

**Household Food Security and Integrated Child Development
Services in India**

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ABSTRACT

Household food security remains to be a major concern around the globe with millions of adults and children suffering from malnourishment. More importantly, a large percentage of these people reside in India despite the presence of many public policies to tackle household food insecurity. Food insecurity is caused by three interlinked factors viz. availability of food, access to food, and utilization of food. In India, the first problem has been taken care of fairly well but much needs to be done with respect to the second and third aspects. An intervention scheme like the Integrated Child Development Services for the pre-school children deals with these aspects by providing a combination of supplementary feeding, health and nutrition education and regular health check-ups to improve the quality of food intake and its absorption by the body at the initial stages of growth. The evaluation studies indicate that the impacts of this program have not reached the target groups effectively and the operational efficiency of the program is not satisfactory. The key to malnutrition reduction lies in decentralization of the scheme, community participation, along with education and empowerment of women as is observed in the case of the Tamilnadu Integrated Nutrition Program. This would go a long way in creating a good human resource that can take advantage of the process of liberalization and globalization.

Household Food Security and Integrated Child Development Services in India

1. Introduction

Food insecurity at the household level is still a major concern as the number of undernourished children and adults were about 840 million in 1998-2000 according to the latest report on the 'state of food insecurity' by the Food and Agricultural Organization. Of these 799 million belong to the developing countries and India accounts for about 233 million of them (FAO, 2002). What is perhaps more alarming is that a majority of the developing countries barring a few exceptions like east Asian countries and more significantly China, have shown increases in this number since mid 1990s.

One of the main causes of food insecurity at the household level is poverty and at the same time food insecurity also causes poverty as depicted in the conceptual framework shown in figure 1 below.

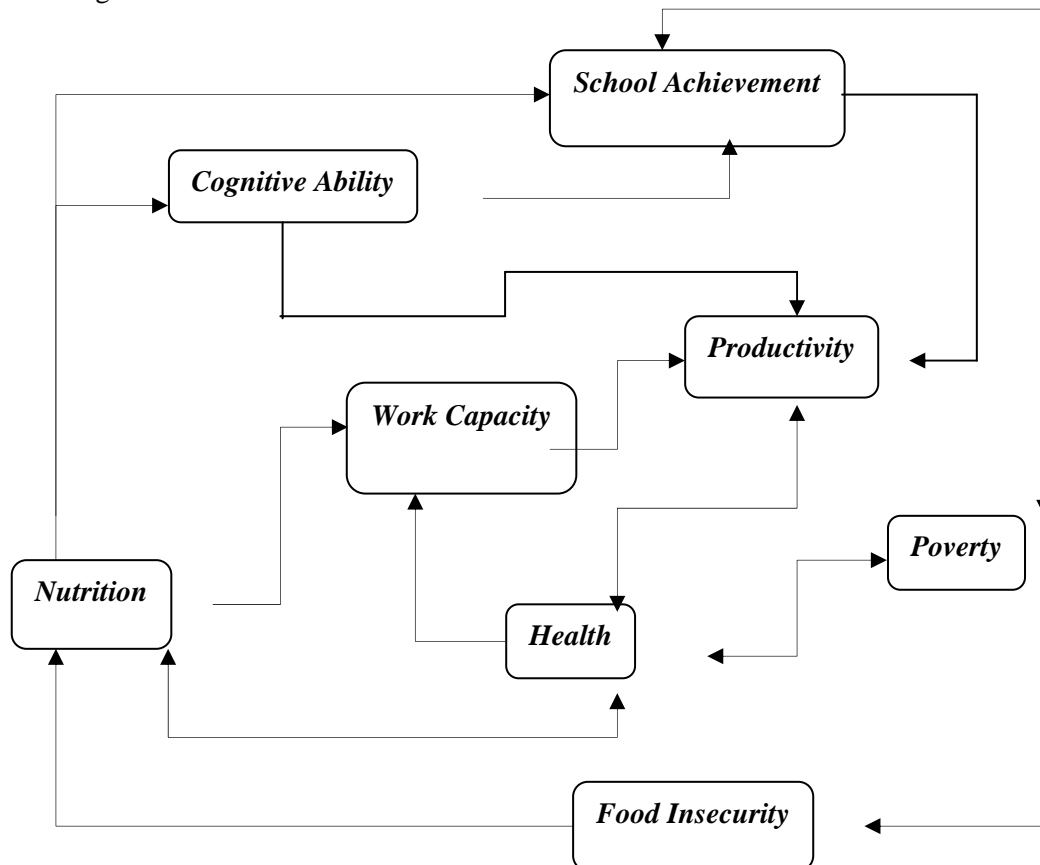


Figure 1 Linkage Between Poverty, Food Insecurity and Nutrition

Source: Flores and Gillespie (2001)

Both quantity and quality of food intake affects the nutritional status of an individual and inadequacies in either or both of these have adverse impacts on health, cognitive ability and school achievement. All of these determine the productivity of an individual thereby affecting the income earning abilities and hence the standard of living.

The magnitude and prevalence of undernutrition is so widespread in the developing countries that only state intervention can help tackle this problem. Many of these countries have several food safety net programs to address the issue of malnutrition particularly among vulnerable sections of the population. The success rates of the safety net programs implemented by the state in reducing undernutrition levels has not been very good mainly due to problems of effective management. Emphasis on decentralized management with increased community participation seems to improve the effectiveness and efficacy of the service delivery wherever the programs have been successful. These issues gain importance in an era of globalization and liberalization both of which may not be beneficial to the poor in the beginning.

The decade of 1990s saw major changes in the economic environment, mainly that of economic liberalization for better economic management and entering the process of globalization by opening up of markets. It is widely debated that these changes will affect absolute and relative poverty due to reductions in resource allocation to social sector in a period of economic restructuring and higher unemployment levels and increase in prices of essential commodities affecting the purchasing power of the poor particularly in the initial phases of globalization. In India, studies have shown reduction in allocation of resources to social safety net programs in the first half of 1990s with increases in subsequent years. But the evidence on increase in poverty or decrease in levels of human development due to liberalization and globalization is weak.

Objective of the Study

Given this background the study proposes to look into the performance of two direct food based intervention programs for pre-school children in India, the Integrated Child Development Service (ICDS) operational in most parts of the country and the Tamilnadu Integrated Nutrition Project (TINP) well known for its achievement in reducing undernutrition in the south Indian state of Tamilnadu. Such an analysis could provide insights about 'successes' and 'failures' and hence would be helpful in any policy reformulation during the phase of economic restructuring. This study is based on secondary data and available literature focusing on the decade of 1990s. The emphasis would be on the three main aspects of any intervention program namely: *targeting* - whether the program covers the entire group for whom it has been designed, *effectiveness* -does the program bring about the anticipated results, and *efficiency* -for a unit of money spent per person, how much eventually reaches the individual and the benefit-cost ratio of such a program.

Section 2 assesses the nutritional status of the Indian population while comparing with other countries in the world. Section 3 looks at the location and trends in nutritional status of children which gives an understanding of the magnitude and current status of the problem of undernutrition among children in India. Sections 4 and 5 are a discussion of the performance of the ICDS and TINP respectively. Section 6 concludes the study.

2. Nutritional Status In India vis-à-vis Other Countries in the World

One of the ways of assessing the food security of households (or the individuals within) is to look at the nutritional status of the population or in other words food insecurity has been identified as one of the major causes of undernutrition. The nutritional status of the population can be measured on the basis of outcome indicators like the body size (height and weight) across different age groups or the mortality and morbidity status for a particular sex. In India, the health indicators based on life expectancy at birth, infant mortality rates and under five mortality rates have shown tremendous improvements since 1970 but the pace of decline has slowed down in the 1990s; and ranks much lower in these health indicators compared to many other Asian countries. The status of children is far worse - under five mortality rate, infant mortality rate and low birth weight percentage is higher in India than the developing country averages as well as the Sub-Saharan region as indicated in Table 1 below.

Table 1 Select Social, Health and Economic Indicators for Select Asian Countries and Regions in the World

	Under five Mortality Rate		Infant Mortality Rate	GNP per capita (US\$)	Life Expectancy (years)	Under-nourished children (%)	Low Birth Weight (%)
Select Asian Countries	1999 Rank [@]	1999 Value	1999	1999	1999	1995-2000	1995-99
Bangladesh	53	89	158	370	59	56	30
China	147	12	11	780	70	10	6
India	49	98	70	450	63	53	33
Indonesia	52	73	38	580	66	34	8
Nepal	47	104	75	220	58	47	na
Pakistan	39	112	84	470	65	26	25
Philippines	83	42	31	1020	69	28	9
Sri Lanka	135	19	17	820	74	34	25
Thailand	101	30	26	1060	69	19	6
Regions of the World							
South Asia		104	74	443	62	49	31
Sub Saharan Africa		173	107	503	49	31	15
East Asia and Pacific		45	35	1057	69	19	18
Industrialized Countries		6	6	26157	78	-	6
Developing Countries		90	63	1222	63	29	17
Least Developed Countries		164	104	261	51	40	18

Source: UNICEF (2002), <http://www.unicef.org/sowc01/toc.htm#>

Notes: (1) Under-five mortality rate – Probability of dying between birth and exactly five years of age expressed per 1000 live births; (2) Infant mortality rate – Probability of dying between birth and exactly one year of age expressed per 1000 live births; (3) Undernourished children- % of under fives suffering from underweight – below minus two standard deviations from median weight, that is the moderately and severely undernourished.

(4) Low Birth Weight – Birth weight less than 2,500 grams

@ A lower rank indicates lower status.

The south Asian region as a whole has poorer indicators, however the countries in this region have shown improvements since the 1980s in the reduction of undernourished children (below five years). As shown in Table 2 below, South Central Asia (includes South Asia) has the largest percentage and number of undernourished children across the years but in the decade of nineties their incidence and number have come down with a slower pace of reduction in the second half of this decade.

Table 2 Trends in underweight of children (under five) in developing countries, by regions 1980-2000

Region	Percent underweight					
	1980	1990	1995	2000	Change 1980-1990	Change 1990-2000
South Central Asia	60.8	52.2	48.0	43.7	-14.1	-16.3
South East Asia	52.4	42.6	37.7	32.8	-18.7	-23.0
Africa	40.5	37.8	36.5	35.2	-6.7	-6.9
Latin America and Carinbean	25.6	19.1	15.8	12.6	-25.4	-34.0
Developing countries	47.1	39.8	36.0	32.5	-15.5	-18.3
Number underweight (million)						
	1980	1990	1995	2000	Change 1980-1990	Change 1990-2000
South Central Asia	89.36	93.36	83.62	78.53	4.5	-15.9
South East Asia	27.71	24.24	21.51	18.94	-12.5	-21.9
Africa	34.78	41.68	44.51	47.3	19.8	13.5
Latin America and Caribbean	13.19	10.38	8.59	6.82	-21.3	-34.3
Developing countries	221.35	219.73	196.59	181.92	-0.7	-17.2

Source: Table 1.2 of 4th report on the World Nutrition Situation, UN ACC/SCN (2000)

It is well recognized by now that economic growth is not sustainable without human development and in this context, nutrition and economic growth with human development have a two-way causal relationship. Poor nutritional status affects the health status in the short run and the long run thereby affecting an individual's performance level once in school, school attendance and the ability to undertake work in a sustained manner. All these affect the prospect of securing a decent livelihood. Various studies have highlighted the impact of nutritional status of children on school enrollment, their cognitive abilities and school performance. Estimates suggest that protein energy malnutrition in childhood is associated with a 15 point decrease in IQ, which in turn is associated with a 10 percent drop in earnings and hence productivity. The adults who were moderately malnourished as children would be 2-6 percent less productive than their counterparts who were not malnourished and that iron deficiency anemia is associated with a 17 percent loss of productivity in heavy manual labor. Estimates of cost of malnutrition as a percent of GDP varies from 1 to 5 percent depending upon the severity of malnutrition in India.¹ About 9.8 percent of the deaths in the year 2000 across all countries, was caused by undernutrition among children and women and is the largest among many other causes.² About 2.8 million

¹ For details on calculation, methodology and limitations see Horton (1999) and Ramana *et.al* (1997).

² The World Health Report 2001 indicates that among these deaths the south Asia region accounts for the maximum.

deaths occur due to malnutrition in low income Asian region out which India accounts for about 63 percent followed by Pakistan and China at about 13 and 10 percent respectively.

The reverse impact of economic growth on nutrition is highlighted by the fact that most of the undernourished people of the world live in poorer regions. The recent world health report indicates that the South East Asia region, which accounts for the largest percentage of population with average household income under US\$ 1 a day, has the highest number of underweight children.³ Within India the poorer regions have larger percent of undernourished children but states with higher per capita growth rates also have large proportion of undernourished children.

Another approach to measure the nutritional deficiency is based on the input approach wherein if the diet does not include the recommended levels of intake of various food categories then the person could be considered as malnourished. Alternatively the food intake is converted into equivalent calories, proteins and other micronutrients and if the intake falls short of the recommended dietary allowance (RDA) then a person is considered to be undernourished. In India the commonly used norm is the calorie intake norm of 2400 kcal per capita per day in rural areas and 2100 kcal per capita per day in urban areas. The National Sample Survey Organization (NSSO) at the household level collects information on food intakes for a large number of disaggregated food items. These are converted into equivalent calories which gives an indication of the nutritional status of the household.

NSS data shows that the nutritional intake in India as measured by the average calorie intakes have decreased since mid 1970s across all the states as well as in the rural and urban areas. However, it has been noted in recent estimations that though the growth in real income and reduction in poverty have been observed in the past two decades in India corresponding changes in nutritional intake have not been reported. Table 3 shows the comparison of head count ratios based on income poverty line and the calorie norm for rural and urban India across states. There is a clear divergence between the two despite the fact that poverty lines in India are pegged based on the calorie norm. However in the 1990s, the average caloric intakes improve for the bottom quintiles across a majority of the states whereas for the top three quintiles there is a decline. The results for protein are broadly the same and studies on intakes of other nutrients are very few.

³ However, in this region, this report also indicates the largest number of underweight children in the household income category of *above* US\$ 2 a day indicating that poor nutritional status is also affected by non-economic factors. The study further indicates that if the people living on less than \$2 per day had the same risk factor prevalence as people living on more than \$2 per day, then protein-energy malnutrition would be reduced by approximately 37% (Table 4.1, pp52 of the report).

Table 3: Head Count Ratios Based on Calorie Norm and Poverty Line Incomes (Percent)

	Calorie norm (2400 kcal per capita per day)		Poverty line incomes		Calorie norm (2100 kcal per capita per day)		Poverty line incomes	
	Rural				Urban			
	1993- 1994	1999- 2000	1993- 1994	1999- 2000	1993- 1994	1999- 2000	1993- 1994	1999- 2000
Andhra Pradesh	76.2	80.7	29.5	11.1	64.4	60.9	38.3	26.6
Bihar	85.2	74.9	65.3	44.3	49.9	51.2	34.5	32.9
Gujarat	78.9	80.5	29.8	13.2	62.1	61.6	27.9	15.6
Haryana	56.0	55.1	28.3	8.3	55.2	55.3	16.4	10.0
Himachal Pradesh	62.0	56.5	34.0	7.9	35.1	27.1	9.2	4.6
Jammu & Kashmir	44.6	39.7	15.4	4.0	35.1	29.3	9.2	1.9
Karnataka	72.8	78.9	37.0	17.4	61.0	60.8	40.1	25.6
Kerala	78.2	81.2	33.3	9.4	67.1	63.2	24.6	20.2
Madhya Pradesh	70.1	78.4	35.9	37.1	58.4	59.0	48.3	38.4
Maharashtra	82.7	83.3	50.4	23.7	65.4	62.5	35.2	26.8
Orissa	67.3	74.6	56.4	48.0	42.9	41.8	41.6	42.8
Punjab	57.6	62.8	15.6	6.4	59.0	51.9	11.4	5.8
Rajasthan	51.2	56.7	26.1	13.7	50.2	45.3	30.5	19.9
Tamil Nadu	80.6	86.5	41.9	20.6	68.8	66.7	39.8	22.1
Uttar Pradesh	62.6	64.5	41.1	31.2	57.0	56.3	35.4	30.9
West Bengal	69.4	75.6	52.4	31.9	55.2	58.2	44.7	14.8

Source: The head count ratios for calorie norms are from Viswanathan and Meenakshi (forthcoming) and Meenakshi and Viswanathan (2003) for rural India and the same authors' calculation for urban India. The head count ratios for income poverty is from Planning Commission (2002).

Thus whatever be the approach to measure the nutritional status of the people in India there is some cause for concern and the existing measures to improve the situation needs to be re-looked. The nutritional status of the people is affected both due to inadequate food intake caused by food insecurity at the household level as well as non food factors like health status, access to clean water, sanitation and socio-cultural issues.⁴ In order to improve the food security status of the households in India, there have been adequate number of public intervention programs (direct and indirect) for a long time in this country but they

⁴ Osmani (1997) indicates that to raise the nutritional status of the people apart from higher income the two other important requisites are provision of public services (namely better environmental conditions, safer drinking water and adequate health services) and cultural behaviour (like higher female literacy).

have not been effective in bringing about the desired results of improving the nutritional status of the population.

The present study aims to look at the impact of one such intervention program called the Integrated Child Development Services targeting children below the age of six years and expectant and nursing mothers across rural and urban areas in India and a similar program in rural Tamilnadu in India assisted by the World Bank. These are both direct intervention programs having a food and a non-food component and the impacts can be considered short term in nature. Though there have been a large number of studies looking at the impact of ICDS and TINP on the nutritional status of children, this study proposes to study the impact of such intervention programs during a decade when market reforms have been initiated at both the national and sub-national levels. The economic reform measures could also adversely impact the growth in income and employment thereby increasing the poverty levels of households which in turn would affect the food intake and its distribution within household. During such times there is a stronger reason for the need of such programs, however, the reform measures could also affect the social sector expenditure leaving lesser resources for the safety net programs. This calls for not only effective and efficient but also well targeted spending of the scarce resources to reach the needy.

3. Location and Trends in Nutrition Status Among Children in India

Malnutrition among children can be classified into protein energy-malnutrition and micronutrient malnutrition. The former is captured mainly through anthropometric measures like weight for age, height for age and weight for height. If the growth indicator of the child falls two standard deviation below the reference median on weight for age, height for age or weight for height then the child is considered to be *underweight*, *stunted* or *wasted* respectively. Each of these measures reflects different aspects of undernourishment. Underweight indicates chronic and acute undernutrition, stunting indicates chronic undernutrition caused by inadequate nutrition over a long period of time and wasting indicates prevalence of acute undernutrition due to seasonal variations in food security and recent episodes of illness. The present study uses underweight as the indicator of undernutrition as most studies uniformly report this measure and it takes into account both chronic and acute undernutrition. Micronutrient undernourishment is primarily analyzed by deficiency of iron, vitamin A and iodine but is not undertaken in this study.

The information base on nutritional status is inadequate to do a trend analysis across states or across income classes or occupational classes particularly based on the outcome approach. The data set provided by the National Institute of Nutrition (NIN) is the only source that provides information on select states in India for the rural areas. The database for input approach is available from the NSS data at regular intervals at the household level but intakes of individual members of the household like children or women are not given. The NIN does provide information on intakes for individual members of the household but its coverage is limited to a few states for the rural areas. Given the limited database the following aspects can be summarized on the nutritional status of children with supporting data as shown in Table 4 below:⁵

⁵ These observations are summarised based on author's own calculations and studies by Ramana *et.al* (1997), NIN reports on nutritional status for select states, World Bank (1999, 2001).

Table 4 Percentage of Undernourished Children Across Place of Residence and Standard of Living in India

State	Annual per Capita Growth Rate of SDP [@]	Place of Residence				Standard of Living		
		Rural		Urban		1998-99		
		1992-93	1998-99	1992-93	1998-99	Low	Medium	High
Andhra Pradesh	3.6	52.1	40.7	40.2	28.6	48.5	36.5	16.1
Bihar	2.1	51.8	36.6	37.3	27.3	59.5	52.1	32.7
Gujarat	4.9	45.8	49.3	40.5	38.1	63.0	46.2	25.9
Haryana	3.1	39.4	35.6	33.0	31.3	42.8	40.8	23.5
Himachal Pradesh	5.1	48.3	28.7	30.2	44.8	52.7	46.3	33.1
Jammu & Kashmir	2.5	na	37.2	42.6	20.7	58.7	34.7	21.1
Karnataka	5.8	25.5	28.0	24.3	22.4	54.6	45.3	20.0
Kerala	4.0	30.6	58.4	22.9	44.3	35.8	28.8	19.2
Madhya Pradesh	2.8	59.4	53.2	50.1	44.1	61.5	58.0	33.6
Maharashtra	3.5	57.5	55.5	45.5	45.3	60.4	49.5	27.5
Orissa	2.3	44.7	31.8	38.4	18.6	61.9	48.9	27.8
Punjab	2.7	47.4	51.9	40.0	46.0	45.9	37.0	19.2
Rajasthan	4.6	41.1	38.3	43.9	33.5	57.6	52.4	37.2
Tamil Nadu	5.4	57.3	53.6	32.3	42.6	47.2	35.4	10.3
Uttar Pradesh	3.0	na	52.6	Na	31.5	61.5	51.1	34.4
West Bengal	5.5	54.2	49.6	39.8	38.4	56.5	44.2	21.4
All India	-	59.9	49.6	45.2	38.4	56.9	46.8	26.8
Standard Deviation	-	10.63	10.26	8.40	9.62	8.55	8.23	7.55

Source: Deaton and Dreze (2002) for the annual per capita growth rate of SDP; Radhakrishna (2001) for 1993-94 and various National Family Health Survey Reports for 1998-99 for undernourished children.

Note: (1) Undernourished Children are classified based on weight for age below 2 standard deviation from the median.

(2) The data is for the children are below the age of 4 years in 1993-94 and below the age of 3 years for 1998-99.

(3) The Standard of Living is calculated based on the asset holding of households and the details are in National Family Health Survey: 1998-99 (2001), pp34-35.

(4) The standard deviation does not include All India values.

@ SDP: State Domestic Product

- Severe undernourishment (below 3 standard deviation of the reference median) has come down in all the states in India in both the rural and urban sectors.
- Prevalence rate of moderate plus severe undernourishment is still very high ranging from about 30 to 45 percent and above in many rural areas as shown in Table 4.
- Rural areas show larger percentages of undernourishment than urban areas.

- The relation between level of economic development (indicated by per capita growth rate in state domestic product) and nutritional status is very weak.
- States like Maharashtra and Tamil Nadu whose per capita (real) state domestic product has grown significantly in the last decade have not shown dramatic improvements in measures of nutritional status of children.
- In all the states the percentage of undernourished children are larger among poorer households while richer households also show prevalence rates ranging from 15 to 30 percent in 1998-99 (Table 4).
- However, the table shows that within a state the standard of living of the household affects the nutritional status of the children and even though there is a prevalence of undernutrition among the richer households the rates are lower in states with high growth rates of state domestic product (SDP) than in states with low growth rates of SDP.
- The percentage of undernourished children is larger among households where the adults are chronically energy deficient.
- Children belonging to the socially disadvantaged groups like the scheduled caste and scheduled tribe show lower nutritional status.
- Gender differentials in nutritional status are not apparent.
- Based on the NIN data Kerala and Tamilnadu reduced the severely malnourished by one fourth among children below five years since mid 1970s while most of the other states reduced by one half. However, there is a marginal decline in the moderately malnourished in all states except Orissa.
- The percentage of normal status for children below five years showed slow improvement till 1990 and seem to have picked up in 2000 for all the states covered under the NIN database.
- The analysis of the district profile data of Department of Women and Child Development (DWCD) across states indicates that severe undernutrition rates are the highest in Bihar (about 25%) followed by Rajasthan (about 11%) and the remaining states below 5 percent.
- However when moderate malnutrition magnitudes are compared then the states like Bihar, Tripura and Rajasthan show a prevalence rate of above 40 percent, with Himachal Pradesh, Haryana, Punjab and Manipur in the range of 20-30 percent and the remaining states (excluding the southern and eastern states) in the range of 15 to 20 percent.
- Apart from income other socio-economic determinants of nutritional status are larger family size, literacy status of head of the household and mother, occupation of the head of the household as shown in Table 5.

Table 5 Percentage of Undernourished Children Across Socio-economic Variables in 2000 for Rural Areas in Select States

Social groups	Scheduled Caste	Scheduled Tribe	Backward Caste	Others
	68.6	62.4	58.8	56.4
MPCI[@] (Rs.)	<300	300-600	600-900	>900
	64.9	59.2	51.2	43.3
Occupation	Landless Agri. Labourer	Other labour	Owner Cultivator	Others
	67.9	66.8	70.3	68.4
Education of head of household	No literacy	Read & Write	School Education	College Education
	65.2	61.7	58.2	17.8
Family Size	1-4	5-7	8-10	>=10
	58.8	60.3	61.9	65.1

Source: NIN (2002)

Note: (1) This covers only the rural areas in the states of Andhra Pradesh, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Tamilnadu and West Bengal.

(2) The nutritional status is according to the weight for age standard deviation classification.

@ Monthly per capita income

Clearly the above summary indicates that there are overall improvements in prevalence of severe undernutrition among children in the 1990s though large variations exist across states as well as across economically and socially disadvantaged groups. It is apparent that to reduce undernutrition to the developed country levels would require not only socio-economic development but more importantly direct intervention by the state to address this issue on a large scale. There has been state intervention in India since mid 1970s to address the problem of child undernutrition and the next section analyzes the performance of this scheme.

4. Integrated Child Development Services (ICDS)

About the Program

ICDS forms a part of the government's direct food based transfer program. The integrated package consists of nutrition, health and early child development services as the efficacy of one service depends on the complementary support it receives from other services. The Scheme was started in 1975-76 on an experimental basis in 33 blocks. Based on encouraging results, it was decided to expand the coverage of the scheme and as on 30.9.99, 4200 Centrally Sponsored ICDS Projects have been operational. As on 30.9.99, 370908 village centers called *Anganwadis* were providing supplementary nutrition to 257.88 lakh children and 51.61 lakh mothers and pre-school education was available to 126.95 lakh children. The VIII Five Year Plan witnessed the massive expansion of ICDS Scheme throughout the country. During this period, further 1346 projects were operationalized bringing the total coverage of 3946 projects under ICDS. There was also substantial growth

in the number of beneficiaries of supplementary nutrition in Centrally Sponsored ICDS Projects from 172.71 lakhs in the beginning to 221.17 lakhs at the end of the VIII Five Year Plan. Since the beginning of 1990 the World Bank started providing credit for some components of the ICDS project in a few select states.

The World Bank assisted ICDS projects were:

- I. ICDS-I Project which was in operation since 1990 in the States of Orissa and Andhra Pradesh, ended on 31st December, 1997. This Project covered 191 blocks of Orissa and 110 blocks of Andhra Pradesh at a total cost of Rs. 343.68 crores.
- II. ICDS - II Project in Bihar and Madhya Pradesh became operational in September, 1993 for a period of seven years and came to an end in September, 2000. This Project covers 210 blocks in Bihar and 244 blocks in Madhya Pradesh in predominantly tribal and difficult area, in a phased manner. There are 75 and 177 tribal blocks in Bihar and Madhya Pradesh respectively. In addition to normal ICDS activities this project provides some additional services which include civil works, strengthening of health services and training, community mobilization, communication, women's empowerment, etc.
- III. ICDS-III Project was started in five states of Kerala, Maharashtra, Rajasthan, Tamil Nadu and Uttar Pradesh in March, 1999. The total cost of the Project was about Rs. 1000.11 crores for a period of five years from 1998-99 to 2003-2004 (excluding country-wide training cost). The Project was divided into two primary components Service Delivery and Programme Support-which include Service Quality Improvement, Women's Empowerment, Staffing and Infrastructure Development, Management and Institutional Development, Community mobilization, Monitoring and Evaluation etc.
- IV. Andhra Pradesh Economic Restructuring (APER) Project was launched in Andhra Pradesh in March 1999 covering a total of 251 blocks for a total period of 5 years from 1998-99 to 2003-2004. The project components under this Project are nearly the same as that of ICDS-III Project.

The services under ICDS are interlinked with various sectors with the aim of providing a lasting benefit on the well being of children and their mothers.

The services provided by the ICDS in its current form are as follows:

- (a) Supplementary nutrition program (SNP)
- (b) Immunization,
- (c) Health check-up,
- (d) Referral services,
- (e) Non-formal pre-school education (PSE) and
- (f) Nutrition and health education (NHE).

The classification of beneficiaries and their availing of the services as mentioned above are given below:

Children	0-12 months:	(a) to (d)
	1-3 years	(a) to (d)
	3-6 years	(a) to (e)
Girls	11-18 years	(f)
Mothers	Expectant and nursing	(a) to (d)
Women	11-45 years	(f)

This program is implemented by the department of women and child development at the center in coordination with the state governments with the aim of holistic development of the child. The financing of ICDS is both by the government and international agencies. The central government bears the operational cost including the establishment cost and the health component with support from United Nations International Children's Fund (UNICEF) for equipments. The state government finances the supplementary food distributed to the beneficiaries and the local transportation, storage, fuel

and condiment costs. Some states receive food aid from the World Food Program (WFP) and the Cooperative for Assistance and Relief Everywhere (CARE) to meet the supplementary food requirements. The Swedish International Development agency (SIDA) provided support to over 40 ICDS centers in Tamil Nadu up to 1998. Apart from this the World Bank provided training and management in some states for ICDS staff.

Targeting

The number of operational ICDS projects varies substantially across the states and looking at the state level figures may not give a clear picture whether within a state they are appropriately distributed across the economically backward regions. A survey study in mid 1980s showed that there was a clear shortfall in the regions where they were required the most and there was a certain gap between the allotted and operational projects. At the same time even within the project regions not all eligible beneficiaries were enrolled.

The identification of child beneficiaries is based on their nutritional and socio-economic status. Special attention is supposed to be given to children with very low levels of nutritional status. Targeting also takes place area wise and for vulnerable sections of the populations. In the former case emphasis is given to relatively backward areas with large number of poor people, tribal areas and drought prone areas and in the latter case children belonging to households of landless agricultural laborers, marginal farmers or households whose monthly income is below a certain amount (in 1984, this was taken as Rs. 500 per month) are considered.⁶ The coverage of beneficiaries could be classified according to project location: rural, urban and tribal. In 1995-96 the rural projects constituted about 81 percent, tribal 13 percent and urban 6 percent. Consequently the number of beneficiaries has also grown over time with different rates for different groups.

Among the various services provided by ICDS, the children in SNP has grown at a faster rate and is the largest among the beneficiaries. This is followed by the children attending the PSE who numbered about 37 lakhs in 1992. The number of mothers attending SNP has grown at a rather slow pace, from about 5 lakhs in 1981 to about 27 lakhs in 1992. If a comparison of the coverage of child beneficiaries is made between 1981 and 1992, it is observed that increases have mainly taken place in tribal areas with the rural and urban areas showing a marginal improvement. Further, it is noted that the beneficiaries mainly belong to the lower income groups and vulnerable groups. In 1999 the coverage under SNP of children and mothers was only about 40 percent in rural/urban areas and 75 percent in tribal areas. For PSE the coverage was 50 percent in rural/urban areas and 75 percent in tribal areas.⁷

The National Sample Survey data collects information on food intakes and expenditures across households for a large number of disaggregated commodities and is available at unit record once in five years since mid 1980s. This data also provides information on the number of meals taken outside the house out of which one of the components is the meal taken in school. The data indicates hardly any positive numbers for households in many of the states across all expenditure classes in both rural and urban areas. The average number of meals per household per month was about three for all India rural in 1993-94 which increased to four in 1999-2000 for the poorest per capita expenditure class. The states with positive numbers are in Gujarat, Kerala and Tamilnadu in 1993-94 increasing to a larger number in the 1999-2000 survey (mainly in the rural areas) with the exception of Bihar, Haryana, Himchal Pradesh, Punjab, Rajasthan and Uttar Pradesh. Tamilnadu figures are the highest at about 25 meals for 1993-94 and 21 for 1999-2000 in rural areas but this would include children up to the age of fifteen as the state also provides noon meals scheme at the school level. Thus large scale survey data like NSS shows near absence of beneficiaries across rural and urban areas indicating a rather poor targeting.

⁶ In 1992 also the same income criteria was being used without an attempt to convert it to real terms.

⁷ These are as reported in NIPCCD (1992).

However this aspect needs to be explored further particularly when the scheme is being universalized in the X Plan (of the central government) period.

Impact of ICDS

There is virtually no evidence of the impact of ICDS on the impact on household food security and poverty. The impact of ICDS has usually been studied based on the health outcomes from the different services provided. Based on the health outcome indicators, there seems to have been a definitive improvement in infant mortality, nutritional status, morbidity pattern, immunization coverage and utilization of health services once ICDS was introduced. There is some evidence that PSE of children in ICDS areas has had an impact on enrollment and scholastic performance in the later years with better language, cognitive and conceptual skills compared to children from non-ICDS areas. However, not much of this is well documented and available in the policy circles. Apart from SNP the other services under nutrition component are NHE and prophylaxis against nutritional anemia and vitamin A deficiency. It is understood that the NHE component of the program for women and mothers has had a significant impact on their awareness about their personal and child's nutritional needs. The present study focuses only on the impact of the nutrition services as it is directly linked to household food security with the focus on improving intra-household distribution.

Supplementary Nutrition⁸

Supplementary nutrition is a major component of the program in terms of importance and cost. All the beneficiaries who attend the *anganwadi* center are given the feed. The children in the 3-6 years attend the pre-school and have the lunch provided by the center whereas the expectant and nursing women and children in the 0-2 years age group come to center for their supplementary feed. In some sense self-targeting takes place with regard to supplementary feeding as richer households usually do not prefer to eat this food, however children from these households may attend the pre-school. The food to the children is provided either as ready to eat food or hot cooked meals or sometimes dry ration. The effectiveness in terms of impact has been the maximum for cooked meals as in the other two cases there is tendency for the food being shared by other members of the household. The nutrition supplement is supposed to be provided for 300 days in a year; however, there is a significant variation across the states in the number of days. Tamilnadu is the only state which shows the target days being achieved whereas states like Bihar are at the lower end (Shariff, 2002).

Low birth weight (LBW) is the one of the main causes of infant mortality and high morbidity rates and is the first step leading towards an undernourished child (among the survived children). One of the ways to improve low birth weight is to improve the nutritional and health status of the expectant mothers and the SNP feeding to expectant mothers under ICDS seems to have a definitive impact in improving LBW.

Table 6 shows that there is definitely a positive difference between the ICDS and non-ICDS with larger impact in the tribal areas. However, if the absolute percentages within the ICDS areas are compared only about 60 percent of children are 2.5 kgs and above at birth and there is still a large gap in achieving the best results. What is starker is the percentage of mothers who know the birth weight of their child in both ICDS and non-ICDS areas. Even within the ICDS areas there does not seem to have been adequate knowledge and facilities to document the birth weights as is seen from the large proportion of women who either did not know or failed to recall the weights. However, the presence of ICDS project does have a small impact in creating the awareness as noted in the higher percentage compared to non-ICDS area.

⁸ This section summarises the findings mainly from Subbarao (1989), NIPCCD (1992), Ramana et. al. (1997), World Bank (1998a 1998b and 2001) and few other related studies as mentioned within the text.

Table 6 Difference between ICDS and Non-ICDS areas in select indicators

	Rural	Tribal	Urban	All
Low Birth Weight				
	-26	-38	-20	-15
Mothers who knew birth weights (%)				
ICDS	24	19	30	24
Non-ICDS	18	9	27	17
Weight for Age [#]				
0-3 years				
Normal	-2	-3	-14	-5
Moderate	1	-1	6	1
Mild	-2	3	7	2
Severe	3	1	1	2
3-6 years				
Normal	-5	-4	-12	-8
Moderate	1	-1	7	2
Mild	1	4	7	4
Severe	3	1	-2	2

Source: NIPCCD (1992)

Notes: # The nutritional status is measured as weight for age and the numbers indicate the difference in the percentage of children in each of the categories. A positive number indicates higher value in non-ICDS areas.

As regards children in the 0-6 year age group the NIPCCD evaluation finds a large proportion of children below normal nutritional status along with the fact that average weight was below the normal weight for different age groups in the ICDS areas.

Studies indicate that the targeting of the 0-3 year olds is usually poor for two reasons: (a) irregularity in obtaining the quota (due to dependence on an adult for coming to the center) and (b) possibility of sharing the food with other members of the household or not completing the entire meal as they are not under the surveillance of the ICDS worker once they get back home. The NIPCCD evaluation showed lower mean weight for age and also higher proportion of children below the required standard compared to the 3-6 year olds even in the ICDS areas. Table 6 shows that between ICDS and non-ICDS areas severe malnutrition status is not very different in both the age groups as well as across the locations. However, in the 0-3 years age group the urban area had smaller proportion of children with normal nutritional status than in non-ICDS areas.

The NIPCCD study looks at the impact based only on ICDS and non-ICDS areas however there could be significant differences within ICDS areas between beneficiaries and

non-beneficiaries. A better understanding of the performance would be to look at the improvements within ICDS areas over the period of time as many of these outcomes take effect after a longer time and also knowledge dissemination about nutritional requirements etc. takes time. Ramana *et al.* (1997) analyze the results from the district profile survey (again for select states only) for the period 1988 to 1996 to get an understanding of the trend within ICDS areas.⁹ The main findings are: severe malnutrition level which was below 5 percent in the beginning of the survey period came down to nearly nil levels at the rate of 0.34 percent per year. The total (moderate plus severe) malnutrition levels showed a fall of about 0.69 percent per year. This analysis is mainly based on the northern and north-eastern states. Another study indicates that between 1975-79 and 1988-90, the contribution of ICDS to the decline in the percentage of severely malnourished is about 8% and notes that in the absence of ICDS, it would have still declined by 5.8 percentage points.¹⁰

There clearly seems to be lack of enough evidence to highlight the achievements of ICDS and whatever little data there is indicates only a marginal improvement since the introduction of the program in the mid 1970s.

Other Services

Apart from supplementary nutrition, regular health check-ups, growth monitoring, immunisation and education for the pre-school children are the other components of the ICDS package. Several government departments and voluntary organizations provide many of these services but there is a definitive difference in its utilization between ICDS and non-ICDS areas according to the NIPCCD study. The difference was large in the education component compared to the health check-up and immunization component. However, even within the ICDS areas utilization of services by the expectant and nursing mothers was less than 50 percent (except in the case of pre-school education for 3-6 years which was about 56 percent) showing that accessibility and higher awareness due to the presence of ICDS did not make a significant impact. The tribal areas showed a larger utilization rate compared to the rural and urban areas. The community participation in rendering services to ICDS was only about 8 percent which was higher in the tribal areas.

Investment and Efficiency

There are very limited studies that look into the cost effectiveness of investment in ICDS. The possible reasons for absence of cost-benefit studies could be lack of adequate information on costs as well as impacts. Before the results from these studies are summarized an analysis of the public expenditure by the central and state government is considered. The expenditure by the government on nutrition indicates a commitment towards providing social security to the poor through schemes that have a nutrition component.

Trends in Government Expenditure on Nutrition and Malnutrition Reduction

In 1997-98 the entire food based transfer program accounted for about 0.9 percent of the GDP. Out of this 97 percent was the government's share and remaining by the international aid agencies. The direct nutrition interventions (ICDS Program and various other supplementary feeding programs like Balwadi Nutrition Program, Day Care Center Scheme, Iron and Vitamin A supplementation) accounted for 19% of the total cost of food based transfer programs while the value of foodgrains transferred through employment programs was about 0.4%.¹¹ Among the direct intervention programs ICDS has the largest share in which the supplementary nutrition program accounts for two-thirds of the cost. The

⁹ This survey covered 131 districts in the states of Haryana, Punjab, Bihar, Rajasthan, Manipur, Sikkim, Mizoram, Meghalaya, Tripura, Goa, Daman and Diu and was conducted by the department of woman and child development of the central government.

¹⁰ This is reported in Radhakrishna (2000)

¹¹ These figures are from World Bank (2001).

ICDS scheme is managed by the department of woman and child development of the government of India and the expenditure on this component accounts for more than 80 percent of the entire expenditure by this department. The expenditure (in constant 1993-94 prices) for ICDS was about 2 crores in 1988-89 which increased three fold to about 6 crores by 1997-98 indicating the emphasis on this project by the government since the VIII Plan period.

As the central government bears mainly the operational cost and a small proportion of the food cost the state level expenditure on nutrition indicates the amount spent on supplementary feeding for ICDS. There are however states like Gujarat, Orissa and Tamilnadu where the mid-day-meal schemes are in operation for the school going children up to the age of 15 years and the nutrition expenditures is higher for these states.

The studies which have analyzed social security expenditures in India during the 1990s indicate that the expenditure on nutrition constitutes less than 10 percent (of total revenue expenditure) in all the states except Tamilnadu with about 18 percent share during the period 1991-95. Though the expenditure on nutrition includes other schemes of individual states apart from the ICDS, the expenditure on supplementary nutrition component of ICDS forms a major share in all the states.¹²

The rate of growth in real expenditure on nutrition dipped towards mid 1990s across the states but after 1994 posted a 10 percent average growth rate across states. Tamil Nadu posted the highest annual growth rate (37%) in nutrition expenditures in real terms (1997/98 prices) during this period. Between 1970 and 1990, no definitive picture emerges regarding the trend except for Tamilnadu which has consistently increased its share from 0.3% in 1972-73 to about 4% in 1991. Table 7 shows the share of nutrition expenditure as percent of total revenue expenditure across states for the decade of 1990s and early 2000s. However, since 1990 there is a clear decline for all the states except Andhra Pradesh. The state of Tamil Nadu still spent a larger share of about 2.5 to 3 percent in the entire decade of 1990s. In Andhra Pradesh the average share increased to about 6.5 percent in 1995-99 from 0.27 percent in 1991-95 and then declined to 4.1 percent in 1999-2002. No clear reason emerges from the studies for this pattern in Andhra Pradesh.

The plan and non-plan components of nutrition expenditures indicate the new investments and recurring expenditures respectively and a comparison of the two could indicate any possible expansions in the nutrition schemes at the state level. Some states like Bihar show only plan expenditures during the entire decade. In Andhra Pradesh for the pre-1995 period the plan component was in the range of 60-70 percent but after 1995 this changed dramatically and reduced to about 3-4 percent with the non-plan taking up the major share. The other state with a large shift is Rajasthan while most of the remaining states show a marginal increase/decrease or constancy in the plan/non-plan shares.

¹² At the central level this constitutes more than 90 percent after 1997 (World Bank, 2001)

Table 7 Select Indicators on Nutrition Expenditure Across States

	Ratio of Nutrition Expenditure to Total Revenue Expenditure ¹ (%)				Ratio of Plan to Total Expenditure ² (%)		Ratio of Expenditure to outlay ³ (%)
	1990-91	1991-95	1995-99	1999-2002	1991-95	1995-2000	1997-98
Andhra Pradesh	0.3	0.3	6.5	4.1	67.6	2.8	62.9
Bihar	0.2	0.2	0.0	0.2	58.9	92.6	43.4
Gujarat	1.4	1.7	1.3	0.9	100.0	100.0	91.1
Haryana	0.5	0.5	0.3	0.3	45.6	37.0	99.0
Himachal Pradesh	na	0.2	0.2	0.2	77.3	69.8	100.0
Jammu and Kashmir	na	0.1	0.0	0.0	33.3	37.3	88.4
Karnataka	1.6	0.8	0.7	0.6	29.7	45.6	100.1
Kerala	0.2	0.2	0.1	0.0	24.8	12.8	86.7
Madhya Pradesh	0.4	0.3	0.6	0.5	39.6	37.6	17.8
Maharashtra	0.6	0.6	1.0	0.4	62.9	76.4	84.6
Orissa	0.7	0.6	1.5	0.7	55.7	82.9	70.5
Punjab	0.0	na	Na	na	na	na	98.0
Rajasthan	0.6	0.4	0.5	0.6	75.0	96.0	55.6
Tamil Nadu	4.0	3.3	2.9	2.6	36.7	37.3	116.4
Uttar Pradesh	0.0	na	Na	na	na	na	15.1
West Bengal	0.3	0.1	0.1	0.3	53.6	73.6	48.1

Source: (1) and (2) databank of National Institute of Public Finance, Delhi.

(3) Annual plan expenditure annexure 6.5 from planning commission document, <http://planningcommission.nic.in>.

An important aspect noted in the mid term appraisal of the 9th Plan of the government of India is the effective utilization of funds allocated to the social sectors schemes. It is observed that the amount allocated in the plans is usually underutilized by the state as well as the central government as only a proportion of the amount allocated under the planned heading is actually expended. The reason for this could be that resources are not available when expenditures have to be made and perhaps indicates a lack of priority by the governments to find resources to finance the schemes under this head.

Given that fewer amount is spent than allocated it would be informative to know how much of the amount spent is productive. As the share of nutrition expenditure is a very small component in the social expenditure as well as total expenditure (even smaller as a

proportion of domestic product) except in Tamil Nadu, one may expect only a weak correlation between this expenditure and child (and adult) malnutrition status. Firstly no clear trend emerges as to the outlay and nutritional status of children across the states. Richer states like Gujarat and Maharashtra have lower expenditures as a proportion of total expenditures but the number of undernourished children is very large. Tamilnadu spends a substantial amount of its total expenditure on nutrition has lower level of malnutrition and Andhra Pradesh which has substantially increased proportion of nutrition expenditure over the years is showing reductions in malnutrition levels. The states like Bihar and Uttar Pradesh which have higher numbers and percentages of children malnourished have not altered their priorities.

Studies have shown that instead of universal targeting of the nutrition schemes if targeting is done either for children in poorer households or malnourished children then perhaps the expenditure could be more effective. Though the ICDS has been in operation for more than two decades there are very few studies that conduct a cost-benefit analysis of it. Only recently some evidence has been provided towards this extent.

Benefit cost ratios and cost effectiveness

The costs in a program like ICDS mainly includes wages of the workers, cost of food, health and education services. The quantification of benefits is more difficult as improvement in undernutrition is not just improvements in physical growth but also improvements in cognitive abilities in the school going age, having tremendous impact on earnings and productivity as an adult.¹³ In other words, a program like ICDS could have long term economic and non-economic benefits due to a qualitatively better labor force with lower absenteeism and increased innovation in individual tasks arising from a healthier individual and reductions in human costs of mortality and illness with reduced costs of health care.

The benefit cost ratio estimated varied from Rs.2.3 to Rs.26.4 depending on various assumptions about program efficiency and productivity loss (combination of three parameters: productive life expectancy, average annual wage rate for an adult and average rate of employment) for different nutritional deficiency disorders.¹⁴ The highest benefit cost ratio was for protein energy malnutrition programs followed by the iodine deficiency and anemia programs. Since the benefits are difficult to capture in such programs the alternative approach is to look at the cost effectiveness of the program. With the focus on provision of supplementary nutrition in ICDS it is estimated that in order to transfer Re.1 worth of food to the beneficiary it costs about Rs. 1.22. A comparison with the indirect food transfer program namely the public distribution system in the country ICDS cost about 80 percent less to transfer 100kcal of nutrition to a beneficiary. This effectiveness would improve further if leakages are plugged and targeting is towards needy children as mentioned in the previous section.

The experience of other nations on malnutrition reduction programs indicates that the most cost effective interventions are related to micronutrient programs where the cost per unit is less and effects are dramatic followed by (well-designed) education programs for changing behavior. The next cost-effective programs are the feeding programs, provided they are highly targeted and are supplemented with nutrition and health education. Thus there is clearly a need for restructuring the existing ICDS for better impacts given limited resources learning from experiences of other countries particularly China and Thailand. Within India TINP in rural Tamilnadu has been successful in its impact and targeting and a brief discussion on its performance is useful in understanding the role of management and political will required for effective functioning of such programs.

¹³ The cost-effectiveness of investments in various nutrition programs around the world is discussed in Horton (1999).

¹⁴ These results are from Ramana *et. al* (1997).

5. Nutrition Security for Pre-School Children in Tamilnadu¹⁵

About the nutrition program

Tamilnadu has a history of feeding programs for children dating back to the mid-1950s with as many as 25 nutrition programs in operation in the early 1980s. These schemes were mainly to combat hunger and the focus was not so much on the nutritional aspect. The main beneficiaries of these feeding programs have been the children and later on old age pensioners and pregnant and nursing mothers were added. Since the beginning of 1980 the government reorganized its nutrition programs and they were combined into the three feeding programs- Puratchi Talaivar M.G.R.Nutritious Meal Program (PT MGR NMP), Tamilnadu Integrated Nutrition Project (TINP) and the ICDS. These schemes have a food and a non-food component to improve the nutritional status of the beneficiaries. The food component consists of providing either supplementary food in the nutrition or welfare centers or noon meals in the school. The non-food component includes periodic growth monitoring, pre-school education and health-care, immunization, nutrition and health education and post-natal care for mothers. The schemes vary in terms of beneficiaries, geographic coverage and its component.

Table 8 shows the different schemes that have been in operation in Tamilnadu since the 1980s. The standard ICDS in Tamilnadu was introduced in the year 1975 when the scheme was initiated by the central government. To begin with, three projects were launched at three places on an experimental basis, which have now been expanded to 113 projects covering 67 projects in rural areas, 44 projects in urban areas and 2 projects in tribal areas. Each project covers 60 to 130 (*Anganwadi*) Centres with each such Centre covers about 1000 - 1500 population.

Table 8 Various Nutrition Schemes in Tamilnadu

Sl. No.	Scheme	Beneficiaries	Services Provided	Year of Starting or Duration
1	Integrated Child Development Services (ICDS)	Children in the age group of 0 to six years and pregnant and nursing women	Supplementary nutrition, pre-school education, health check up, immunization, health education and referral services	1975-76
2	Puratchi Talaivar M.G.R. Nutritious meal Program (PT-MGR- NMP)	Children in the age group of 2+ to 4+	Nutrition, education and health care	1982
		Children in the age group of 5+ to 9+	Nutrition and education	1982
		Old age pensioners, ex-servicemen	Nutrition	1983
		School students in the age group of 10 to 15 years	Nutrition and Education	1984
		Pregnant Women	Nutrition	1995

¹⁵ This section mainly draws from Reddy *et.al* (1992), World Bank (1994), Horton (1999), NIN (2001) and Rajivan (2001).

Table 8 Various Nutrition Schemes in Tamilnadu(Contd.)

Sl. No.	Scheme	Beneficiaries	Services Provided	Year of Starting or Duration
3	Tamilnadu Integrated Nutrition Project (TINP)- I	Children below 3 years	Selective supplementary nutrition, growth promotion for child below 3 years and educating the family and the mother on feeding practices	1981-1989
4	Tamilnadu Integrated Nutrition Project -II	Children below 3 years, children 3-5+ years and pregnant and nursing mothers	As in TINP-I plus immunization, micronutrient supplementation and education for preschool children (3-6 years)	1991-1997
5	WB-ICDSIII	Children below 3 years, children 3-6 years, pregnant and nursing mothers, adolescent girls	As in TINP-II plus nutrition and health education, health services by health personnel, referral services and training to adolescent girls for self development and skill formation	1998-2003
6	National Program of Nutritional Support to Primary Education	Children studying in class I to V	Cooked food equivalent to 100gms of rice for 10 academic months	1995

The main objective of the PT MGR NMP scheme (which is a mid-day feeding program) is to provide adequate nutrition to economically disadvantaged children; to improve the health and nutritional status of children; to develop their mental and physical ability and to increase the enrolment in schools and reduce dropouts. This scheme is now a combination of 'hunger-health-nutrition' effort and also includes social security for old, destitute and widow. The school going children eat at the school and the other beneficiaries eat at the pre-school centers. The food provided consists of hot cooked rice along with vegetable supplements. Since 1999-2000 all child welfare centers (CWCs) except 718 Municipal centers have been brought under the standard Integrated Child Development Services Scheme and World Bank Assisted Integrated Child Development Services Scheme - III. The details of the current status of the program are in Table 9.

Table 9 Direct Nutrition Coverage in Tamilnadu, 2002-2003

Sl.No	Scheme	Number of Centers	Number of Children Covered	Number of Adults Covered	Total Covered
Child Welfare Centers					
1	ICDS (General)	10420	440050	104586	544636
2	TINP (WB ICDS III)	19500	787247	293334	1080581
3	PTMGR NMP (Urban)	718	30096	3105	33201
Total		30638	1257393	401025	1658418
School Nutritious Meal Centers					
1	PTMGR NMP (Rural)	38925	6015252	Nil	6015252
2	PTMGR NMP (Urban)	2087	476410	Nil	476410
Total		41012	6491662		6491662
Total (All Centers)		71650	7749055	401025	8150080

Source: Government of Tamilnadu (2002a).

The success story of two important nutrition programs the Tamilnadu Integrated Nutritious Meal Program (TINP) I and II in reducing severe malnutrition in the state has been the focus of many studies.¹⁶ Apart from this the other main contributions were creation of a well functioning health system at the grass roots level to supplement the nutrition component and training and communication center to serve the workers and functionaries across the state.

The state level schemes have been sponsored mainly by the state government with substantial assistance from foreign donor agencies like Swedish International Development Assistance (SIDA), World Bank (International Development Assistance-IDA) and Danish International Development Assistance (DANIDA) from time to time. Apart from this general ICDS also exists and is a centrally sponsored scheme with all expenses (including salaries of State, District and Project Level functionaries) except the expenditure on weaning food are reimbursed by the Government of India.

¹⁶ The WB ICDS III is the ongoing program and is an extension of the TINPs. There are no reports as yet evaluating program whose project term is nearing completion.

Table 10 Nutritional Status of 0-36 month old Children and Rankings for Select Economic and Social Indicators by Districts in Tamilnadu.

	Normal and Mild malnutrition (%) ¹	Rankings Based on				
		Normal and Mild Malnutrition Rates ²		Gross District Domestic Product ³	Agriculture's share in GDDP ³	Female Literacy Rate ⁴
		1996	2001	1998-99	1998-99	2001
Coimbatore	96.6	1	2	1	4	4
Cuddalore	90.5	19	14	13	15	10
Dharmapuri	90.5	11	14	4	17	14
Dindigul	94.1	5	7	9	12	Na
Erode	95.4	8	4	5	5	12
Kanniyakumari	97.8	1	1	16	6	1
Madurai	94.3	4	6	6	16	4
Nagapattinam	87.7	16	16	17	8	5
Ramanathapuram	90.6	10	13	18	9	8
Salem	95.6	12	3	3	3	12
Sivagangai	93.1	13	9	19	11	9
Thanjavur	91.1	15	11	14	14	6
Tiruchirapalli	93.0	14	10	15	2	11
Tirunelveli	91.1	6	11	7	13	5
Tiruvannamalai	89.6	7	15	8	7	3
Toothukudi	94.5	2	5	10	18	2
Vellore	94.0	3	8	2	1	8
Villupuram	86.0	14	17	12	10	13
Virudhunagar	90.7	9	12	11	19	7

Sources: (1) Government of Tamilnadu (2002b) Table 27.8

(2) Based on Rajivan (2001) for 1996 and author's own calculation based on 2001 rates

(3) Government of Tamilnadu (2002b), Table 5, Chapter 12.

A recent district level data on the prevalence of undernutrition shows much lower prevalence rates compared to the ICDS data as shown in Table 10. The percentage of normal and mildly undernourished children in the age-group 0-3 years varies from 85% to about 98% with some districts showing very similar rates. The rank correlation between 1996 (during TINP II period) and 2001 (during WB ICDS III) is about 0.65. Though there seems to be some link between economic and social development and nutritional impact the rank correlation between prevalence rates in 2001 and (a) Gross District Domestic Product (GDDP) (b) percentage of agriculture in GDDP (c) and female literacy rates are 0.37, 0.31

and 0.30 respectively. The inference that can perhaps be drawn from these low correlation values is that the program is effective irrespective of the socio-economic indicators. Since a lot has been written and analyzed about the TINP the present study summarizes the main findings as follows.

How different is TINP?

- The percentage of expenditure on nutrition in total revenue expenditure is highest in TN.
- Large reduction in severe malnutrition among 6-60 months old children in 5 years during TINP-I.
- TINP-II showed systematic improvements in severe and moderate malnutrition reductions with increase in normal and mild malnourished categories for the children and reductions in low birth weights.
- Regular growth monitoring and selective feeding based on this information were identified as the main causes of success.
- Immunization of children and mothers was regular with coverage of 90% and massive doses of micronutrient supplementation like Vitamin A, iron and folic acids with a coverage rate varying from 35 to 60 percent.
- Better targeting of the schemes due to decentralization.
- Better management of the schemes leading to low level of leakage.
- Good coordination with health services in the later stages of the program.
- The nutrition centers in rural areas had two workers, one looking after the needs of the 0-3 year olds and the other to take care of pre-school education and nutrition of the 3-6 year olds. This resulted in good impacts for both the age groups unlike the experience in ICDS areas which favored the 3-6 year olds.
- Calorie-protein content of the food supplement is clearly stated with regular surveillance of the quality. Few deviations from quality had been observed.
- Some success seems to have been achieved in changing permanent nutritional behavior.
- Institutional sustainability is apparent as the program is now being completely managed by the staff as the World Bank input has come to an end.
- Strong political commitment to implement and improve the nutrition schemes.
- A recent policy note by the state government indicates a plan for (a) making the state malnutrition free along the United Nations advocated approach of “nutrition throughout the life-cycle” (b) change in focus of the programs from management to prevention of malnutrition (c) convergence of health and nutrition services under one department (d) focusing on nutrition and education of the adolescent girls and (e) economic empowerment of women.

Though Tamilnadu has been leading in nutrition expenditures as a percentage of total revenue expenditure and is among the leading states on per capita social security expenditure there is declining trend in the 1990s towards 2000-01. As in ICDS there are very few studies analyzing the cost-effectiveness or cost-benefit of the successful nutrition programmes in Tamilnadu. However indications are that as supplementary nutrition was selective and the food cost having the largest share in the total cost of the project there was a definitive reduction in project cost resulting in sustainability of the project. It is found that the unit cost of TINP was about US\$9-12 per year per child and is among one of the cost effective programs around the world. At the same time the ratio of mobilizers to children was 1: 300 and is considered to be good enough to achieve sustainable impacts as not only effective investment but also a required level of effort is essential in achieving the desired result. As in any other nutrition program the impacts have been studied only on the basis of growth monitoring and other impacts of better nutritional and health status like school achievement, improved living conditions and job opportunities have not been ascertained.

6. Conclusion

About 50 percent of children below three years are undernourished in rural India and about 38 percent in urban India. In several large states, over 40-50% of adults suffer from chronic energy deficiency. The results of the NSSO 1999-2000 quinquennial consumer expenditure survey, used to roughly approximate nutritional intake, suggest that the poorest 20% of the rural population consumed on average 1,700 calories or less per day, in contrast to the average RDA of 2400 calories. The poorest 20% of the urban population consumed on average 1650, calories per day or less, compared to the average RDA of 2,100 calories. All this clearly shows the need to improve the nutrition status of the population in India suffering from undernutrition and persistent hunger as well as others who are at the risk of being so in the near future.

There are a large number of studies showing that complex set of factors determine hunger and malnutrition. Not only household food security but also clean environment, people's knowledge and behavior influence the nutritional status. Policies can influence all causes to help improve the nutritional status of the households. In India, the central and state governments implement several food based transfer programs to alleviate household undernutrition - the Targeted Public Distribution System, food for work programs, mid-day school feeding program, and nutrition programs that include food supplementation, such as the Integrated Child Development Services Program, Balwadi Nutrition Program, and Day Care Center Scheme.

The present study has looked at the performance of the Integrated Child Development Service focusing mainly on the decade of 1990s along with a discussion of trends in nutrition expenditure as a proportion of revenue expenditure and the nutritional status of pre-school children. The nutrition expenditure by the states mainly consists of expenditure on food supplementation for the ICDS program except in few states where mid-day meal for school children is also provided. At the national and sub-national levels there is a decline in allocations in terms of share of revenue expenditure to nutrition expenditure. Despite this decline Tamilnadu and Andhra Pradesh showed higher values. A comparison of the nutritional status of children, one in the early part and one in the later part of the decade, show significant improvements at the all India level as well as the states. However what emerges is that there is no clear link between nutrition expenditure in the state or the economic growth of the state on the one hand and undernutrition levels on the other hand.

The recent evaluation studies of the ICDS has shown improving trends in child nutritional status in the project areas. The studies found a reduction in severe undernutrition but minimal impact in reducing moderate undernutrition. The projects also contributed to a reduction in the infant mortality rate and the incidence of low birth weights. Most noteworthy among these findings was that the nutritional status of children in ICDS areas was only slightly better than in non-ICDS areas. The percentage of severely malnourished children under-three in ICDS areas is lower by 1.8 percentage points than the non-ICDS areas, and for children 3-6 years old, by 1.5 percentage points. The percentage of moderately malnourished children in ICDS areas is 2.5 and 3.4 percentage points lower than in the non-ICDS areas for the two subgroups. The two major limitations of this study lie in its lack of lack of studying the cost-effectiveness of the program and in giving regional disaggregates. In contrast to the rather unsatisfactory impact of the scheme like ICDS, the TINP stands apart in its impact. The good progress in reducing severe malnutrition without any fear of the reversal of impacts is the achievement of this program. The important lessons are effective management of the scheme with little leakages, education of the mother and adolescent girls about good nutrition and health practices, and increasing participation by the community as well as the involvement of the government machinery in sustaining the project at a high level of efficiency. However, the question of sustainability in terms of the cost of the program and its contribution in reducing moderate and mild undernutrition is yet to be answered.

Given the performance of ICDS and other safety net programs there is an increasing concern towards improving the efficiency and effectiveness of these programs provided by the state and three major factors can be attributed towards this concern. First, despite the fact that many of these programs have been in existence for nearly a decade or more and that the government spends considerable resources on these transfer programs the impact of these policies seem to be limited as is observed from the persistence of large number of undernourished adults and children. Second is the impact on the poor of the economic reform process initiated in India in 1991 which set in motion market-oriented policies. The experience so far of implementing such policies the world over is that poor have not benefited though the economic growth has picked up on an average after a period of stagnation wherever such market-friendly reforms were successfully implemented. The reasons for increase in poverty are attributed to decreased purchasing power -rise in prices particularly of the food items and loss of incomes due to retrenchment of jobs in urban organized and unorganized sectors – inflation, reduction in public expenditures particularly in welfare subsidies and social services affecting the access of the poor to the basic social services. Third is the phenomenon of globalization particularly of financial services and of trade in agricultural products. Though the globalization of financial services had major impact on growth in the initial phases but later developed into the East Asian crisis resulting in adverse impact on human resource and the need for effective social safety nets was felt the most in Indonesia, one of the worst affected during the crisis. Since the Uruguay Round Agreement on Agriculture was signed in 1994 which subsequently lead to the establishment of the World Trade Organization, the opening up of domestic markets including agricultural products is causing a lot of concern among the developing countries. These relate to the fall in domestic production due to import of cheaper food products and higher volatility in prices affecting the large number of people depending on agriculture in these countries and that too a large proportion of them being poor. Therefore under these changing circumstances not only is the state expected to provide the social safety net for existing poor and possibly new additions to the poor during the process of market reforms and globalization but also has to spend fewer amount calling for improvements in targeting, effectiveness and efficacy of the programs.

This study finds that there is a paucity of relevant, reliable and timely data to study the trends in nutritional status even in the areas where the program is being implemented. There is a provision for management information system (MIS) for all the ICDS blocks that is supposed to keep track of bottlenecks in the program and maintain regular records of the nutritional status, immunization rates, and participation rates. This data is not very easily available for analysis. More importantly this database does not include relevant information about the socio-economic status of the households to identify and track the beneficiaries and vulnerable groups. The availability of such information could be helpful in two ways: (1) to identify the status of the beneficiaries after they leave the program; (2) to identify the vulnerable groups who could be affected due to process of liberalization and globalization and timely help could be provided to them. The study also finds that most of these evaluations have focused on the impact based on anthropometric indicators and have not analyzed aspects like improvements in cognitive development, school achievement of the child or on poverty status of the household. Information on these aspects will go a long way in convincing (a) the policy makers about the need for such programs as well as its efficient management, and (b) the participants about the impacts so that better community participation can take place for effective outcomes.

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