

## National Nutrition Thriposha Intervention Programme to combat malnutrition in Mothers and Children of Sri Lanka

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Sri Lanka (Ceylon) was one of the first countries in the developing world to appreciate the importance of correcting malnutrition caused by poverty and to introduce programmes for achieving this objective. A scheme of subsidised food began as a wartime necessity and continued through three decades as the rice ration scheme. Nutrition intervention, with a view to satisfying the minimum nutritional requirements of each and every citizen, has been one of the central components of Sri Lanka's welfare system since independence. At present, the food intake of approximately one half of the population is subsidised, while prior to economic liberalisation the entire population was entitled to a food subsidy. The selected beneficiaries receive their food subsidy in kind, either through the food stamp scheme or the existing poverty alleviation programs such as Janasaviya and Samurdhi.

The comprehensive socio-economic survey of 1969/70 showed that although everyone was provided with 500 kcal per capita per day through the rice ration scheme for 28 years, 43% were still deficient among the below Rs.200/= income group and 87% among both Rs.100 to Rs.400/= groups<sup>1</sup> (Table 1).

**Table 1**  
**PERCENTAGE OF ADEQUACY\* OF SOME NUTRIENTS BY INCOME CLASSES (ALL-ISLAND)**  
**SOCIO-ECONOMIC SURVEY 1969/70**

Nutrients	Per capita daily recommended allowance for Ceylon	Income Classes (%) in Rupees							
		<100	< 300	200-399 <sup>+</sup>	400-599	600-799	800-999	>=1000	All income classes
Energy (Kcalories)	2200	91	94	103	111	114	116	130	103
Protein (g) (Animal Protein g)	45 (12)	94	105	120	130	137	138	147	120
Calcium (mg)	519	(-)	(-)	(-)	(-)	(-)	(-)	(-)	72
Iron (mg)	23	(-)	83	86	93	94	97	97	86
Vitamin A (mcg) (retinol)	642	(-)	56	60	65	75	87	98	62
Riboflavin (mcg)	1200	(-)	51	56	62	69	75	82	57

\*The adequacy of the diet in respect of any nutrient is determined by expressing consumption of the nutrient as a percentage of the recommended allowances on a per caput per day basis. The recommended allowances for Ceylon is shown in the first column and the adequacy for each nutrient is given under each income class. (-) Detailed Breakdowns not available for computing adequacy. (+) 87% of households below Rs. 400/= income bracket suffered dietary deficiencies.

They were also deficient in animal protein rich foods resulting in throughout the income range except those over Rs.1000/= deficient in iron (23mg), Vitamin A (retinol, 642 µg) and Riboflavin (1200 µg) leading to widespread anaemia, xerophthalmia and protein energy undernutrition.

Dietary surveys of the Nutrition Department from 1950 to 70<sup>2</sup> were instrumental in spotlighting the shortfalls of the diets and dietary deficiency, diseases of vitamin A – xerophthalmia where the Americans had perfected the technique of adding Retinol palmitate to non fat dry milk and for 16 years every child, pregnant and lactating mothers attending MCH clinics were treated (Table 2).

A Mega dose vitamin A programme was also tried after milk powder was stopped and the resurgence of vitamin A induced blindness keratomalacia came back again – 500,000 children in 4 worst affected districts were given the dose 100,000 IU 3 times in a 1 ½ years but was stopped as it was not successful. UNICEF Post Kwashiorkor Formula Mixture (PKFM) through the US Aid Director in India and CARE was responsible for starting the Community Nutrition Programme in 5 of the 9 provinces<sup>2</sup> (Table 3).

**TABLE 2**  
**DIETARY SURVEYS – CEYLON (1950-1970) NUTRIENT INTAKE PER CAPUT PER DAY**

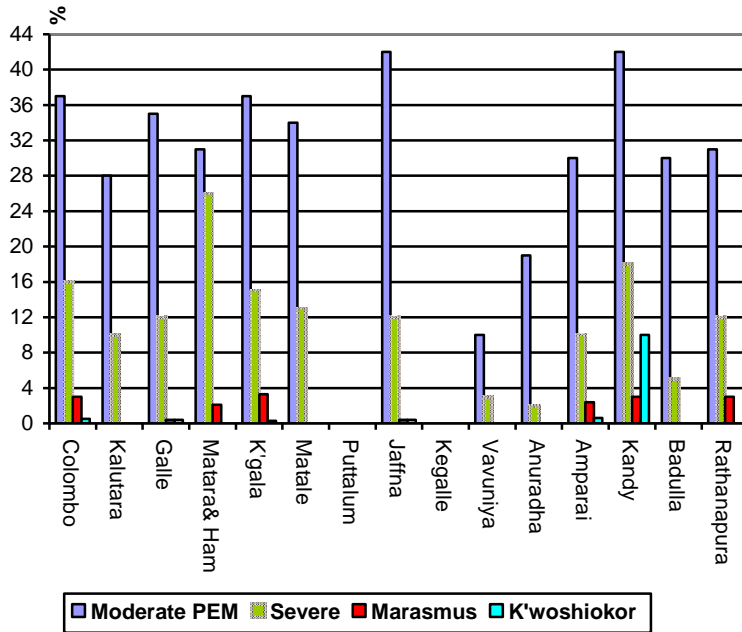
**DEPARTMENT OF NUTRITION – MEDICAL RESEARCH INSTITUTE**

Date of Survey	Urban 1950	1951	1952	1952 R	1952 U	1953 R	1955 A	1955 L	1961	1961	1963	1963	1966	1966	1970	1970
Village Surveyed All lower income	City of Colombo Upper income	Deltura	Pattiwila	Hiripitiya	Weerakoonga ma 1 <sup>st</sup> Survey	Kumbalgama	Kukulpone	Weerakoonga ma 2 <sup>nd</sup> Survey	Morentuduwa	Weerakoonga ma 3 <sup>rd</sup> Survey	Panapitiya	Gonagoda	Welhinna	Mamanuwe	Hiripitiya 2 <sup>nd</sup>	Kukulpone 2 <sup>nd</sup>
Calories	3271	1873	1955	1814	1403	1760	1589	1532	1799	1567	1923	1699	2160	2058	1979	1863
Proteins (g)	84.0	48.1	51.1	44.5	32.1	45.2	36.7	37.7	43.8	35.2	46.3	38.8	53.3	46.5	49.6	52.9
Fat (g)		38.2	43.3	40.4	20.4	37.8	41.3	22.4	37.7	26.7	41.3	33.3	49.3	46.5	48.0	48.4
Calcium (mg)	762	368	313	341	174	357	273	247	282	209	347	279	307	295	391	280
Vit. A Carotene (µg) Retinol (µg)	550 984	362 18	343 18	300 20	244 0.4	475 0.4	215 18	298 12	296 28	284 17	245 28	395 17	392 32	417 11	624 45	432 13
Iron(mg)	20.4	10.0	13.1	13.9	7.9	13.0	10.7	9.5	12.7	9.6	12.4	11.6	12.0	18.0	16.0	13.5
ThiamineB1 (mcg)	1395	763	824	859	646	941	746	673	962	900	763	772	832	1034	975	832
RiboflavinB2 (mcg)	1409	528	533	502	333	513	526	425	588	515	571	548	640	596	648	527
NicotinicAcid (mg)	16.0	12.3	11.5	9.8	6.9	12.2	9.8	6.8	13.3	10.9	10.4	8.7	15.1	12.4	10.8	8.5
AscorbicAcid (mg)	122.0	44.2	52.0	53.7	52.8	64.0	35.5	46.6	50.8	39.9	59.6	53.3	69.0	44.1	76.6	67.0

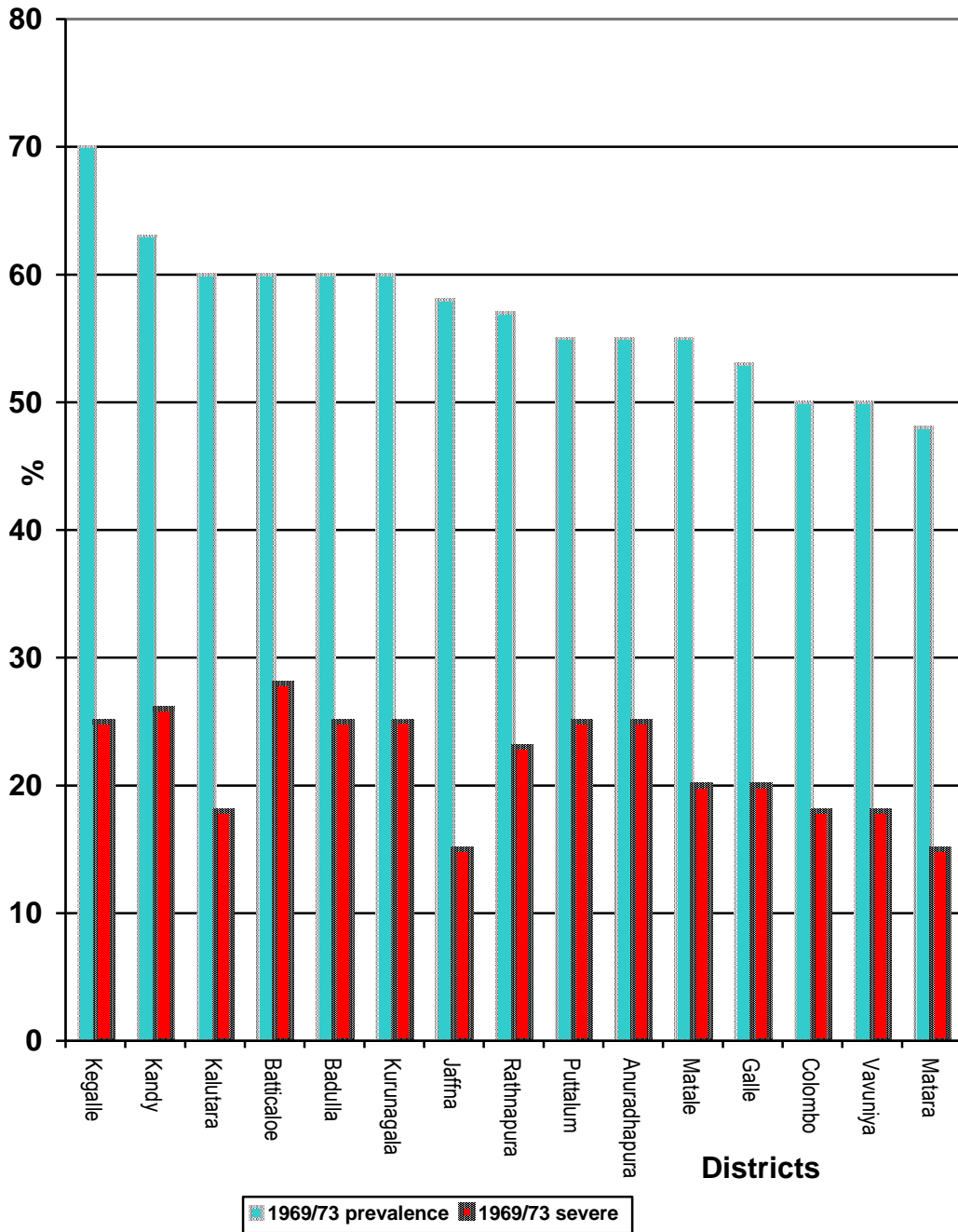
**Table 3**  
**Prevalence of vitamin A deficiency signs prior to distribution**  
**Megadose a first dose by age group by MOH areas by 4 provinces**

<b>Six Health Districts in 4 Provinces in 1971/72</b>	<b>13-24</b>	<b>25-36</b>	<b>37-48</b>	<b>49-60</b>	<b>61-72</b>	<b>13-72</b>	<b>Bitot's spots No.</b>	<b>Night Blindness No.</b>	<b>Kerato Malacia No.</b>
<b>1. CENTRAL PROVINCE</b> 11 MOH distribution areas	26,039	23,07	19,474	18,319	14,026	100,936	125	23	04
<b>2.SABARAGAMUWA PROVINCE</b> 11 MOH distribution areas	26,148	23,177	19,555	18,395	14,085	101,352	860	313	24
<b>3. SOUTHERN PROVINCE</b> 16 MOH distribution areas	33,741	26,530	25,234	23,737	18,168	130,791	877	235	30
<b>4. EASTERN PROVINCE</b> 5 MOH distribution areas	12,382	10,975	9,261	8,712	6,67	48,000	496	325	1
<b>42 MOH's distribution areas</b>	<b>98,310</b>	<b>87,133</b>	<b>73,524</b>	<b>69,163</b>	<b>52,957</b>	<b>381,087</b>	<b>2358</b>	<b>896</b>	<b>68</b>

**Figure 1**  
**Severe and moderate under nutrition of preschool children by districts in 1974**

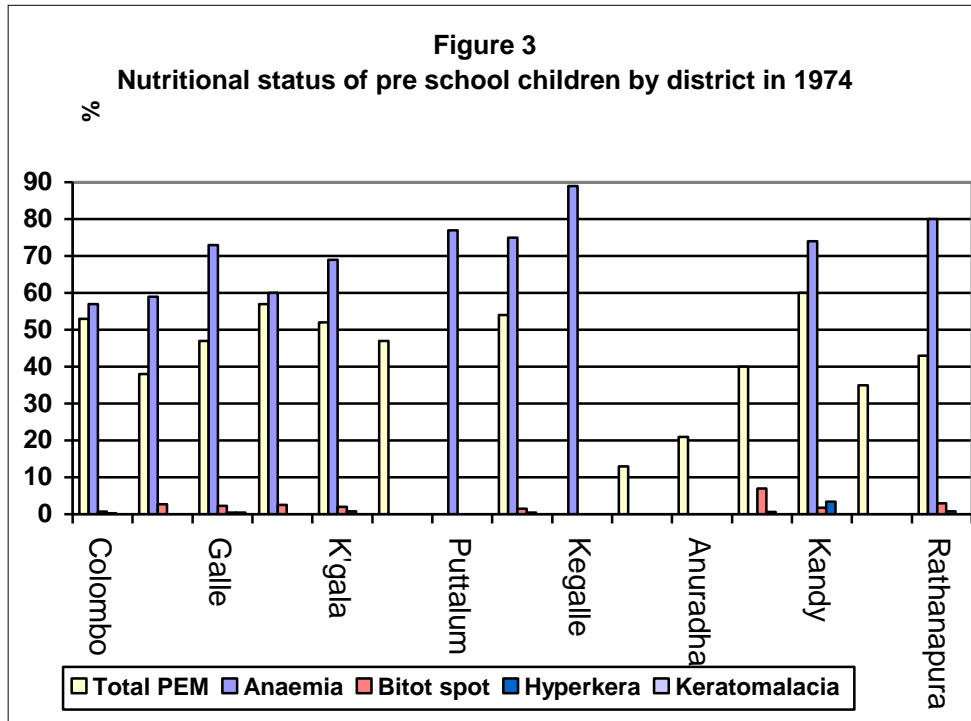


It was recognised that way back in 1973 research studies of the Department of Nutrition, MRI, in collaboration with WHO showed (Figure 1) that malnutrition /under nutrition was most prevalent during the time of weaning started in late infancy up to the 5<sup>th</sup> year of the pre-school period due to lack of knowledge on the part of the low income mothers on correct feeding during pregnancy and weaning complicated by cultural taboos<sup>3</sup>. the high prevalence of undernutrition was due to a lack of a traditional weaning practice, poor child care practices including poor child spacing, non availability of low cost weaning foods and poor environment, chiefly at lower socio-economic levels in urban, rural and estate areas.



**Figure 2: Prevalence of anemia in pregnancy by districts<sup>3</sup>**

The prevalence of nutritional anaemia chiefly due to iron deficiency varied from 56-70% throughout the age range (Figure 2). The children with hookworm infestation was 16% in some areas, others were severely anaemic. Vitamin A deficiency (Bitot's spot, Keratamalacia) was 12% and 15% ribo-flavinosis (Figure 3).



But for a nation with a relatively low per capita GNP (\$ 652 in 1994), its social and demographic achievements are impressive. For example, the literacy rate is almost 90 percent, the population growth rate is below 1.5 percent, infant mortality is 17 per thousand live births, and life expectancy at birth is 71 years<sup>4</sup>. In terms of these indicators, the island compares favourably with countries such as Singapore, Thailand, Indonesia, and South Korea, which were once poorer than Sri Lanka but are considerably wealthier now.

Though Sri Lanka has achieved considerable success in the reduction of mortality with increase in the life expectancy, load of morbidity that is present in the community has not been commensurate with the decline in mortality. An important and persisting problem has been the significant level of under nutrition, affecting particularly infants, children of the younger age groups adolescents and pregnant women. Though poverty does influence levels of under nutrition, poverty alone does not explain the high prevalence of under nutrition that persists in Sri Lanka. Educational and cultural factors also play a significant role, which in turn affect infant and child feeding practices and family attitudes towards nutrition in general<sup>5</sup>.

The first comprehensive island-wide nutrition supplementary food intervention known as the Thriposha program was initiated by the government in 1973 with donors CARE & US AID in response to mounting evidence that certain key segments of the population were highly vulnerable to protein-energy malnutrition (PEM) and micro nutrient deficiency of iron, vitamin A and iodine despite the existence of an island-wide food subsidy scheme. Thriposha means triple nutrient as it provides energy, protein and micronutrients as a pre-cooked 'ready-to-eat' cereal legume based food.

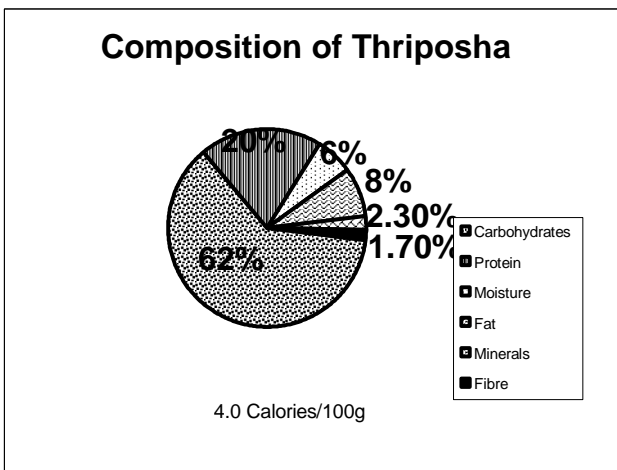
The rationale of the Thriposha programme was designed to provide a supplementary food providing all the required nutrients especially during the vulnerable periods pregnancy and lactation and weaning infants after 6 months with a complementary food mostly for the lower socio income group as early as the 1950s realising that most developing countries being unable to provide daily animal foods. A cheap but effective extrusion plant producing blended foods pre cooked energy and protein dense with all minerals and vitamin premixes added from cheap plant sources cereals and legumes mostly corn and soya. The products being mainly wheat soya blend (WSB) at the start and later (CSB) corn soya blends under United States Public Law 480 (PL480) title foods<sup>6</sup>.

The objective of the Thriposha program is to provide an energy and reference protein dense, with all required micro-nutrients, as a supplement to the most nutritionally vulnerable segments of the population, pregnant and lactating women and children from 6 to 59 months of age mainly at the time of weaning with the excellent complementary food Thriposha.

**The specific objectives of the Thriposha Program at the start was:**

1. To maintain satisfactory weight gain of 10kg in the "at risk" pregnant mother
2. To reduce incidence of low birth weight by half to 10% by the year 2000.
3. To reduce nutritional anaemia and maternal mortality among pregnant mothers
4. To ensure successful lactation
5. To reduce third degree Energy Protein Malnutrition (PEM) by 90 percent and second degree PEM by 50 percent in infants and preschool children and reduce infant mortality
6. To eliminate the florid form of severe malnutrition kwashiorkor, marasmus and keratomalacia within 5 years
7. To reduce the under nutrition in the under fives to less than 30% (NCHS) by the year 2000.

## Nutritional Value of Thriposha



Thriposha, an extruded, precooked fortified mixture contains maize (66%), soya (30%), full cream milk powder (3%) and vitamin (0.1%) and minerals (0.9%), is of high nutritional value although the value for calories is relatively small, but **it provides daily 10g of reference proteins and up to 100% of daily requirements of micronutrients (eg. For a three year old).**

This is because dietary surveys from the 1950s up to date have shown that although energy security was provided by the state, vitamin A, riboflavin, calcium, and the necessary protein (animal) were markedly inadequate at low income levels in all sectors<sup>6</sup>.

**Table 4**  
**The Nutrient value of Wheat-Soya Blend and Corn-Soya Blend<sup>7</sup> and Indigenous CSB Thriposha per 100 g of Dry product**

Nutrient	Wheat-soya blend <sup>a</sup>	Corn-soya blend <sup>b</sup>	indigenous extruded WSB/CSB Thriposha <sup>c</sup>	Vitamin and mineral compounds added
Protein (g)	21.5	17.2	20.05	---
Energy (kcal)	354.5	375.7	414.0	---
Fat (g)	5.9	6.9	7.8	---
Vitamin A (IU)	2323	2612.2	1700	Vit A palmitate stabilised 250 SD
Thiamine (Vit B <sub>1</sub> ) (mg)	0.54	0.53	760.0 (mcg)	Thiamine mononitrate
Riboflavin (Vit B <sub>2</sub> ) (mg)	0.50	0.48	560.0 (mcg)	Riboflavin
Niacin (mg)	8.19	6.23	8.0	Niacin
Vitamin B <sub>6</sub> (mg)	0.47 <sup>d</sup>	0.5 <sup>e</sup>	6.0 (mg)	Pyridoxine HCl
Vitamin B <sub>12</sub> (µg)	1.00	1.0	4.0	Vitamin B <sub>12</sub> 1%
Folate (µg)	275	300	3.6 (mg)	Folic Acid
Pantothenic acid (mg)	3.7	3.4	3.6	Calcium <i>d</i> -pantothenate
Vitamin C (mg)	40	40	40	Ascorbic acid, 2.5% ethyl cellulose coat
Vitamin D (IU)	198	198	200.0	Vitamin D, stabilised, 100 SD
Vitamin E (mg)	8.7	8.7	6.0 (IU)	dl- $\alpha$ -Tocopherol acetate, dry 50%
Calcium (mg)	842	831	900	Tricalcium phosphate
Zinc (mg)	5.5	5.0	3.0	Zinc sulphate
Iron (mg)	17.85	17.49	18	Ferrous fumarate
Magnesium (mg)	227.26	173.8	96	Magnesium sulphate
Phosphorus (mg)	294	206	0.67 (g)	Tricalcium phosphate
Iodine (µg)	56.88	56.9	44.0 (mcg)	Potassium iodate

SOURCE a and b: refs 7

- Ingredients: 53% bulgur flour; 20% wheat protein concentrate; 20% soya flour, defatted; 4% soya bean oil, stabilized; 3% vitamin and mineral pre-mixes. Energy density (g/kg): 3.54 dry, 0.50 as cooked gruel. Phytate/zinc ratio: 23.1 molar. Phytate iron ratio: 5.6 molar.
- Ingredients: 69.5% corn meal, processed and gelatinized; 21.8% soya flour, defatted and toasted; 5.5% soya bean oil, refined, deodorized, and stabilized; 3.0% vitamin and mineral pre-mixes. Energy density (g/kg): 3.74 dry, 0.50 as cooked gruel. Phytate/zinc ratio: 7.8 molar. Phytate/iron ratio: 2.4 molar.
- Ingredients: Soya 30.0, Maize 65.0, Fullcream Milk 3.0, Vitamin 5.0, Total: 100.0
- 0.17 mg pyridoxine HCl.



Comparison of the nutrient values of Thripasha, wheat soya blend (WSB) and (CSB) corn soya blend is shown in Table 4.

### Thripasha production, beneficiaries & distribution cost

As extrusion cooking providing to be highly feasible a decision was made to locate an Anderson extrusion cooker in Ja-ela and expand production. Seven acres of land were purchased for this purpose by GSL and a new factory was built with a floor space 38,000 square feet to further enhance production capacity with mill conveyors and storage tanks. The land was sited on the government rail tract for easy distribution by rail, which now constitutes 50% of the monthly distribution<sup>6</sup>. Catering to 580,000 beneficiaries with a production target up to 38,800 master bags per month (873,000 kg), or 465,600 master bags per year (10,476 mt).

**Table 5**  
**Annual average monthly beneficiary level**

Year	Target	Reached	% Achieved	Expenditure (\$)
1973/74	135,000	75,462	56%	149,477
1974/75	275,000	199,812	73%	491,368
1975/76	350,000	293,078	84%	889,145
1976/77	400,000	300,700	75%	753,181
1977/78	450,000	320,508	71%	1018,650
1978/79	500,000	337,871	68%	1316,401
1979/80	550,000	401,280	73%	1235,908
1980/81	550,000	524,149	95%	1392,610
1981/82	600,000	511,849	85%	1991,519
1982/83	600,000	539,516	90%	1925,063
1983/84	650,000	478,067	74%	2062,491
1984/85	650,000	538,516	83%	1800,854
1985/86	650,000	560,520	86%	1545,028
1986/87	585,000	497,133	85%	1278,996
1987/88	580,000	556,322	96%	1797,576
1988/89	580,000	411,601	71%	2116,557
1989/90	580,000	296,000	51%	2651,940
1990	580,000	378,675	65%	(Rs.)
1991	580,000	274,267	47%	166,657,608
1992	580,000	544,315	94%	142,796,600
1993	580,000	505,483	87%	178,673,461
1994	580,000	309,810	53%	183,508,247
1995	580,000	225,899	39%	4,591,837
1996	580,000	302,297	52%	174,097,223
1997	580,000	119,325	21%	85,465,987
1998	580,000	123,478	21%	136,104,711
1999	580,000	348,352	60%	263,983,303
2000	580,000	399,137	69%	
<b>TOTAL</b>		<b>180,720,000</b>		

Table 5 shows the annual average monthly beneficiary levels<sup>8,9</sup>. In 1990 - 1991 when CARE handed over the programme to the CTC there was also a fall in production for a year. In 1994/5 due to the problem with raw materials and the repairs in the factory, the programme nose dived for 5 years but recovered in 1999.

### **Changes in the Target levels**

Since the beginning of the Thriposha program, the target beneficiary levels have increased significantly. At the start the beneficiary level was 135,000. Between 1983 and 1985 this increased to 650,000 and from 1986 it has levelled off to 580,000. This is due to the production capacity of the program in keeping with the needs of mother and children of Sri Lanka. 66% of the allocation is for children 6-60 months and 34% for pregnant and lactating women. The total number of Thriposha beneficiaries from the start at 1973/74 for 28 years to the end of 2000 was determined at 180,720,000. The cost of a Thriposha packet of 750 g was audited at Re.5/= at the start running through to Rs.9/= then Rs.15/= and Rs.25/= and in the year 2000 at Rs.45/=. The price of a 450 g packet of Thriposha was commercially sold at Re.5/= at the onset but after 8 years it was raised to Rs.9/=. The commercial performance came to an end due to fall in donations<sup>6</sup>.

Thriposha is sent monthly to 1125 Health Centres all over the country, according to the recommended beneficiary levels, and 50% sent by rail. 460 estates too get their quota according to the defined level and most estates collect their consignment by their private transporters at the rate of 50 cents for each packet. The Mahaweli programme in Kotmale, Polonnaruwa and Ratnapura receive their quota through their own transport system<sup>6</sup>.

### **Distribution**

The monthly allocation of Thriposha is done by the Ja-Ela factory unit. The planned allocations are revised on the basis of a monthly Beneficiaries Inventory (MBI) report submitted by the clinic center to the allocating unit. The MBI report has an inventory section and the beneficiary section, which provide summary statistics on the quantity of Thriposha received and distributed, stock balance, number and type of beneficiaries reached, etc.

## **Screening and Selection**

The targeted beneficiary levels are pre-determined, based on the available data on malnutrition, births per annum and the average nutritional levels of mothers and children in each area. This evaluation is done through a questionnaire completed by the Medical Officer of Health (MOH) in each area, and the number is finalised by the program supervisor of the Thriposha programme. Periodically these numbers change based on the improvement or deterioration of the nutritional status in these areas.

Initially, infants and pre-school children below 75% (moderate and severe under nutrition) (weight for age) of the Gomez classification were eligible for Thriposha which was 50% in 1973 at the start of the Thriposha Programme and CARE provided the child weight cards accordingly. First using the data of the card made by Department of Nutrition but later the NAS standard WHO used. However, since 1986, the third percentile NCHS, which is equivalent to 80% of the Gomez classification was adopted and UNICEF provided a growth monitoring chart for each child<sup>6</sup>.

Thriposha is provided to all infants 6-12 months and children between one and five years whose weight falls below the third percentile NCHS. In order to screen, select and monitor all children. This is used to track recipients weights and record them regularly. Pre-school children are weighed every three months, which is adequate to monitor the child's progress, but those identified as underweight ( -2 S.D. NCHS) are weighed every month and Thriposha given as Drakes study showed that the longer the underweight 12-36 months child remained in the programme till they returned to normal<sup>6</sup>.

Furthermore, mother's selection was done on the basis of haemoglobin levels, and CARE had provided Talquist books. Those who had recorded a level below 50% were given Thriposha. Based on the recommendation of the WHO, that the Talquist selection method was inaccurate, this system was also dropped in 1986. In the absence of any other reliable screening procedure, all pregnant and lactating mothers have been included in the Thriposha programme. However the report also has a section called 'At Risk Group', which provides numerical information on antenatal mothers below 42 kg in weight, lactating mothers with low birth weight babies, and

infants and pre-school children falling below the third percentile margin (PCM), in terms of WA. The 'at risk group' section was recently added to the MBI reporting format and is of great assistance to the allocating unit in targeting Thriposha to those who need it most. Thriposha reaches its beneficiaries through a variety of institutions, including MCH centres, non-governmental organisations, Mahaweli, Samurdhi and the plantations. Approximately 90 percent of the 'approved' beneficiaries are reached through the national health system (MCH centres, Family Health Bureau, Base hospitals, rural hospitals, peripheral units, central dispensaries, etc). Due to the civil conflict, the program is not as effective in the northern but better in the eastern province and best in 4 of the other 7 provinces<sup>6</sup>. The reduction in undernutrition and low birth rate by provinces is presented under the impact of the Thriposha performance by provinces (Figure 6 and 7).

In the non-plantation sector, each beneficiary is given a packet of Thriposha (weighing 750 grams) once in two weeks, which he/she is free to take home. The problem with this is that there is no way of preventing the whole family from sharing the food supplement. According to the FNPPD, around 50% of the children receiving Thriposha share it with their families. Some Sri Lankan experts argue that the program is fundamentally flawed due to this reason. In the plantation sector, on the other hand, children receive Thriposha through a daily on-site feeding program conducted in the crèches. Since the screening/selection criteria do not apply to the plantations all children at the crèche receive Thriposha, which is added as a supplement to their meals<sup>6</sup>.

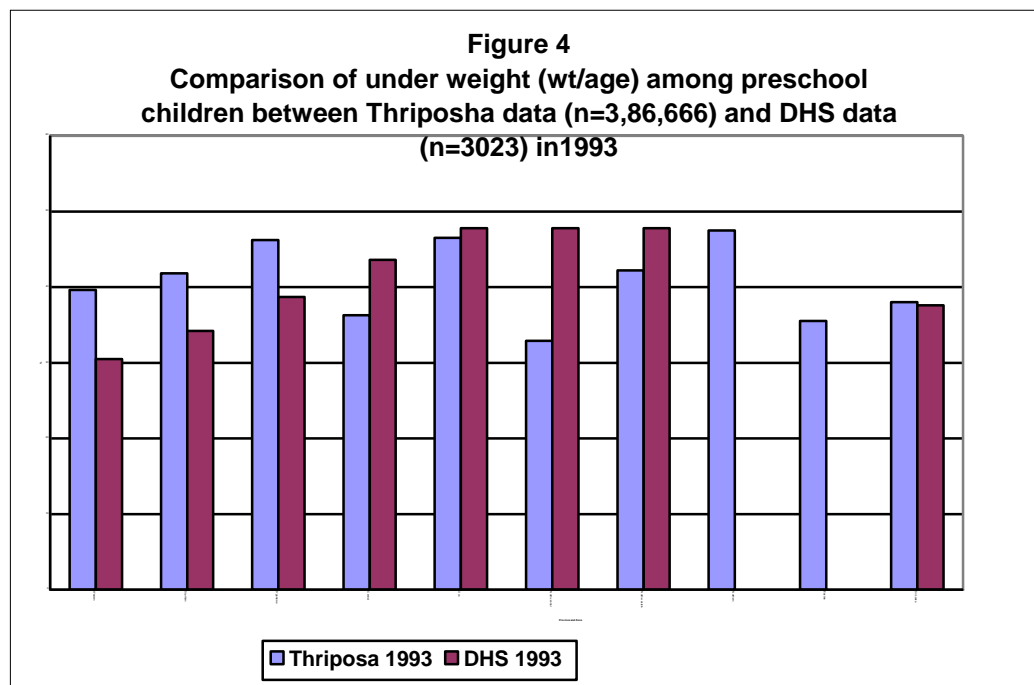
It is believed that the program is most effective in the plantation sector, as there is very little 'leakage' and children generally receive their full share of the food supplement. Although this hypothesis may be true, it needs to be empirically verified.

### **Monitoring the programme**

Prior to 1991, this task was performed mainly by CARE with the support of the Supervisor of the Thriposha program. CARE had about half a dozen Field Co-ordinators, who were in regular contact with the Regional Directors of Health Service (RDHS), the MOHs, the health clinics, the estate feeding centres, and mothers and family health midwives. Regional workshops were also

held from time to time to discuss implementation problems and identify solutions. Hands-on training was also provided with regard to such activities as screening, selection and monitoring of Thripasha beneficiaries, record keeping, and program appraisal. Mothers were also given simple advice on nutrition, health, and the value of child and maternal health cards<sup>6</sup>.

Basic data on the various aspects of implementation at field level were collected by CARE personnel using a comprehensive questionnaire, which had a ‘question-and-answer’ portion and a narrative portion. As the former portion was considered to be cumbersome, it was shortened and simplified in 1990, but the narrative portion was maintained. The data collected in this manner enabled CARE to make periodic assessments of the program and determine whether it was making satisfactory progress. As explained in CARE’s final report, “Monitoring consisted of assessing the status of the program; identifying problems and program constraints and making suggestions to overcome them to improve effectiveness; and collecting specific data on distribution, beneficiary levels, storage, and so on<sup>6</sup> .



After CARE withdrew from the program, these logistical functions were transferred to the central allocating unit, which was established at Ceylon Tobacco Co-operation (CTC) Services in 1991. But since the field questionnaire is no longer in active use, the allocating unit is not monitoring the programme as effectively as CARE did. Information collected from the monthly

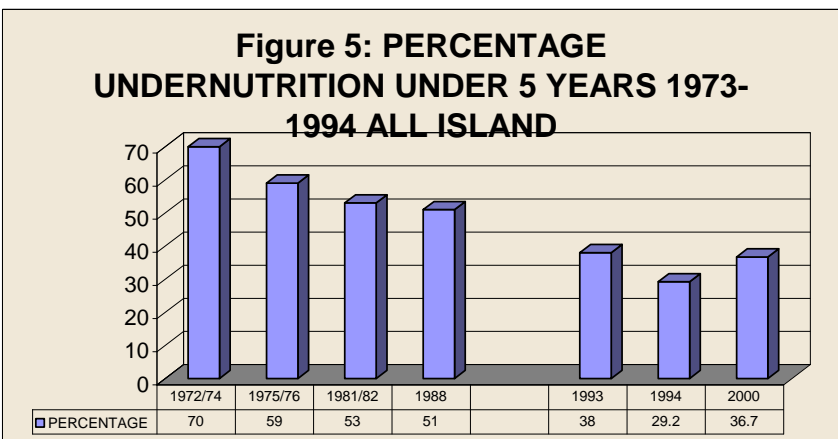
MBI reports (submitted by MCH centres) is computerised by the allocating unit, but very little analysis of the data is being done (Figure 4)<sup>8,9</sup>.

The impact of the Thriposha program could be effectively monitored through the child and maternal health cards. But this is being done only on a sporadic basis and without the use of proper statistical techniques. While it is recognised by the authorities that health clinic data have a key role to play in nutritional surveillance in Sri Lanka, a system has yet to be developed that will deliver reliable information at regular intervals to the right people – i.e. planners, policy analysts, and key decision-makers.

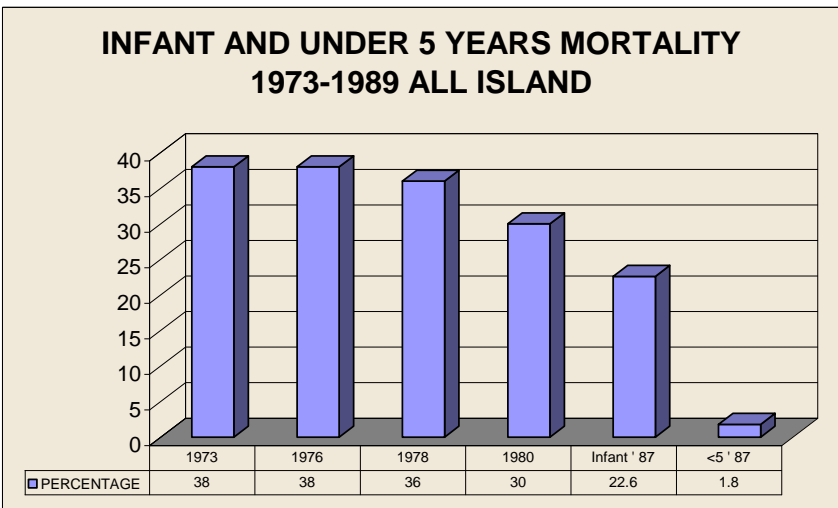
### **Impact of Thriposha and problems**

The growth of young children who attended clinics is monitored using child health cards, which are kept by the mother. The Public health midwives (PHM) are expected to encourage mothers to bring their children to the clinic once a month to facilitate growth monitoring. PHM usually does at the health centres or at the weighing post the weighing on clinic or specific days. The malnourished children with health cards are given two packets of Thriposha once a month. The card has a graph on which the weight of the child is plotted against the NCHS ‘read line’ (third percentile margin) in order to monitor his progress over time. To determine the impact of the Thriposha it is necessary to assess the health cards of children, using statistically valid methods of sampling. Every centre is expected to assess their situation monthly through their monthly beneficiary return forms.

Only one island-wide study to assess the direct impact of Thriposha using data collected from health cards has been conducted to date by Drake, 1982<sup>6</sup>. The sample consisted of about 1800 children receiving Thriposha, who were selected from health clinics around the country. The children were divided into three groups depending on how long they had been receiving the food Supplement and cross tabulated by age (Figure 5). A child was considered malnourished if his/her Weight for age was less than 70 percent of the reference median (NCHS/CDC).

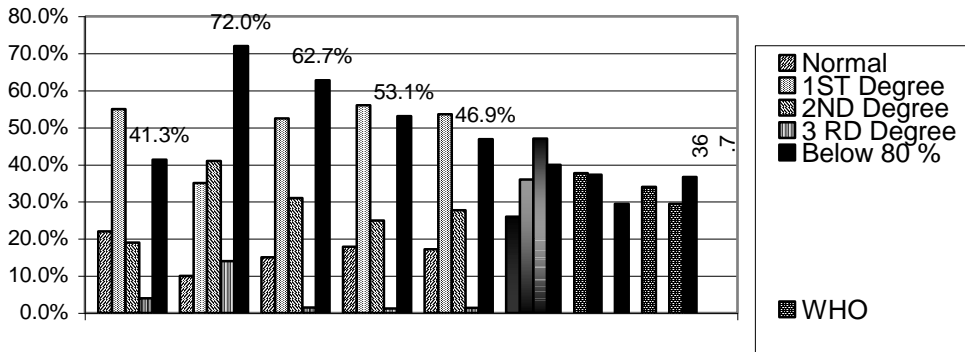


**EVALUATION**  
 Drake found that incorporating the Thripasha programme with three prong programme of MCH and Public Health was responsible for lowering infant and maternal mortality and cannot be due to Thripasha only but due to the combination of all the programmes it has proved to be an excellent service.



The study showed that the prevalence of PEM was lowest among children who had received Thripasha for 13-29 months and highest among children who had received it for 1-6 months, regardless of age. The study thus yielded two important findings: (a) children who had been longest on the Thripasha program had the lowest incidence of PEM; and (b) the reduction in prevalence of PEM was greatest among children aged 13 to 24 months (Figure 6 and 7). These findings established that Thripasha, when effectively targeted, could significantly reduce the incidence of PEM among young children. Also observed that as the Thripasha programme is associated with the three prong approach of primary health and MCH system, mortality, infant and maternal is also reduced (Figure 8,9,10, 11 and 12).

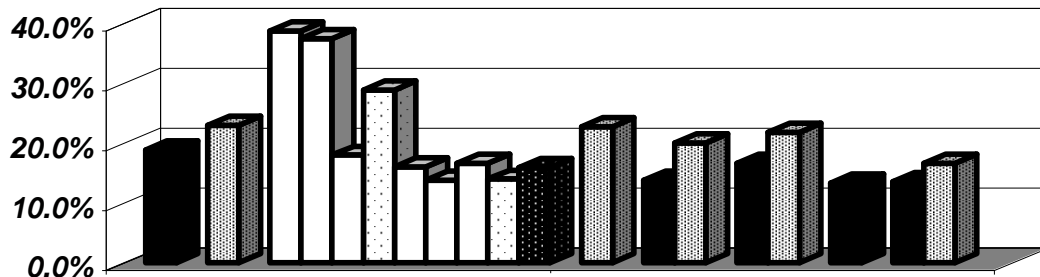
**Figure 6: Progress in reducing undernutrition in children under five years from 72 % in 1972/74 by half in twenty seven years (2000) by the MOH/CARE/CTC Thripasha Programme**



Enable the programme to realise its main objectives. The majority of nutrition intervention programmes and projects in developing countries are driven by a few dedicated individuals who have to compensate for general lack of enthusiasm and support shown for nation-wide welfare programmes due to the scarcity of funds, personnel and infrastructure facilities.

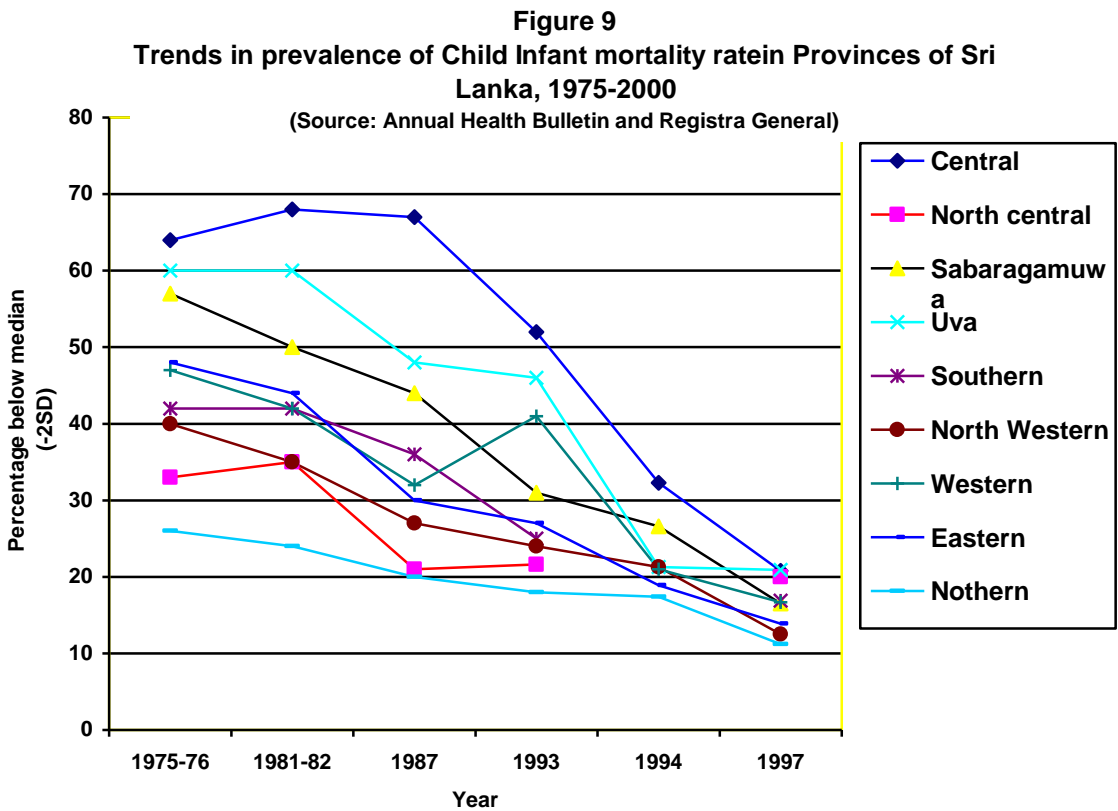
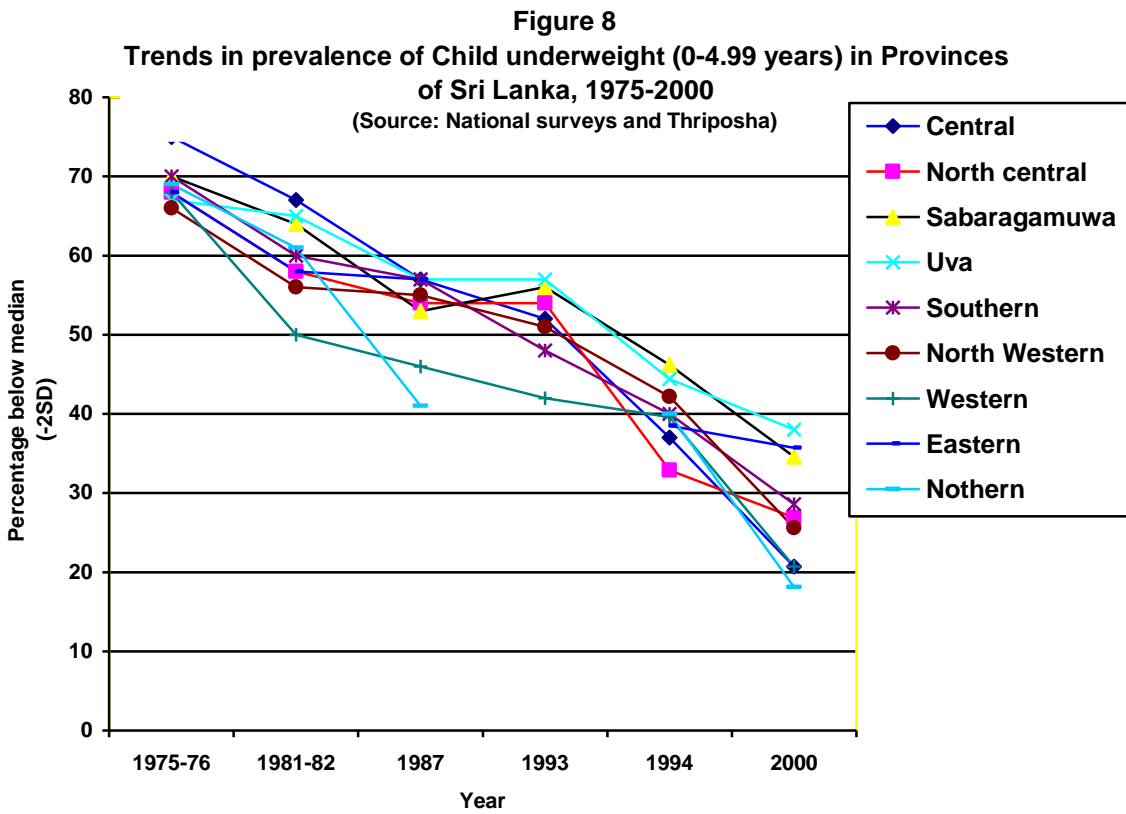
The Thripasha program is faced with a wide range of problems. This is inevitable in an activity of this nature, where a high degree of motivation and commitment is required from government personnel to enable the programme to realise its main objectives.

**Figure 7  
Progress in reducing low birth weight, 29 % in 1984 by half (2000) by the MOH/CARE/CTC Thripasha Programme**

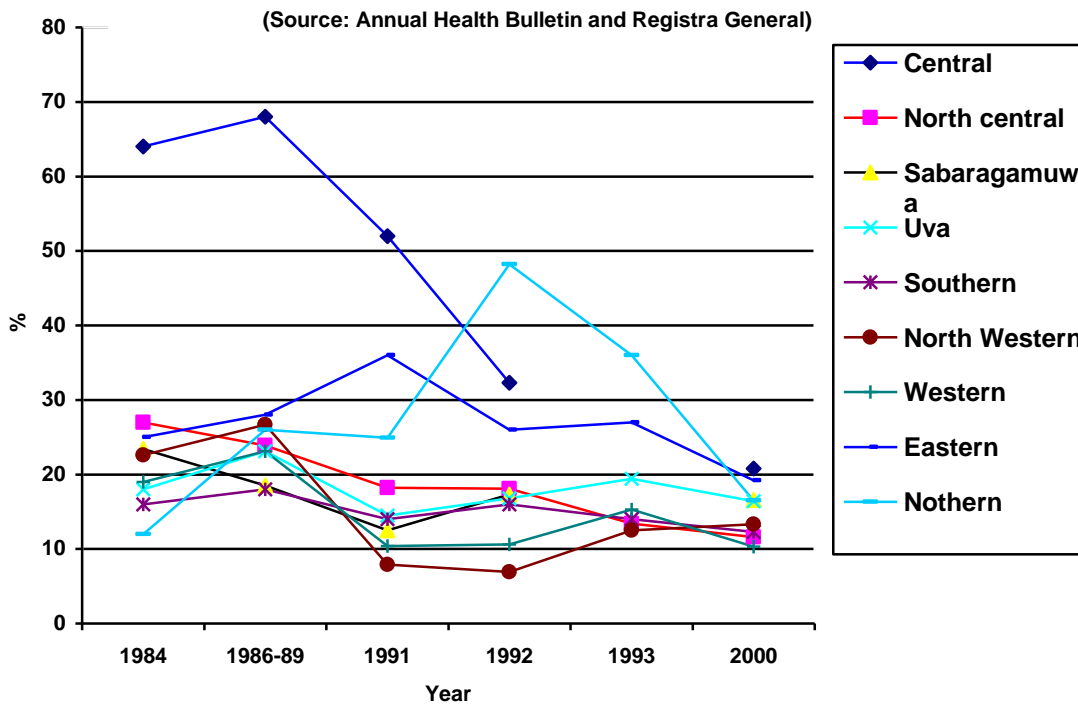


1984 Care: 18.9 %	1991 Care: 13.8%
1986-1989 FHB: 23.5 %	1991 FHB: 20.1%
1988-1989 Care: 15.9 %	1992 Care: 16.6%
1990: FHB: 22.8 %	1992 FHB: 21.8%
1993: Care: 13.4 %	2000: Care: 13.6 FHB: 16.6

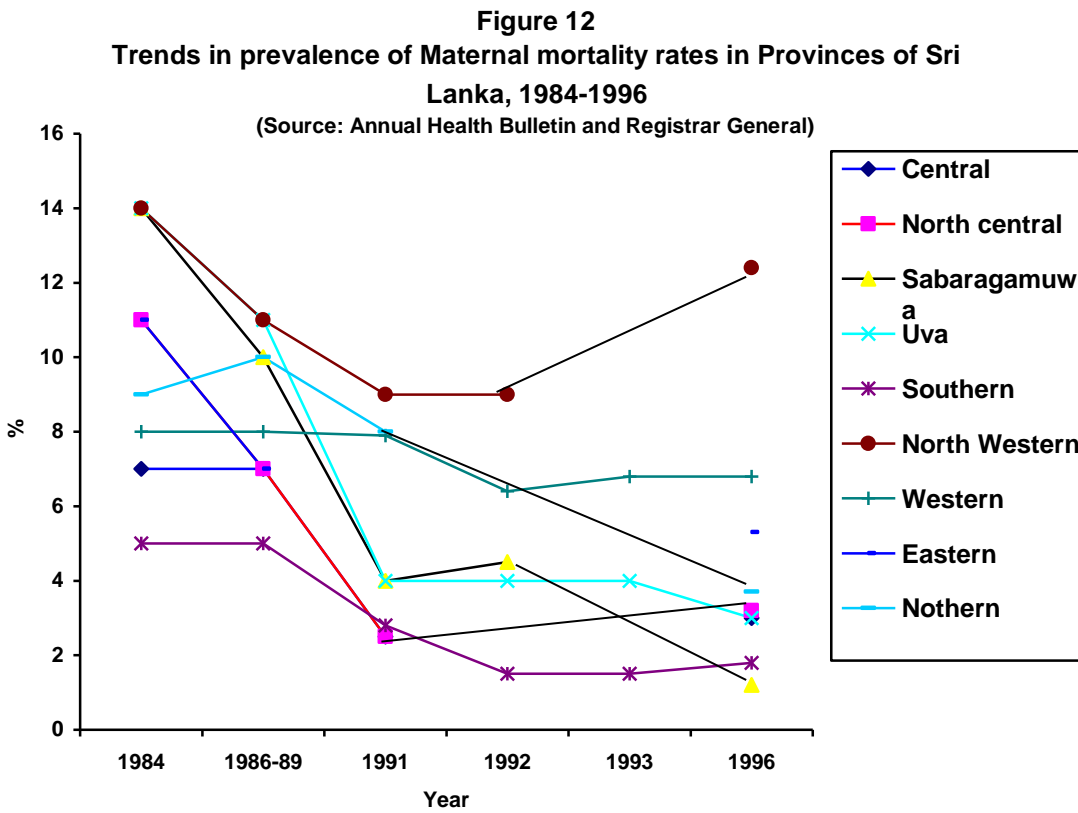
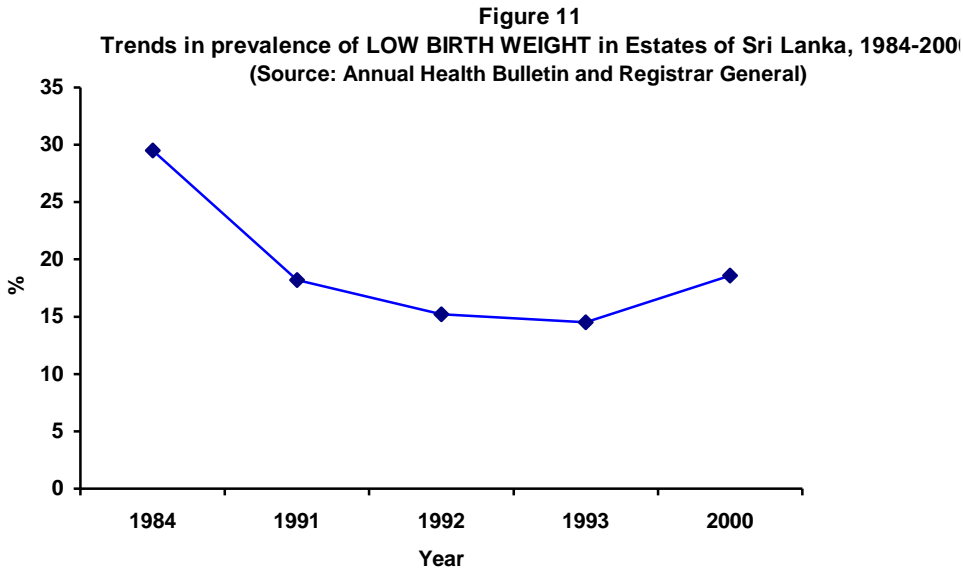




**Figure 10**  
**Trends in prevalence of Low Birth Weight in Provinces of Sri Lanka,**  
**1975-2000**



The majority of nutrition intervention programmes and projects in developing countries are driven by a few dedicated individuals who have to compensate for general lack of enthusiasm and support shown for nation-wide welfare programmes, due to the scarcity of funds, personnel and infrastructure facilities.



For improving the nutritional status of young children and mothers now feel that only providing a supplementary food is unsustainable. Measures to alleviate poverty must also be undertaken together with access to preventive and curative health services, housing, water and sanitation and wide access to meaningful education which is not the case with 30% of the population where

only malnutrition is present today. A national focused plan must be carried out continuously to improve the socio-economic levels of the deprived to eliminate poverty and induced malnutrition together with increased economic development.

**References:**

1. De Mel BV, Workshop on Extrusion Blended Food, Paper presented on First International Extrusion Blended Food Workshop at Colorado State University USA;1976.
2. Medical Research Institute, Dietary surveys - Ceylon, Nutrition Department;1950-70.
3. Medical Research Institute and World Health Organisation, Manpower study, Colombo;1973.
4. Ministry of Health, Annual Health Bulletin, Planning unit;1998.
5. Ministry of Health, Highways and Social Services, Annual Health Bulletin, Planning unit;1995.
6. De Mel BV, History of Thriposha Programme, Personal communication;2001-2.
7. Lutter CK, Complementary foods, Food and Nutrition Bulletin;2000;18(1):96-9.
8. Ministry of Health, Annual Reports, Care-Thriposha programme;1974-90.
9. Ministry of Health, Annual Reports, CTC-Thriposha programme;1991-2000.