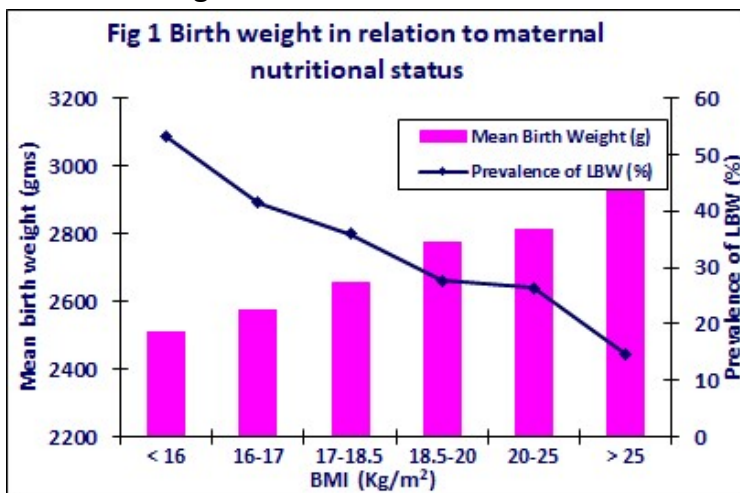


CHANGING FACE OF UNDER-NUTRITION IN CHILDREN AND ITS POLICY IMPLICATIONS

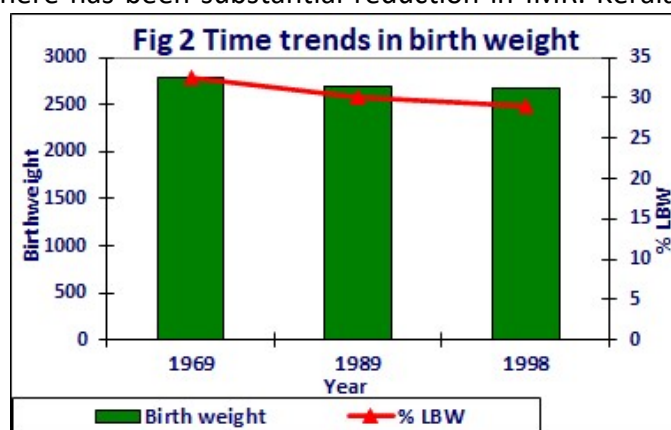
In the early sixties poverty was the major factor responsible for under-nutrition. Review of the recent data from NFHS 2 and NNMB indicate poor infant feeding and caring practices, poor intra-family distribution of food, poor access to health and contraceptive care are becoming important factors associated with under-nutrition in children. All these data clearly indicate that there is an urgent need to reassess the relative role of economic factors, knowledge, attitude and practice regarding infant and young child feeding and rearing, access to health and contraceptive care as determinants of current high levels of under-nutrition in childhood and initiate appropriate interventions. NFI undertook such a review and the summary and recommendations emerging from the review are given below.

Low birth weight neonate

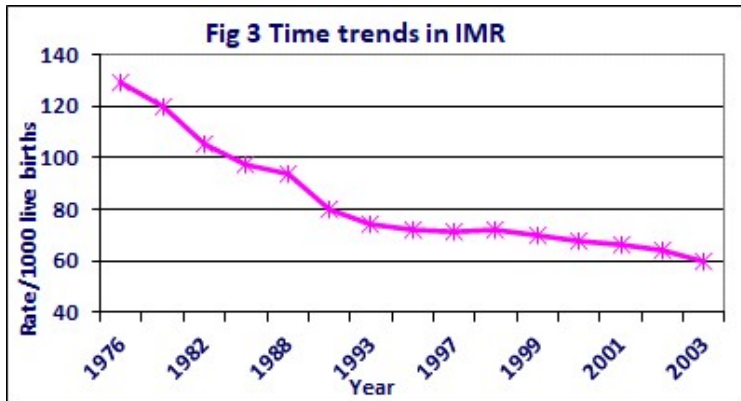


India has the dubious distinction of having a very high prevalence of low birth weight. Maternal under-nutrition (Fig 1), anaemia and poor antenatal care are major factors responsible for low birth weight in India. Currently nation-wide data on birth weight in different states and districts is not available because a majority of births occur at home and these infants are not weighed soon after birth. Estimates based on

available data from institutional deliveries and smaller community-based studies suggest that nearly one-third of all Indian infants weigh less than 2.5 kg at birth. Available data suggest that there has not been any decline in low birth weight over the last three decades (Fig 2). However, over this period there has been substantial reduction in IMR. Kerala has been able to achieve levels of IMR comparable to developed countries indicating that in India where majority of LBW neonates are mature but growth retarded, improvement in birth weight is not an essential prerequisite for infant survival (Fig 3). Majority of Indian LBW neonates with IUGR will survive if given essential care, warmth, breast-feeding and freedom from infection.



Initiatives during the Tenth Plan



In an attempt to improve weight gain during pregnancy in under-nourished women a programme was initiated in 51 backward districts in the country during the Tenth plan under which all pregnant women who weigh less than 40 kg get 6 kg of food grains for the next three months. Available data from states reports indicate that the task of

three-monthly weighment of pregnant women was completed in most districts showing that the universal screening and targeting the intervention on under-nourished women is feasible. Over 80% of the families collected the food grains - a steep increase as compared to the less than 20% of the women availing the ICDS food supplements provided in the Anganwadi.

Under the Reproductive and Child Health Programme efforts are under way to provide effective antenatal care to achieve early detection and effective treatment of anaemia and pregnancy induced hypertension. Data from the District Level Household Survey 2 (2002-04) indicate that the coverage and quality of antenatal services is quite poor in most states and districts. As a result, there has been no decline in prevalence of these maternal problems nor substantial reduction in pre-term births and low birthweight.

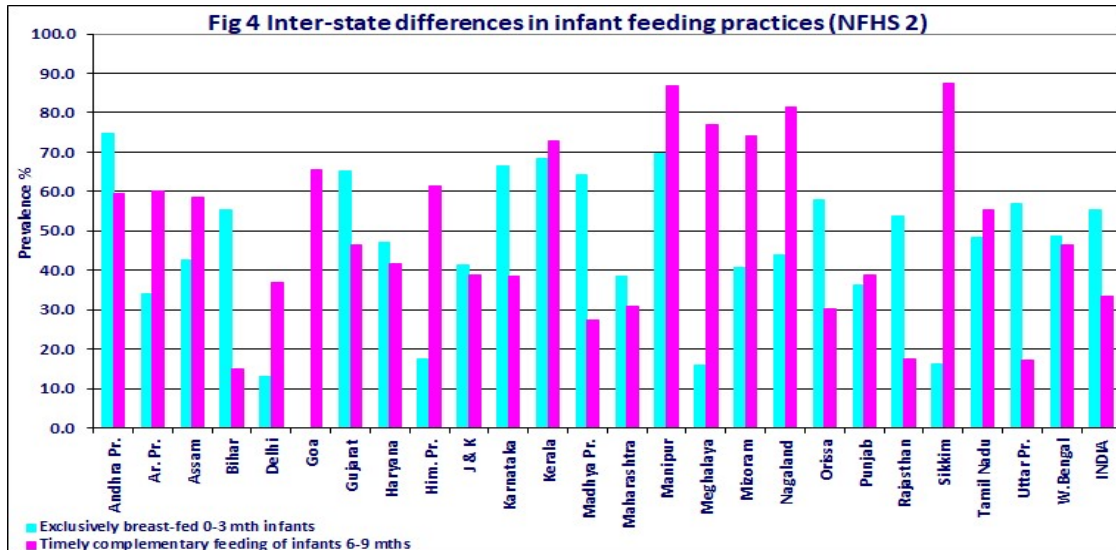
It was envisaged that in all home deliveries AWW will weigh the neonates as soon after delivery as possible and refer those neonates weighing less than 2.2 kg. The feasibility of this simple strategy has been demonstrated in small studies but it has not been operationalised in a large scale in any state.

Recommendations for the XI plan

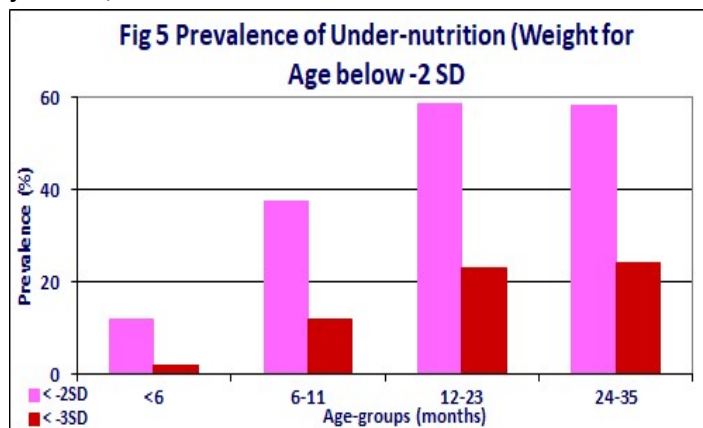
The mother-child dyad is an inseparable unit; to achieve reduction in LBW and further decline in NNMR/IMR, there is a need to improve nutrition and health care for the mother through nationwide effective implementation of the initiatives under NSAG and RCH programmes. Anganwadis should have a 10 Kg tubular Salter scale for reasonably accurate weighing of neonate and have information about nearest hospital with a paediatrician so that they can refer the 'at risk' neonates. AWW should be reassured that there will be only two or three children born every month in her village, and only one child may require referral (not too much work load) and her referral will be honoured. If effectively implemented this strategy would result in substantial decline in neonatal mortality rate in home deliveries.

Infant feeding practices and infant nutrition

Growth during infancy and childhood depend upon birth weight, adequacy of infant feeding and absence of infection. In India exclusively breast-fed infants thrive normally during the first six months of life and have lower morbidity episodes than those receiving supplements in addition to breast milk. In India, steps taken for the protection and promotion of breast-



feeding have been effective and breast-feeding is almost universal. However, the message that exclusive breast feeding up to six months and gradual introduction of semisolids from six months after that are critical for the prevention of under-nutrition in infancy has not been as effectively communicated. Data from NFHS 2 indicated that though breast-feeding was nearly universal and mean duration of lactation is over 2 years, exclusive breast-feeding among infants in the age group of 0-3 months was only 55.2%. In spite of the emphasis on the need for timely introduction of complementary food only 33.5% of the infants in the age group of 6-9 months received breast milk and semi-solid food. There are substantial inter-state differences in exclusive breast-feeding and timely introduction of semi-solid food (Fig 4). Too early introduction of supplements is a major problem in states like Delhi, Himachal Pradesh and Punjab and too late introduction of supplements is a big problem in Bihar, Uttar Pradesh, Madhya Pradesh, Rajasthan, and Orissa. Kerala fares well in terms of appropriate infant feeding practices and this might be one of the reasons for the relatively low under-nutrition rates in the state. Too early introduction of milk substitutes and too late introduction of complementary food are associated with increased risk of under-nutrition and infection. As a result of faulty infant feeding practices there is a steep increase in the prevalence of under-nutrition from 11.9% at less than 6 months to 58.5% in the 12-23 months age group (Fig 5).



Initiatives during the X Plan

Tenth Five Year plan envisaged that there will be a focussed effort through nutrition education so that by 2007 more than 80% of women exclusive breast feed upto six month and over 75% of women provide appropriate adequate complementary feeds from six months of age; this improved infant feeding practices will result in prevention of onset of

under-nutrition in infancy and early childhood. Available data from the surveys carried out by BPNI and other smaller studies do not indicate that there has been substantial improvement in exclusive breast-feeding in the first three years of the Tenth Plan. Conflicting messages about exclusive breast feeding, complementary feeding and perceived convenience of introducing supplements especially in working women are responsible for the lack of progress.

Recommendation for the Eleventh Plan

In the Eleventh Plan period focus of the interventions for improvement in child nutrition should shift from AWC to family. Nutrition education holds the key for success in improving infant feeding practices. It is essential that clear crisp uniform messages on exclusive breast-feeding and appropriate complementary feeding are developed and utilised to promote public awareness through mass media. There is a need to invest in training programmes reinforced by ITES to raise awareness of ICDS/Health personnel, and ensure inter-personal communication by AWW/ANM/doctor at each contact during pregnancy and child care to bring about behavioural change. AWW should invest time and efforts in behaviour change communication to ensure appropriate infant and young child feeding, dietary diversification with the locally available and affordable foods and improved feeding practices during illness

	1-3 years			4-6 years		
	1975-79	88-90	96-97	75-79	88-90	96-97
Protein (g)	22.8	23.7	20.9	30.2	33.9	31.2
Energy (Kcal)	834	908	807	1118	1260	1213
Vitamin A (mg)	136	117	133	159	153	205
Thiamine (mg)	0.5	0.52	0.4	0.76	0.83	0.7
Riboflavin (mg)	0.38	0.37	0.4	0.48	0.52	0.6
Niacin (mg)	5.08	5.56	4.6	7.09	8.4	7.4
Vitamin C (mg)	15	14	15	20	23	25

Source: NNMB (2000)

and convalescence. State specific goals for infant and young child feeding practices will have to be given and progress monitored yearly. All children in 0-24 months group should be weighed at least once in three months for early detection of growth faltering and cause of growth faltering

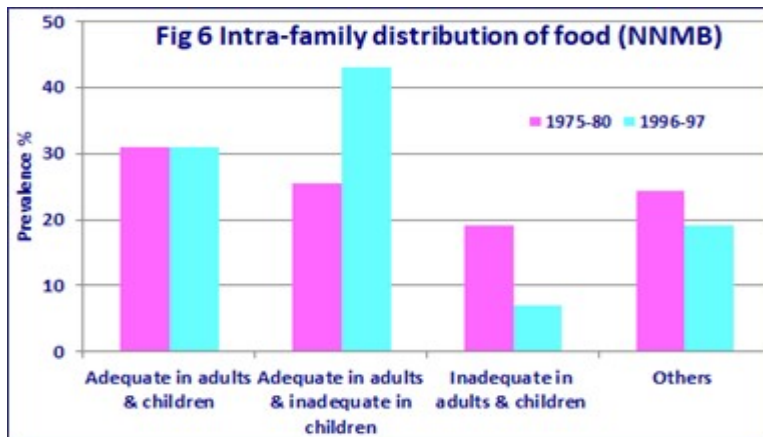
ascertained and corrected.

Nutritional status of Pre-school children

Pre-school children constitute one of the most nutritionally vulnerable segments of the population and their nutritional status is considered to be a sensitive indicator of community health and nutrition. There has not been any substantial improvement in their dietary intake over the last two decades (Table 1). Data on energy intake in children, adolescents and adults from NNMB 2000 is shown in Table 2. Mean energy consumption, as percentage of RDA is the least among the pre-school children, in spite of the fact

Age Group	Males			Females		
	Kcals	RDA	% RDA	Kcals	RDA	% RDA
Pre-school	889	1357	65.5	897	1351	66.4
School Age	1464	1929	75.9	1409	1876	75.1
Adolescents	2065	2441	84.6	1670	1823	91.6
Adults	2226	2425	91.8	1923	1874	102.6

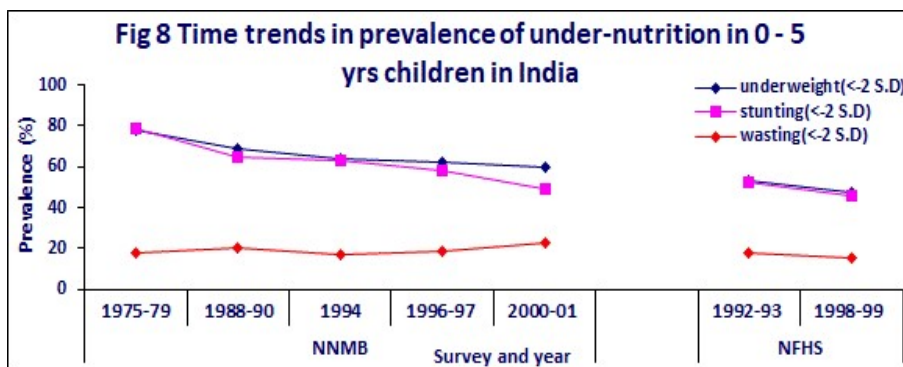
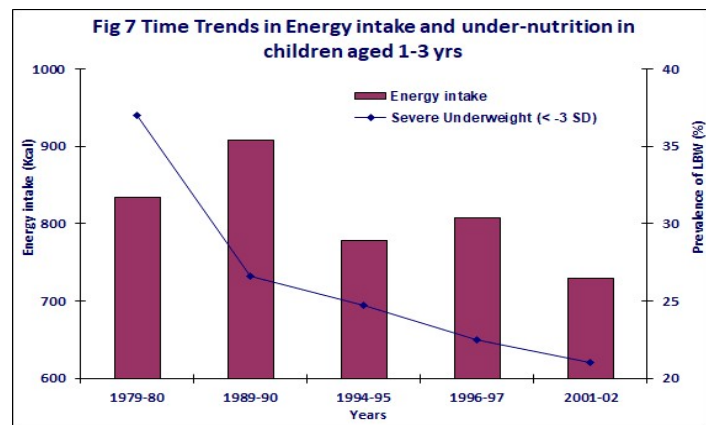
Source: NNMB 2000



that their requirement is the lowest. It would appear that the problems in feeding a young child with predominantly adult food rather than poverty is the factor underlying low intake in pre-school children.

Time trends in intra-familial distribution of food (Fig 6) indicate that while the proportion of families where

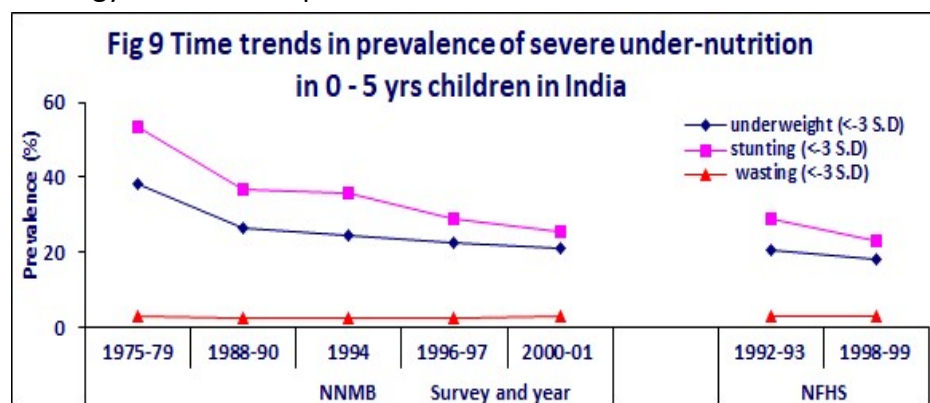
both the adults and pre-school children have adequate food has remained at about 30% over the last 20 years, the proportion of families with inadequate intake has come down substantially. However, the proportion of families where the pre-school children receive inadequate intake while adults have adequate intake has nearly doubled. This is in spite of the fact that the RDA for pre-school 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). It would, therefore, appear that poor young child feeding

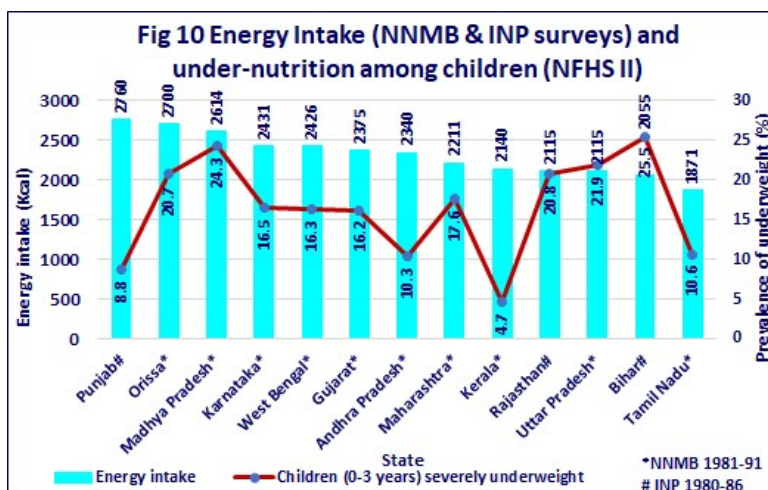
and caring practices and not poverty is the factor responsible for inadequate dietary intake. Data from NNMB on energy intake and prevalence of under-nutrition in under-three

children shows that there has been a steady decline in under-nutrition in children even though the dietary energy intake has not shown a major change over years (Figs 7-9). The decline in under



nutrition is most probably attributable to the better access to health care and effective management of infections.

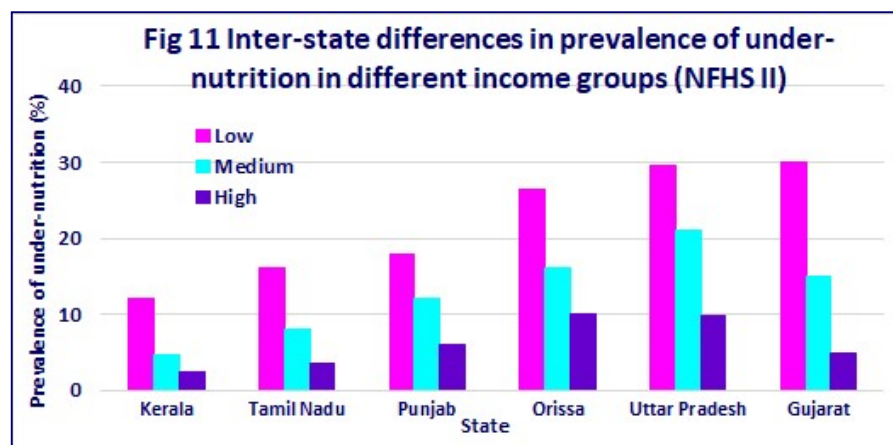
Over the last three decades there has been a steep decline in the prevalence of moderate and severe under nutrition as assessed by weight for age and height for age. In spite of the steep decline in the prevalence of stunting over the last three decades, the change in the mean height of children is very low. There has been a decline in underweight children but even now nearly 50% of the children are underweight as compared to the NCHS norms. 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. It is expected that the WHO will soon make available the norms for BMI for age so that this problem can be sorted out. The fact that Indian children are not under-nourished if BMI for age is considered as the criterion for under-nutrition may be the explanation for the South Asian Enigma of low mortality in spite of high under-nutrition rates.



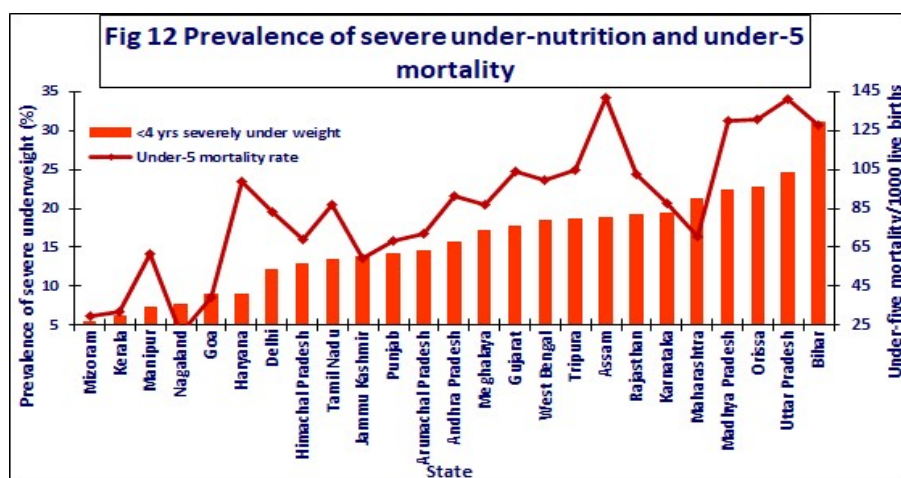
In India there are considerable inter-state difference in the dietary intake and nutritional status of children (Fig 10). Though dietary intake is a major determinant of nutritional status in children, it is not the only determinant. Energy intake is low and under-nutrition is high in Uttar Pradesh, Bihar and Rajasthan. However, in spite of low energy intake prevalence of

under-nutrition is low in Kerala and Tamil Nadu, most probably because of more equitable intra-familial distribution of food based on needs and better access to health care. The decline in fertility and reduction in the higher order births may also have contributed to this because prevalence of severe forms of under-nutrition is higher among higher order births. In spite of high energy intake prevalence of under-nutrition is high in Madhya Pradesh and Orissa perhaps due to inequitable distribution of food and poor access to health care.

Nutritional status of poor children in Kerala is similar to the nutritional status of the rich in Uttar Pradesh and Orissa (Fig 11). 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 clearly indicate that poor intra-family distribution of food and poor access to health care are major factors responsible for under-nutrition in pre-school children.



Poor dietary intake, poor caring practices and poor access to health care are some of the major factors responsible for under-nutrition and under-five mortality (U5MR). In most of the states eg Orissa where under-nutrition is high, under five mortality

rate is also high; in states like Kerala where under-nutrition is low, U5MR is also low (Fig 12). However, there are exceptions to this. In Maharashtra U5MR is relatively low in spite of relatively high under-nutrition rates, perhaps because access to health care is better. In Punjab, in spite of high per capita income, high dietary intake and good access to health care, both under-nutrition and IMR are relatively high. These data indicate the importance of health care in reducing both under nutrition and under-five mortality.

Recommendations for the XI Plan

Data presented above indicate that over the last few decades income poverty is not the major factor determining under-nutrition in pre-school children. Poor infant and young child feeding and caring factors are critical determinants of under-nutrition in pre-school children. Access to health care has been shown to be associated with improvement in nutritional status even if dietary intake remains unaltered.

In view of all these the focus during the XI plan should be on:

- prevention of under-nutrition through nutrition education by inter-personal communication by ANM/AWW aimed at:
 - ensuring appropriate infant and young child feeding practices;
 - promoting appropriate intra-family distribution of food; and
 - dietary diversification to meet the nutritional needs of the family.
- Operationalising universal screening of all infants, pre-school and school children for under-nutrition.
- Operationalisation of nutrition interventions for the management of under-nutrition through:
 - Nutrition education aimed at improving dietary intake of children with mild under-nutrition from the family pot;
 - targeted food supplementation and health care for those with moderate and severe under-nutrition; and

- effective monitoring of these individuals and their families.

ICDS and pre-school child nutrition

The ICDS scheme was initiated in 1975 with the following objectives:

- to improve the health and nutrition status of children in the 0-6 age group by providing supplementary food and coordinating with state health departments to ensure the delivery of the required health inputs;
- to provide conditions necessary for pre-school children's psychological and social development through early stimulation and education;
- to provide pregnant and lactating women with food supplements;
- to enhance the mother's ability to provide proper child care through health and nutrition education;
- to achieve effective coordination of policy and implementation among the various departments to promote child development.

The initial geographic focus of ICDS was on drought-prone areas and blocks with a significant proportion of scheduled caste and scheduled tribe population. In 1975, 33 blocks were covered under ICDS. Over the last two decades the ICDS coverage has progressively increased and currently it covers almost all the blocks. During the initial phases the programme was operationalised by the Social Welfare Departments in the Centre and the state. Subsequently Department of Women and Child Development (DWCD) was formed and the ICDS programme was transferred to DWCD. The fact that during its formative years the programme was perceived by the programme implementers more as a social welfare intervention and not as a holistic child nutrition, health and development intervention might be one of the factors why this well conceptualized programme has not been effective in improving nutritional status of children.

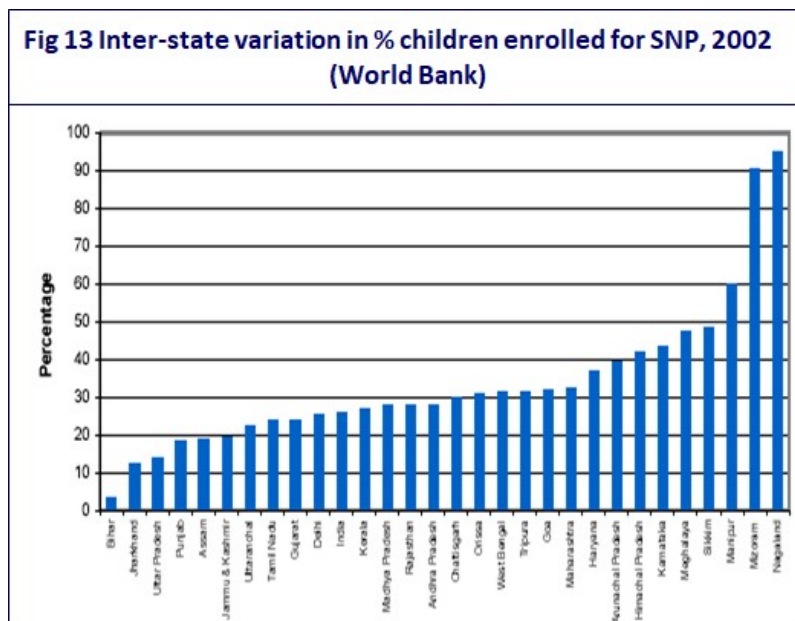
GOI/World Bank evaluation of ICDS

There were major reviews of the nutrition sector and ICDS programme by the World Bank and the Government of India in 1997, 2001 and 2004. The major findings were:

- ICDS is perceived essentially as a food supplementation programme. The dominant focus on food supplementation is to the detriment of other tasks envisaged in the program which are crucial for improving child nutrition;
- nutrition component is even now perceived as a social welfare programme; available food is shared between those who come to anganwadi (self-selected group presumed to be needing food supplements) mostly between children in the 3-5 years age group irrespective of their nutritional status; this type of intervention cannot have any impact on nutritional status of children;
- there is demand for food supplements under ICDS during food scarcity such as drought when ICDS is utilised to improve dietary intake of children;
- ICDS nutrition component is not perceived as a nutrition programme to effectively address prevention, detection and management of under-nutrition in children;
- there were gaps in the training and knowledge of anganwadi workers. Also, supervision

- of the programme, community support and inter-sectoral coordination was poor;
- there are problems in delivery, quality, coverage, coordination and monitoring; the food provided in the anganwadi is mostly a substitute for the food the child might have received at home if (s)he had not come to anganwadi;
- child care and nutrition education of the mother is poor or non-existent; nutrition education for prevention and management of health problems associated with moderate and severe under-nutrition and nutrition during illness are not taken up;
- children in the 6-36 months age group and pregnant and lactating women do not come to the anganwadi and do not get nutrition education;
- as there was no attempt in ensuring that all children are weighed, the children with severe CED are not identified and offered double the rations as envisaged in the ICDS guidelines;

➤ the fact that children have small stomach capacity and none of the under-nourished children can consume the double rations provided in one sitting in the anganwadi is not even understood;

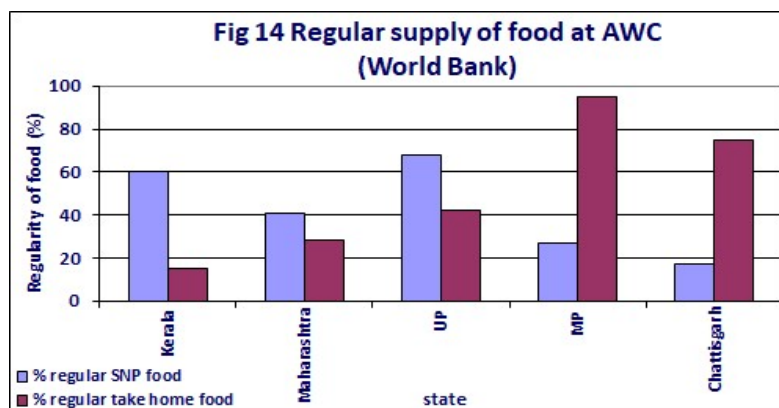


➤ Inadequate worker skills, shortage of equipment, poor supervision and weak M&E detract from the program's potential impact. However, examples of successful interventions (Bellary district in Karnataka) and

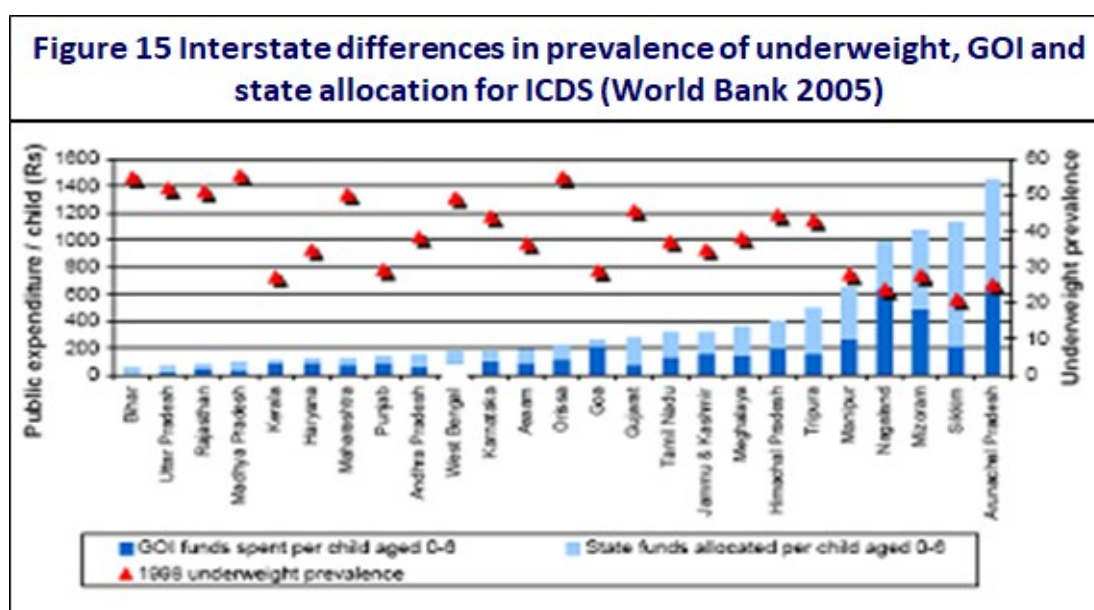
➤ Innovations/ variations in ICDS from several states (the INHP II in nine states, the Dular scheme in Bihar and the TINP in Tamil Nadu) suggest that the potential for better implementation and greater impact does exist;

➤ Although program growth was greater in under-served than well-served areas during the 1990s, the poorest states and those with the high est levels of under-nutrition still have the lowest levels of enrolment under SNP, (Fig 13);

➤ Food supply is often poor even in good performing states while supply is better in some of the



poor performing states (Fig 14); and



- program funding per child (Fig 15) was quite low in many states with high under-nutrition levels.

Policy and programme implications for the XI plan

- Highest priority will have to be given to training of AWWs so that they acquire the needed knowledge, skills and ability to:
 - communicate messages regarding exclusive breast feeding, appropriate complementary feeding, infant and young child feeding,
 - demonstrate how to cook low cost balanced tasty meals from locally available cereal, pulse and vegetables and feed the young children - demonstration can be done in the anganwadi on Village health and nutrition days,
 - undertake universal weighing of all children in 0-72 month age group at least once in three months and monitoring growth in individual child's card (cards should be made available) and to identify children with under-nutrition,
 - identify children with mild under-nutrition and teach the mothers care of these children with home available food,
 - identify children with moderate and severe under-nutrition and give appropriate nutrition and health care; take home food supplements may have to be given for the initial period and the children carefully monitored, and
 - identify severely under-nourished infants/children who fail to improve under home management, those with infections and other complications and refer them to hospitals for care.
- In the Eleventh Plan period focus of the interventions for improvement in child nutrition should shift from AWC to family. AWW should invest time and efforts in behaviour change communication to ensure appropriate infant and young child feeding, dietary diversification with the locally available and affordable foods and improved feeding practices during illness and convalescence.
- It is important to enhance the quality and impact of ICDS substantially through:

- improving infrastructure of anganwadi center so that the essential minimum equipment and accessories needed for good quality services are available,
 - ensuring inter-sectoral coordination and strengthening nutrition action by the health sector,
 - creating nutrition awareness through IEC at all levels (community, women's group, village-level workers, PRIs, programme managers and policy makers at the state and central levels); and improving community ownership of the programme,
 - establishing effective supervision of the ICDS functioning, and
 - improving monitoring so that problems in implementation of the programme are identified and appropriate mid-course correction are done.
- In view of the massive differences not only between states but also between districts in the same state, district should be taken as a unit for planning, implementation and monitoring of the ICDS programme. District data on nutrition and health status of children from DLHS 2 will have to be used for district-based planning as well as assessing the impact of interventions through ICDS.
 - There is a need to address budgetary allocation for ICDS to improve quality of services. It is important to specify the investments needed to operationalise interventions, provide the needed outlays and monitor nutrition outputs and outcomes. Flexibility in norms for establishing and funding centres based on needs should be preferred to uniform funding based on centrally defined norms. The suggestion that nutrition and development of young children is priority and should be addressed on lines of Sarva Shiksha Abhiyaan (SSA) may have to be considered so that universal access to good quality ICDS services to meet the needs of children becomes possible during the XI plan.
 - Infections aggravate under-nutrition. Interventions to reduce infections such as improved access to safe drinking water and sanitation and improved access to health care for early and effective treatment of infections should receive priority attention.
 - The need of child care support services for working women in informal sector should be a focus of the XI plan as increasing women's participation in informal work warrants such an approach. Facilities for childcare in the form of crèches, day care centres should be made available at places of work for women working in both formal and informal sectors.
 - there is a need to ensure systematic collaboration between the ICDS and NRHM/RCH; a good example of collaboration are the Health and Nutrition days which are operational in several states.