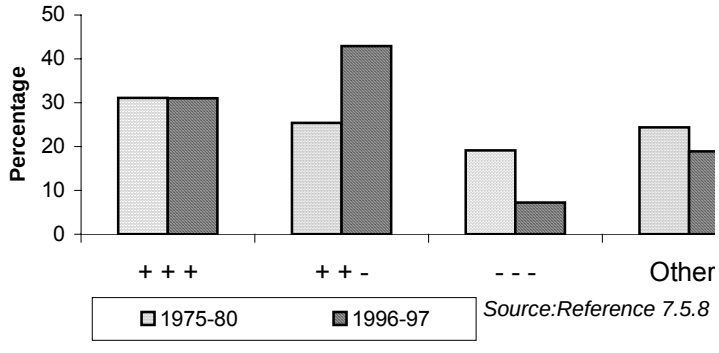
Table 7.5.2 Average nutrient intakes among pre-school children										
Age	**1-3 years**					**4-6 years**				
Year	75-79	88-90	96-97	00-01	05-06	75-79	88-90	96-97	00-01	05-06
Protein (g)	22.8	23.7	20.9	19.5	20.2	30.2	33.9	31.2	28.2	28.7
Energy (Kcal)	834	908	807	729	719	1118	1260	1213	1066	1020
Vitamin A (μg)	136	117	133	106	126	159	153	205	127	166
Thiamin (mg)	0.5	0.52	0.4	0.4	0.5	0.76	0.83	0.7	0.7	0.7
Riboflavin (mg)	0.38	0.37	0.4	0.3	0.3	0.48	0.52	0.6	0.6	0.4
Niacin (mg)	5.08	5.56	4.6	5.1	5.2	7.09	8.4	7.4	8.1	7.9
Vitamin C (mg)	15	14	15	17	17	20	23	25	24	25
Source: Reference 7.5.8										

Data from surveys carried out by National Nutrition Monitoring Bureau (NNMB) on dietary intake in preschool children between 1975 and 2005 are given Table 7.5.2. There has not been a substantial improvement in their dietary intake over the last two decades.

Table 7.5.3: Mean Energy Consumption- Children / Adolescents and Adults											
Gender	Boy and Girl			Male				Female			
Years	1-3	4-6	7-9	10-12	13-15	16-17	≥18	10-12	13-15	16-17	≥18
Kcals	719	1020	1230	1423	1645	1913	2000	1389	1566	1630	1738
RDA	1240	1690	1950	2190	2450	2640	2425	1970	2060	2060	1875
% RDA	58.0	60.4	63.1	65.0	67.1	72.5	82.5	70.5	76.0	79.1	92.7
Source: Reference 7.5.8											

Data on energy intake in children, adolescents and adults in the same families from NNMB survey done in 2005-06 is shown in Table 7.5.3**.** Mean energy consumption, as %age of RDA is the least among the preschool children; inspite of the fact that their requirement is the lowest. The gap between RDA and actual intake is widest in preschool children. It would appear that the problems in feeding a young child with predominantly adult food with low energy and

Figure 7.5.16: Comparison of Energy Adequate Status of Preschool Chidren and Adults(NNMB)



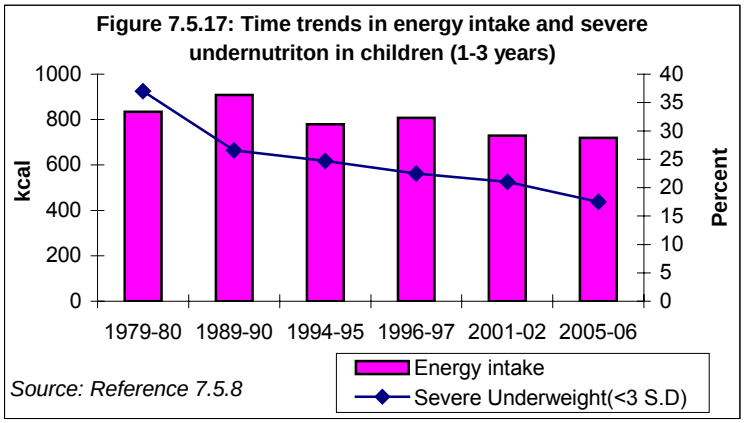
Source:Reference 7.5.8

Dietary Intake	Adult Male	Adult Female	Preschool Children
+ + +	Adequate	Adequate	Adequate
+ + -	Adequate	Adequate	Inadequate
- - -	Inadequate	Inadequate	Inadequate

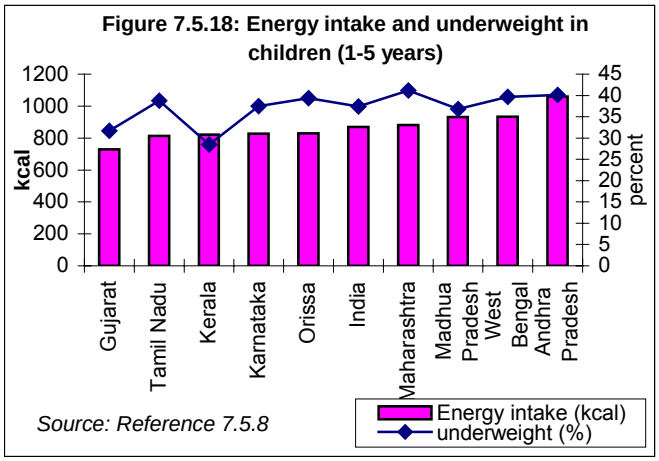
nutrient density rather than poverty is the major factor responsible for low dietary intake in preschool children.

Time trends in intra familial distribution of food (Figure 7.5.16) indicate that while the proportion of families where both the adults and preschool children have adequate food has remained at about 30% over the last 20 years, the proportion of families with inadequate intake has come down substantially. However, the proportion of families where the preschool children receive inadequate intake while adults have adequate intake has nearly doubled. This is in spite of the fact that the RDA for preschool children forms a very small proportion (on an average 1300 kcal/day) of the family's total intake of around 11000 kcal/day (assuming a family size of 5). These data confirm that in the last decade more than poverty, poor young child feeding and caring practices are responsible for inadequate dietary intake in preschool children.

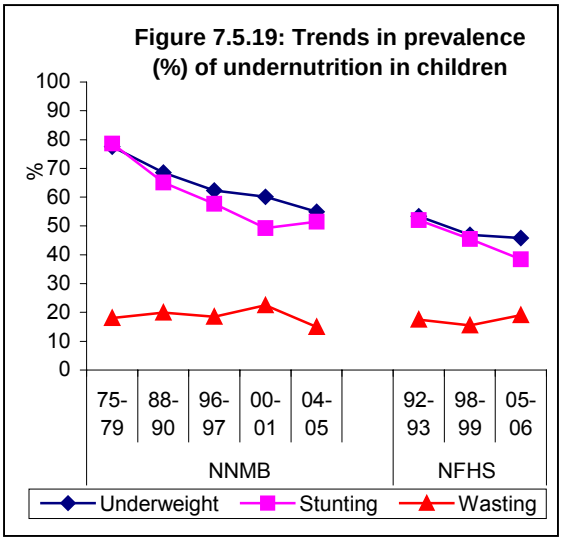
Nutritional status of preschool children

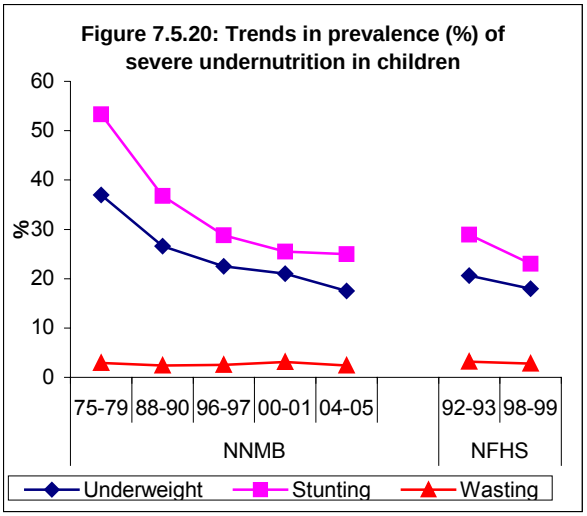


Data from NNMB surveys on energy intake and prevalence of undernutrition in under three children shows that there has been a steady decline in severe undernutrition in children even though the dietary energy intake has not shown a major change over years (Figure 7.5.17). The decline in severe undernutrition is most probably attributable to the better access to health care and effective management of infections. There were not marked differences either in dietary intake or nutritional status between children in the NNMB states (Figure 7.5.18).



Data from NNMB surveys have shown that over the last three decades there has been a steep decline in the prevalence of moderate and severe undernutrition as assessed by weight for age and height for age. Inspite of the steep decline in the prevalence of stunting over the last three decades, the change in the mean height of children is very small. There has

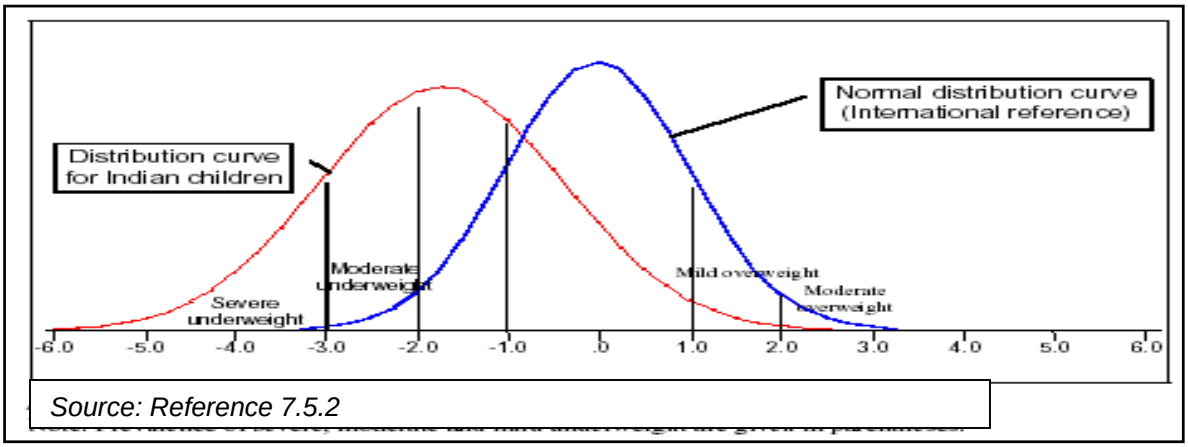




been a decline in underweight children but even now nearly 50% of the children are underweight as compared to the NCHS norms. There has been some reduction in stunting rates similar to the reduction in underweight rates. Wasting rates are much lower than the underweight and stunting rates. It is noteworthy that there has been no change in wasting rates over the same period. It is not clear how much of this is attributable to the fact that Indian children are shorter as compared to NCHS norms and will therefore weigh less, even though their body weight is appropriate for their current height (Figure 7.5.19 and 7.5.20).

Plotting frequency distributions of weight-for-age of Indian preschool children from NFHS -2 against the corresponding NCHS standards clearly indicate that the distribution in Indian children is skewed to the left (Figure 7.5.21). Comparison of the national level data from NFHS 1 and 2 (Figure 7.5.19 and 20)

Figure 7.5.21: Weight-for-age distribution: children under three in India compared to the global reference population



Source: Reference 7.5.2

suggests that there has been some reduction in prevalence of undernutrition in the nineties. If the criteria of weight-for-age, height-for-age are used, nearly half of the children are still undernourished. In contrast only 15.5 % are wasted (low

weight for height). The figure may be even lower if the criterion of BMI for age is used. It is noteworthy that NNMB and NFHS data indicate that unlike underweight, stunting there has been no reduction in wasting rates over the last three decades.

New WHO Growth standards (2006)

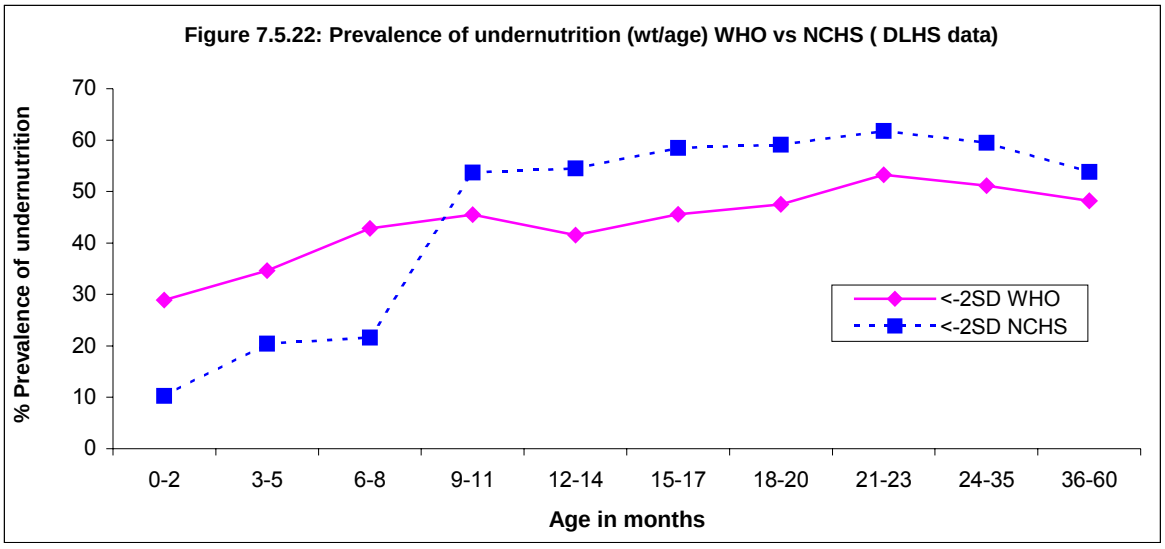
During the nineties, a WHO Working Group analysed available data on growth of infants who were breast-fed in the first year of life and found that the growth curve of breast-fed infants differed significantly from the NCHS standards. In order to derive appropriate global standards for growth of breast-fed infants during early childhood, WHO conducted a multi-centre study in Brazil, Ghana, India, Norway, Oman, and United States. Weight-for-age, height-for-age and weight-for-height and BMI for age standards for preschool children were computed from this study. In April 2006, WHO released the new growth standards for preschool children based on this study and recommended that instead of the NCHS growth standards, member states may use new standards in view of:

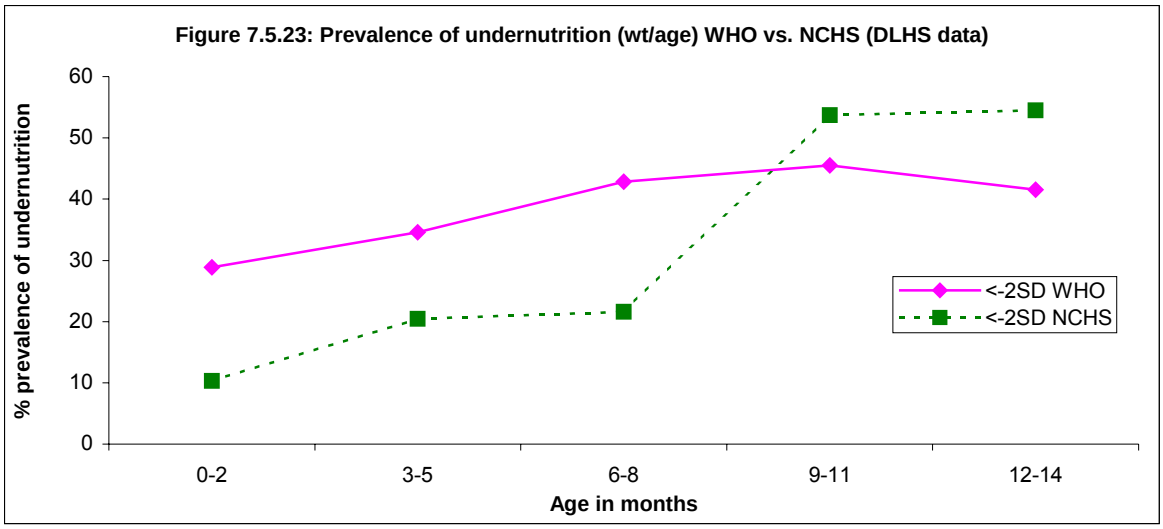
- The WHO policy on promoting breast feeding and
- The urgent need to use the standards for BMI for age for early detection and correction of under and over nutrition in preschool children.

Underweight rates: comparison between NCHS and WHO (2006) standards

Important to assess whether changing over to WHO (2006) standards will lead to changes in prevalence of undernutrition and if so the magnitude of change in different age groups. Analysis of data on weight-for-age of 2.4 lakh preschool children from the District Level Household Survey showed that there were substantial differences in prevalence of undernutrition (weight-for-age) as assessed by NCHS and WHO standards (Figure 7.5.22 and 7.5.23). The maximum difference in underweight rates is in the critical first year of life.

Figure 7.5.22: Prevalence of undernutrition (wt/age) WHO vs NCHS (DLHS data)





Computed underweight rates using WHO (2006) standards are higher as compared to the computed underweight rates using NCHS standards in the first six months. This should be viewed as a correction of a historical fallacy of using NCHS standards based on formula fed infants and not as alarming rise in underweight rates in the 0-6 age group. After first year the prevalence of underweight rates computed from the WHO standards is lower than the underweight rates computed using the NCHS standards. This should not be interpreted as a fall in undernutrition rates and lead to a sense of complacency that undernutrition rates are falling.

Clinical and programme implications adoption of WHO (2006) standards

Review of the data on undernutrition rates in different age groups from the DLHS database computed on the basis of NCHS and WHO standards provides fascinating information. The reported undernutrition rates in the 0-3 month age group as assessed by the NCHS norms (10%) is unrealistically low when one takes into account the 30% low birth-weight rate in the country. If the WHO (2006) standards are used prevalence of under-nutrition in the first three months is about 30%; this suggests that exclusive breast feeding followed by majority of mothers in this period protects the infant from further deterioration in nutritional status. A small rise in the prevalence of undernutrition between three and six months is seen if the WHO standards are used; this is likely to be due to too early introduction of milk substitutes and higher morbidity in this period. A further rise in the undernutrition rate between six and twelve months seen with the WHO standards is likely to be due to too late introduction or inadequate amount of complementary feeds to children in this age group as well as increase in morbidity and inadequate care during infections. Prevalence of undernutrition based on WHO standards clearly brings out the importance of too early introduction of breast milk substitutes, too late introduction of complementary feeds and poor care during morbidity as major factors associated with rising prevalence of undernutrition in infant. This data can serve as a very useful tool

for advocacy and awareness building so that there is focused attention on two critical interventions to improve young child nutrition namely nutrition education to ensure appropriate infant and child feeding and health education to improve timely access to health care.

There is a second peak in undernutrition rates around two years of age when the child shifts totally to adult food; this is perhaps related to inadequate intake of food because of poor child feeding practices. Nutrition education that young children have small stomach capacity and therefore should be fed 5-6 times in order to receive adequate quantity of food may help in improving the dietary intake and nutritional status of children in this age group. Thus use of WHO (2006) growth standards can make an important contribution in clearly bringing into focus the importance of increasing investment in nutrition and health education and healthcare to improve infant and young child feeding and caring practices in the critical period of 0-36 months and can result in substantial reduction in undernutrition rates in preschool children.

Disparities in underweight, by location, wealth quintile, gender and caste

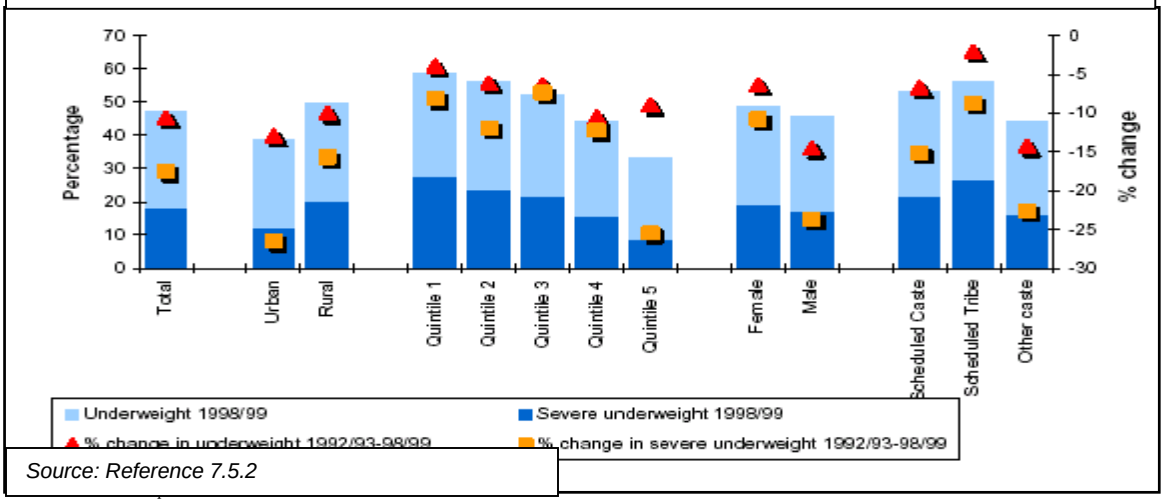
Data from NFHS 1 & 2 on nutritional status of children in some sub-groups are indicated in Table 7.5.4. The prevalence of underweight among children under three years of age and recent trends in underweight vary substantially across different subgroups of the Indian population. Desegregation of the national averages from NFHS 1 & 2 for children under 3 in relation to location, socio-economic status, caste and sex is given in Figure 7.5.24. The rural underweight prevalence exceeds that of urban areas. Rural areas bear a particularly large share of the total *severe* underweight prevalence. As expected, both underweight and severe underweight prevalence increases as household wealth falls. Underweight prevalence is as high as 60% in the lowest quintile, but even in the wealthiest fifth of the population 33% of children are underweight and 8.5% are severely underweight. Underweight (and severe underweight) prevalence is

Table 7.5.4: Nutritional status of children

Age	Weight for age				Height for age				Weight for height			
	% <-3SD		% <-2SD		% <-3SD		% <-2SD		% <-3SD		% <-2SD	
In years	NFHS-1	NFHS-2	NFHS-1	NFHS-2	NFHS-1	NFHS-2	NFHS-1	NFHS-2	NFHS-1	NFHS-2	NFHS-1	NFHS-2
0-3 years	20.6	18	53.4	47	28.9	23	52	45.5	3.2	2.8	17.5	15.5
in months												
< 6months	2.8	2	15.6	11.9	5.7	4.2	15.7	15.4	2	1.9	9.5	9.3
6-11 months	14.1	11.8	43.3	37.5	14.3	11.3	34.3	30.9	2.9	2.8	15.7	13.2
12-23 months	26.3	23.1	63.4	58.5	30.7	29.8	56.6	57.5	5.6	4.1	28	21.9
24-35 months	25.9	24.1	62.2	58.4	34.6	32	60.2	56.5	2.5	1.9	16.6	13.2
Residence												
Urban	14.8	11.6	45.2	38.4	22	15.4	44.8	35.6	2.9	2.2	15.8	13.1
Rural	22.4	19.9	55.9	49.6	30.9	25.4	54.1	48.5	3.2	3	18	16.2

Source: Reference 7.5.5 & 7.5.6

Figure 7.5.24: Demographic and socioeconomic variation in the prevalence of underweight, among children under three, NFHS 1 and 2



Source: Reference 7.5.2

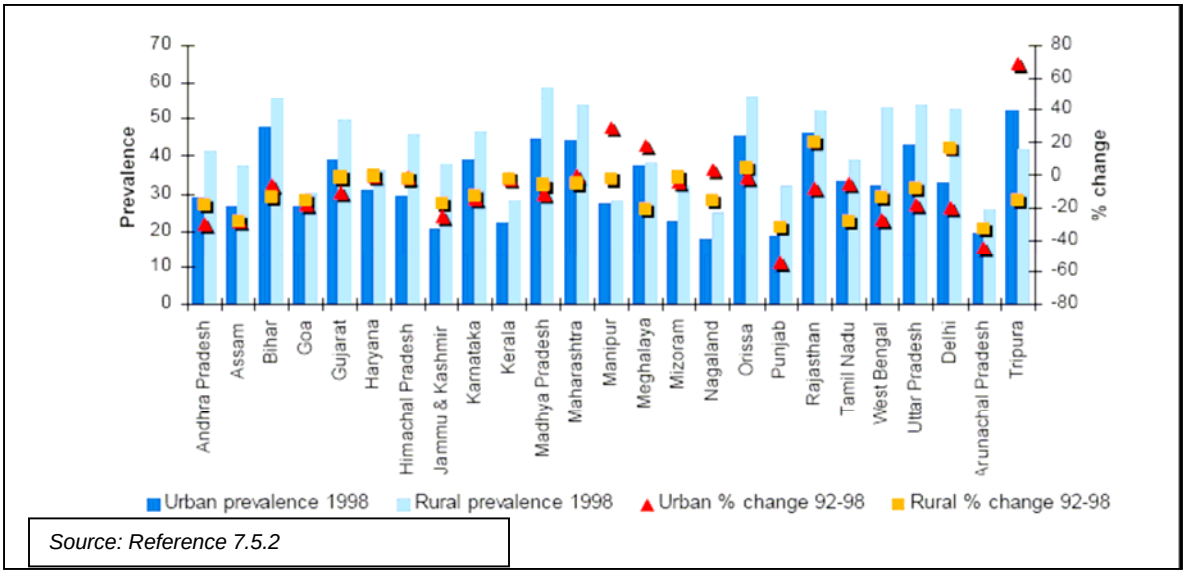
slightly higher among girls, 48.9% (18.9%), than among boys, 45.5% (16.9%). Both underweight (and severe underweight) prevalence is much higher among scheduled castes 53.2% (21.3%), and scheduled tribes 56.2% (26.3%) than among other castes, 44.1% (15.7%). Thus, most at risk for underweight are girls whose families are poor, belong to scheduled tribes or castes, and live in rural areas (India's undernourished children).

Interstate differences in undernutrition

Interstate urban rural difference

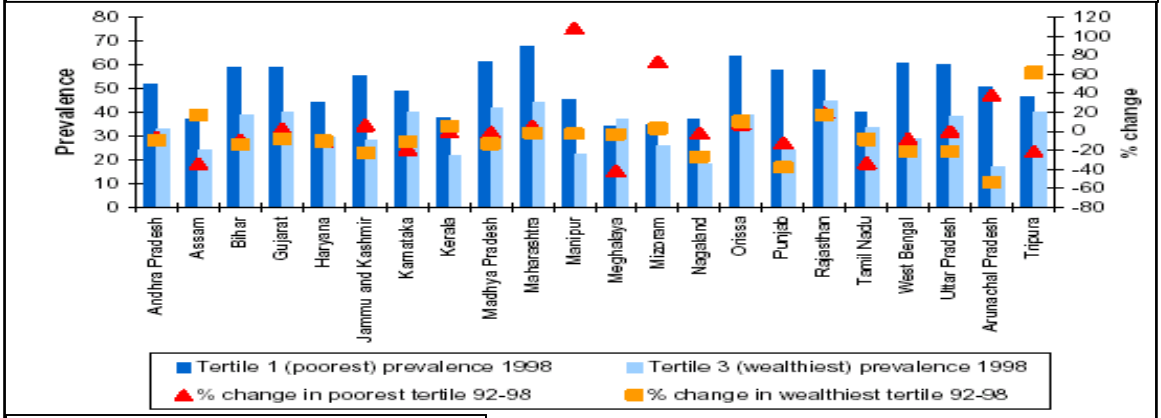
There are clear and consistent urban-rural disparities in underweight prevalence. In all states, except Tripura, the percentage of underweight children is higher in rural areas than in urban areas (Figure 7.5.25). The magnitude of these differentials varies by state. The largest differences are observed in Delhi, West Bengal, Punjab and Jammu and Kashmir where the prevalence of underweight children in rural areas is much higher than undernutrition in urban areas. Comparison of data between NFHS 1 and 2 showed that there was reduction in

Figure 7.5.25: Urban rural and interstate differences in nutritional status of under three children-NFHS 1 and 2



Source: Reference 7.5.2

Figure 7.5.26: Change in the prevalence of underweight, by wealth tertile and state, NFHS 1 and 2



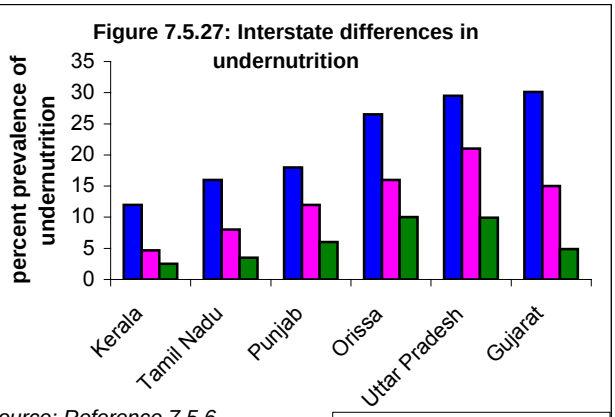
Source: Reference 7.5.2

undernutrition rates in most of the states both in urban and rural areas. However, in Rajasthan, Orissa and Manipur there was an increase in underweight prevalence between 1992-1998; Delhi registered significant increases in rural undernutrition prevalence and the northeastern states of Meghalaya, Manipur, Nagaland and Tripura experienced increases in *urban* undernutrition. The reasons for these trends are not clear.

Socioeconomic status and undernutrition

Data on changes in prevalence of undernutrition rates in the children from poorest and richest tertile is shown in Figure 7.5.26. The data clearly indicates that undernutrition rates are higher in the poorer segments of the population. However, even among the high income group one third of the children are underweight. Data from NFHS-2 show that nutritional status of poor children in Kerala is similar to the nutritional status of the rich in Uttar Pradesh and Orissa (Figure 7.5.27). This is probably attributable to better access to health care and equitable distribution of food between members of the family in Kerala and lack of these in Uttar Pradesh. These data indicate that poverty is no longer the major determinant of undernutrition in preschool children; lack of access to nutrition and health care are becoming important determinants of undernutrition in preschool children.

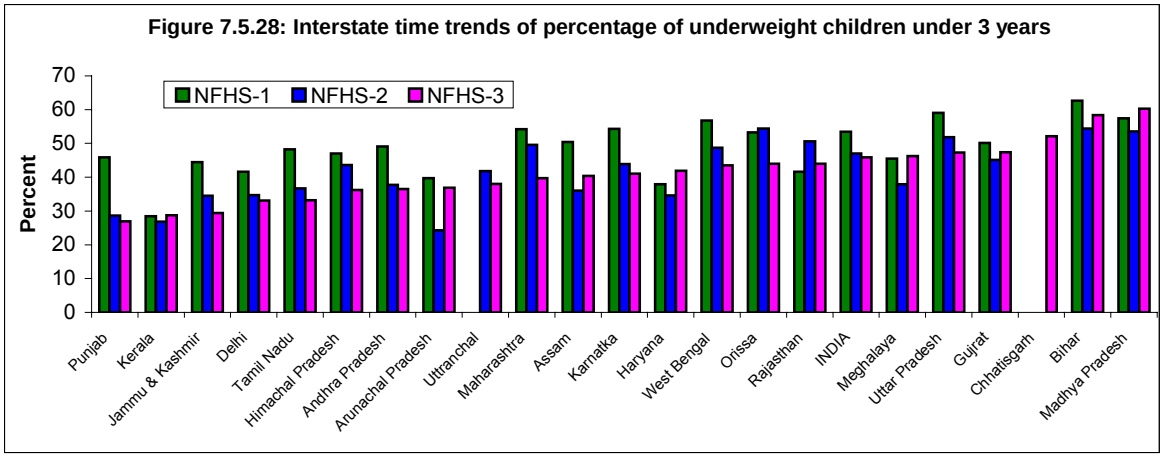
Figure 7.5.27: Interstate differences in undernutrition

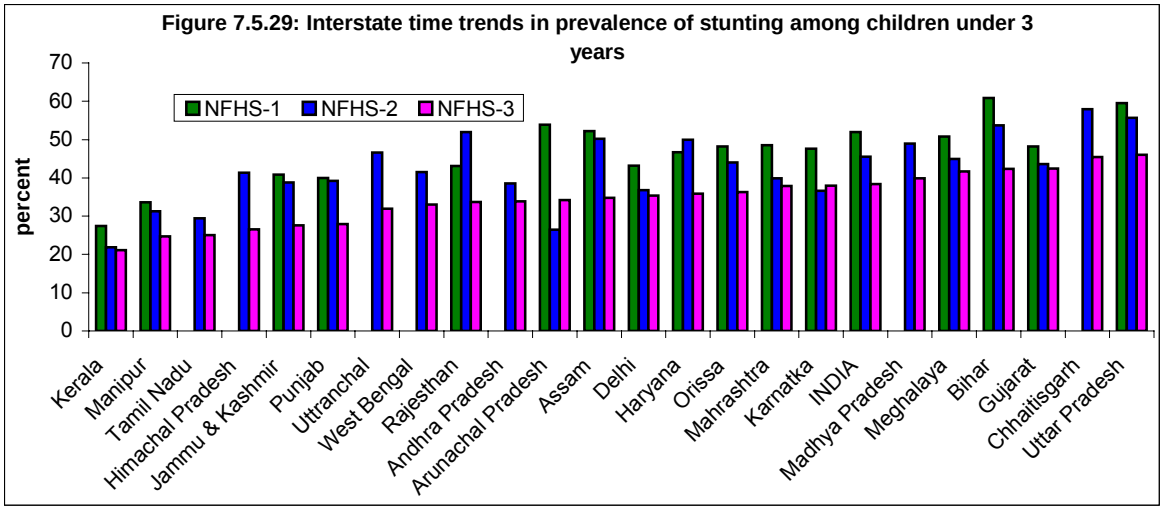


Source: Reference 7.5.6

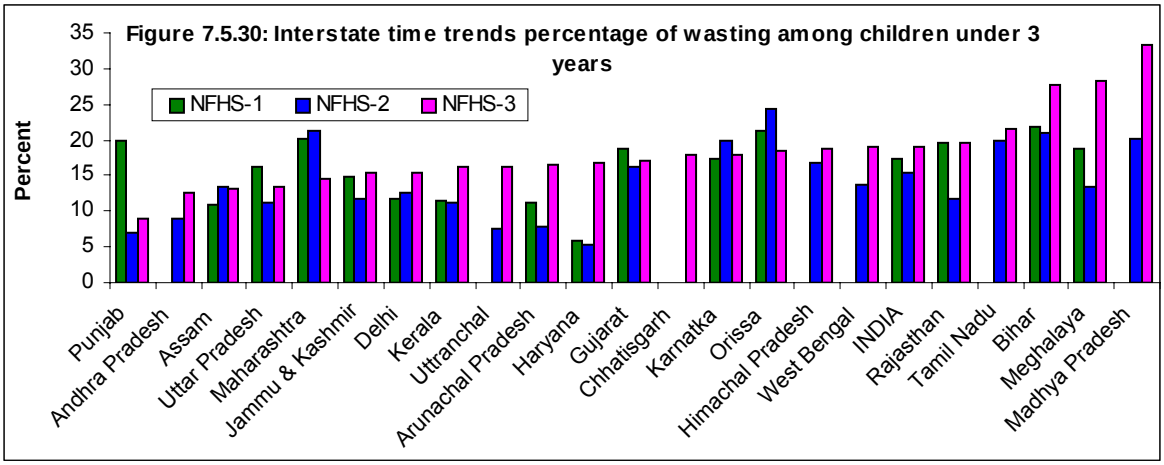
Time trends in interstate differences in undernutrition

Interstate differences in undernutrition rates in under three children (weight-for-age,





height-for-age, weight-for-height) are given in Annexure 7.5.3-7.5.5. Time trends in interstate differences in undernutrition in children between 1992-2005 are given in Figure 7.5.28, 7.5.29 and 7.5.30.Prevalence of underweight children is low in Punjab, Kerala, Delhi and high in MP, Bihar, UP and Gujarat. There has been reduction in underweight between 1992-1998 in Punjab, Tamil Nadu and UP but not much change in Kerala perhaps because undernutrition rates were low even in 1992. The reduction in underweight rates between NFHS 2 and 3 are

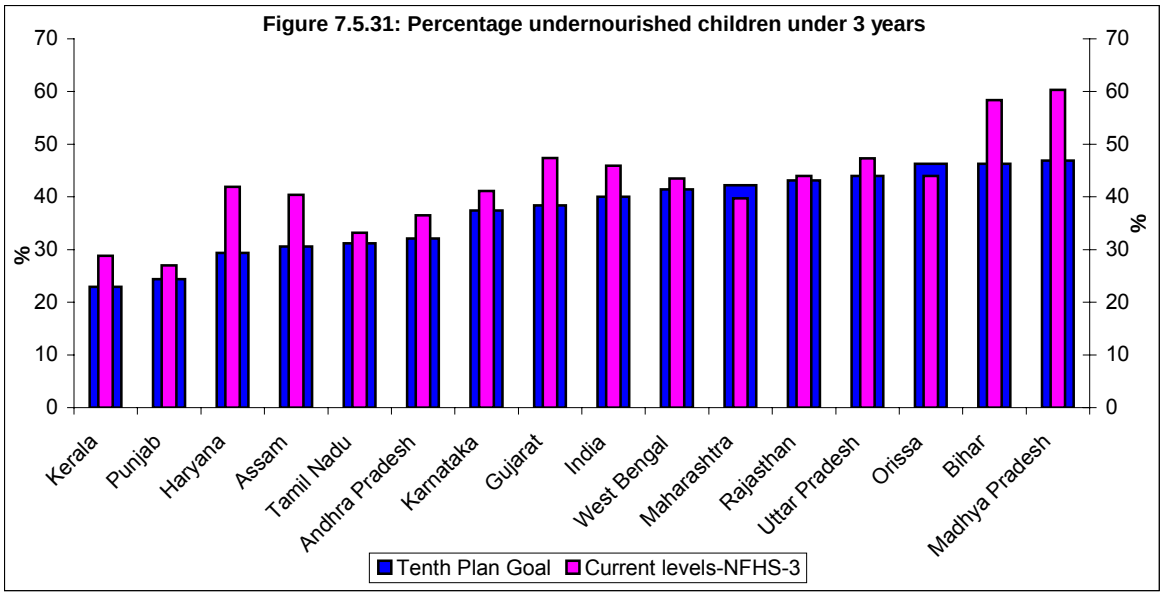


marginal in most states and also India as a whole.

At the national level there has been a sustained but slow reduction in prevalence rate of stunting. There are huge interstate differences in the prevalence of stunting among children under 3 years. States like Chattisgarh, UP, Rajasthan, Assam and Haryana showed the higher rates of stunting as compared to Kerala, Arunachal Pradesh, and Tamilnadu. Rajasthan, Assam, Himachal Pradesh, Uttranchal and Haryana showed the significant decline in stunting rates but the prevalence is still very high in all these states. Kerala showed lowest decline in prevalence rate of stunting. Orissa, Bihar, Maharashtra, Madhya Pradesh and Tamil Nadu had higher rates of wasting as compared to states like Haryana, Punjab Andhra Pradesh and Uttar Pradesh. The time trends in wasting rates between NFHS 1, 2 and 3 was varied and inconsistent. However India as well as majority of states reported an increase in wasting rates between NFHS 2 and 3. The exact significance of this finding is not clear.

It is obvious that in states with low per capita income and poor access to health and nutrition services (such as UP, Bihar and MP) undernutrition rates are high. At the other end of the spectrum states like Punjab, Delhi with high PCI, good access to services undernutrition rates is low. Undenutrition rates are relatively high in states with high per-capita income but where services are sub-optimal (like Haryana). Inspite of low per-capita income undernutrition rates in Kerala and Tamil Nadu are low because of good health and nutrition services.

Data on underweight rates in different states from NFHS-3 with the state specific goals for underweight rate set in the Tenth Five Year Plan is given in Figure 7.5.31. Orissa and Maharashtra have achieved the goals set. Rajasthan and Tamil Nadu are likely to achieve the goals. In Madhya Pradesh, Bihar, Gujarat, Haryana and Assam the decline in underweight children is very slow.



Interdistrict variation in nutritional status

It is well known that there are substantial interdistrict variations in nutritional status in the same state. The District Level Household Survey provides district level information on prevalence of undernutrition in under six children (Annexure 7.5.9 and 7.5.10). These data will be useful in preparing appropriate district specific intervention programmes as well as provide information to monitor improvement in nutritional status.

Emergence of over nutrition

While undernutrition continues to be a major problem in all the developing countries, overnutrition is emerging as a public health problem even in preschool children in many developing counties (Table 7.5.5). In India also overnutrition in preschool children is reported especially among urban and affluent sections of the population. Currently overnutrition rates in preschool children in India are quite low. Efforts have to be directed to ensure that all preschool children are screened at last once in three months so that both under and overnutrition are detected early. Health and life style education on importance of physical activity will have to be the major plank for management of overnutrition in children. Healthy physically active life style established right in early childhood can go a long way in reducing overnutrition and associated health hazards even in adult life

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Table 7.5.5 Prevalence of under and overnutrition in different regions

Stunting	*1980*	*1985*	*1990*	*1995*	*2000*	*2005*
Africa	39.0	37.8	36.9	36.1	35.2	34.5
Asia	55.1	48.2	41.1	35.4	30.1	25.7
LAC	24.3	21.1	18.3	15.9	13.7	11.8
Developing	48.6	43.2	37.9	33.5	29.6	26.5
Developed			2.8	2.8	2.7	2.6
Global			33.5	29.9	26.7	24.1
Underweight	*1980*	*1985*	*1990*	*1995*	*2000*	*2005*
Africa	23.5	23.5	23.6	23.9	24.2	24.5
Asia	45.4	40.5	35.1	31.5	27.9	24.8
LAC	12.5	10.5	8.7	7.3	6.1	5.0
Developing	37.6	33.9	30.1	27.3	24.8	22.7
Developed			1.6	1.4	1.3	1.1
Global			26.5	24.3	22.2	20.6
Overweight	*1980*	*1985*	*1990*	*1995*	*2000*	*2005*
Africa				3.3	4.2	5.2
Asia				2.6	2.5	2.5
LAC				4.4	4.3	4.3
Developing				2.9	3.0	3.4

Source: Reference 7.5.12

Way forward

Poverty and poor access to health care were the major causes of undernutrition five decades ago. Currently there is universal access to ICDS services and essential primary health care; efforts are under way to improve content, coverage and quality of services available to the poorest and the marginalized segments. During the current decade, poor infant and young child feeding and poor utilization of health care are emerging as important determinants of undernutrition in children. Nutrition and health education and improved access to and utilization of health and nutrition care can be very effective interventions, which could result in substantial reduction in undernutrition in children over the next decade.

The Eleventh Plan sub group on ICDS and Nutrition has recommended that the core objective for ICDS in the 11th Plan should be "Universalisation with quality". This would involve ensuring that every hamlet has a functional Anganwadi. Each AWC should have the minimum infrastructure and equipment required for effective good quality services can be provided. These include weighing scales, storage arrangements, and drinking water, cooking utensils, medicine kits, child-friendly toilets, a kitchen shed and toys.

Early detection and effective management of maternal undernutrition will go a long way in reducing current high low birth weight rates. Nutritious take-home rations (THR) should be provided to pregnant and nursing mothers every month, on "health and nutrition day". Anganwadi workers should ensure that THRs also reach mothers who may have missed the "health and nutrition day". The "health and nutrition day" can also act as a meeting point for the Anganwadi worker, ASHA and ANM, and an entry point for the involvement of PRIs.

It is recommended that all children under six and all the eligible women have access to all ICDS services. There should be no eligibility criteria other than age (and especially no restriction of ICDS to "BPL" families), and no ceiling on the number of children to be enrolled in a particular Anganwadi. A major effort should be made to extend ICDS services to all children under the age of three years, involving giving much greater attention to "infant and young child feeding" and nutrition counselling. For children below the age of three years, nutritious and carefully designed take-home rations (THR) based on locally procured food should be provided every week. For children aged 3-6 years, the supplementary nutrition programme (SNP) should consist of a cooked meal prepared at the Anganwadi, based on local foods and with some variation in the menu on different days of the week Supplementary nutrition should always be combined with extensive nutrition counselling, nutrition and health education (NHE), and home-based interventions for both growth and development.

All children should be weighed at last once in three months and children with growth faltering and undernutrition should be identified. Those with grade one

and two undernutrition should be counselled and provided with supplements regularly and monitored for improvement. Children with grade 3 and 4 undernutrition should be referred to PHC for care and counselling. Effective implementation of these recommendations and convergence between health and nutrition services will result in rapid reduction in undernutrition in children.

Available data from recent studies in India suggest that the possibility that undernutrition in childhood may predispose to overnutrition and NCD in adult life; these data provide yet another rationale for energetic interventions to reduce undernutrition in childhood. Prevalence of overnutrition in India except among urban high income group is relatively low. Health hazards associated with overnutrition in children are well understood; effective nutrition and health education targeted to preschool and school children might enable the country to prevent any escalation of the overnutrition rates in children. The current phase of dual nutrition burden should therefore be viewed as an opportunity window for effectively combating both under and over nutrition in children**.**

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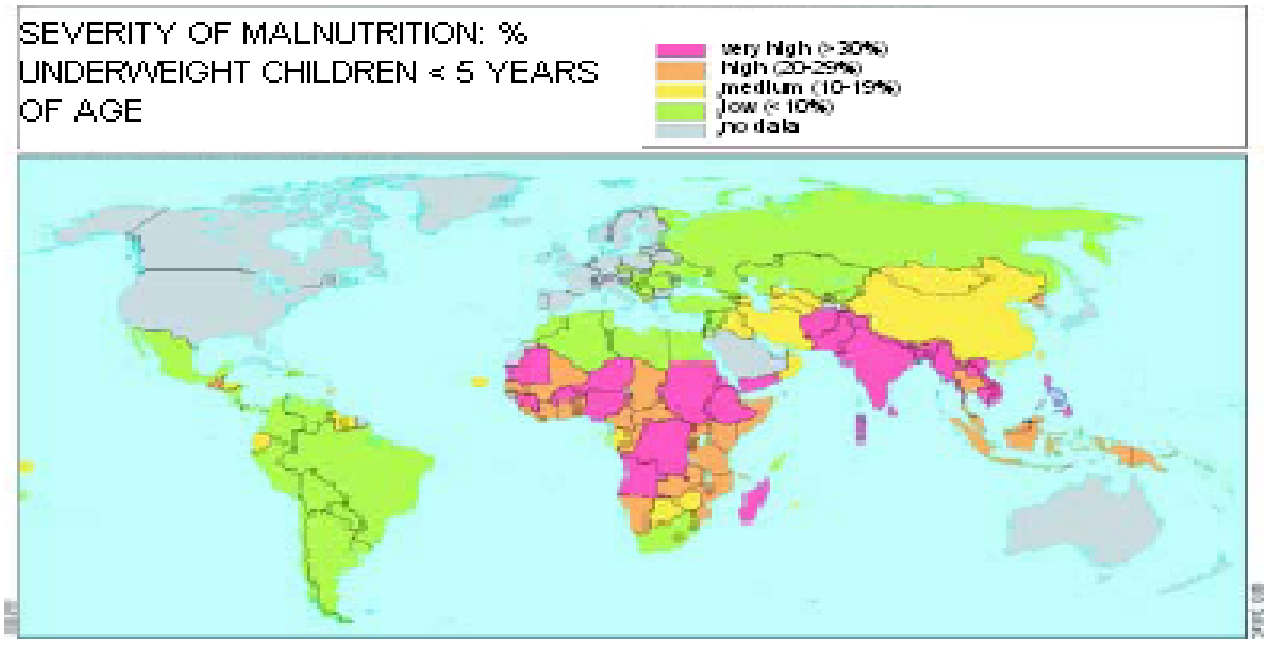
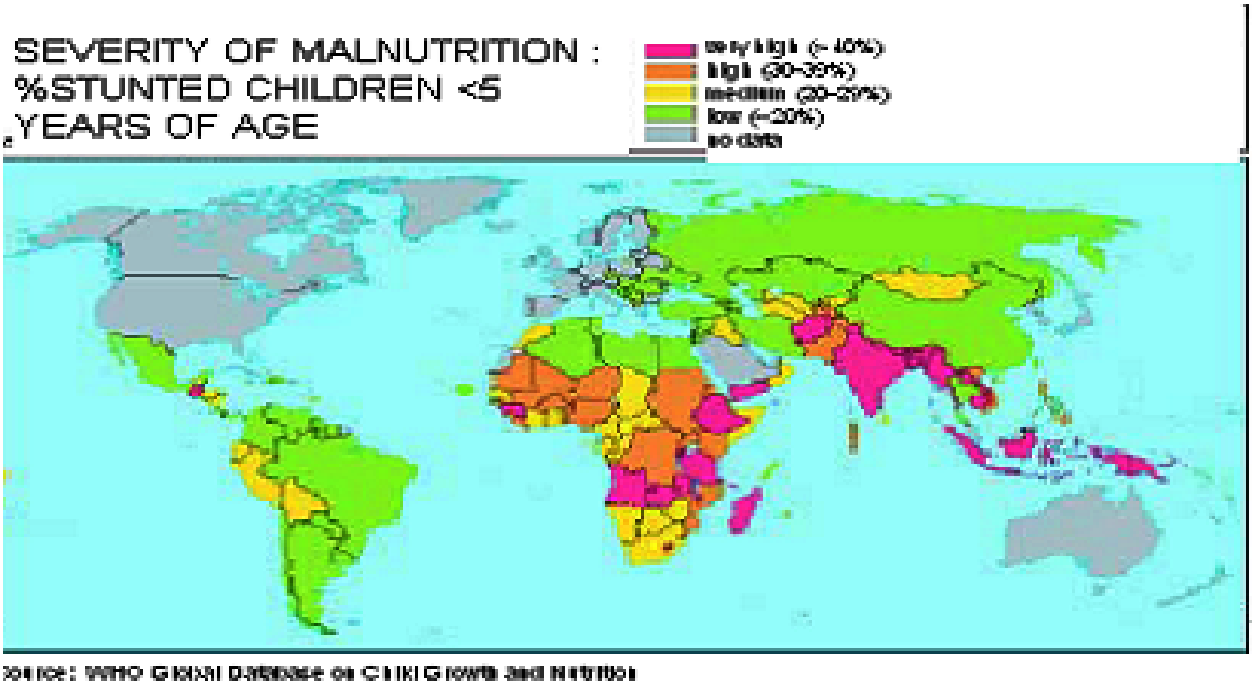
Annexure 7.5.1



Source:WHO Global database on Child Growth and Nutrition

Annexure 7.5.2



Source: WHO Global Database on Child Growth and Nutrition