

# Strengthening Nutrition Through Primary Health Care

*The Experience of JNSP in Myanmar*



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## 1. SUMMARY

The Joint WHO/UNICEF Nutrition Support Programme (JNSP) started in 1983 with support from the Government of Italy. Its objectives are to reduce infant and young child mortality, to improve child growth, and to reduce malnutrition in mothers. Since 1984, the programme has been in operation in 17 countries with widely varying results. In most countries a strong interdisciplinary approach was adopted with an emphasis on the convergence of a range of services for children and mothers. The programme usually took place in a province or in a number of districts, with an additional element of central coordination.

Myanmar is an exception. The JNSP in this country has, from its beginning in 1984, been seen as a nationwide programme, although its expansion nationwide has been in three phases. It has concentrated almost entirely on activities administered through the Ministry of Health. These activities are limited and focused. JNSP completely re-designed training in nutrition for the village workers, their supervisors and district health personnel. JNSP strengthened nutrition units at the central and regional levels and allowed for increased staff at the district and local levels; these staff have all been absorbed in the Health Ministry's regular establishment. All the technical activities fall into two categories - nutrition monitoring and counselling. JNSP also supports the Expanded Programme on Immunization (EPI) and provides equipment and pharmaceuticals. As part of JNSP a food and nutrition surveillance system was set up and operated.

The decision to concentrate activities and to implement them nationally from the beginning was rational because a detailed situation analysis of nutrition conditions and nutrition programmes in primary health care had been carried out just before JNSP started. Such a situation analysis before starting activities was unique to Myanmar among the JNSP countries.

The Government already had a defined plan for primary health care, the People's Health Plan, which had taken into account the situation analysis. JNSP provided the means to implement this in its nutrition and nutrition-related aspects. JNSP had the added effect of making possible a rapid decentralization of responsibilities within the context of the People's Health Plan. It allowed for some flexibility in response to experience and operational research findings within the context of the Plan.

In 1989, the Programme was evaluated; this publication is based on the report of that evaluation.

During the JNSP period, mortality in under three-year-old children decreased and they grew faster. Protein-energy malnutrition declined. Young child feeding practices and health seeking behaviour of mothers improved during the review period. This was along the

lines advocated in the counselling component of the programme. Health staff performance also improved along the lines promoted in the training carried out through JNSP.

It is concluded that JNSP had a direct beneficial effect on the health and nutrition of the target group of under three-year-old children, made possible through the limited though extensive activities undertaken by the programme.

The external costs of the programme were US\$ 5.63 million. The input from Government sources is assessed at US\$ 5.43 million and that from the communities at US\$ 9.29 million. 30 per cent of the total population of Myanmar is covered by the programme. It is estimated that around 1.63 million children and 550 000 pregnant women have benefited. The per capita annual costs are estimated at US\$ 1.67 for each child and the same amount for each mother covered. The identical figures are fortuitous. US\$ 0.46 of this came directly from the communities (the work of the auxiliary midwives who are community volunteers). This is a remarkably small figure which indicates that the programme is sustainable and replicable. However, further expansion of coverage depends on the expansion of the health delivery system as JNSP in Myanmar is a constituent part of the primary health care system operating in the country.

JNSP in Myanmar demonstrates that despite poverty improvement in child health and nutrition can be made in a large population over a short period of time and at low per capita cost. This can be achieved in the following circumstances:

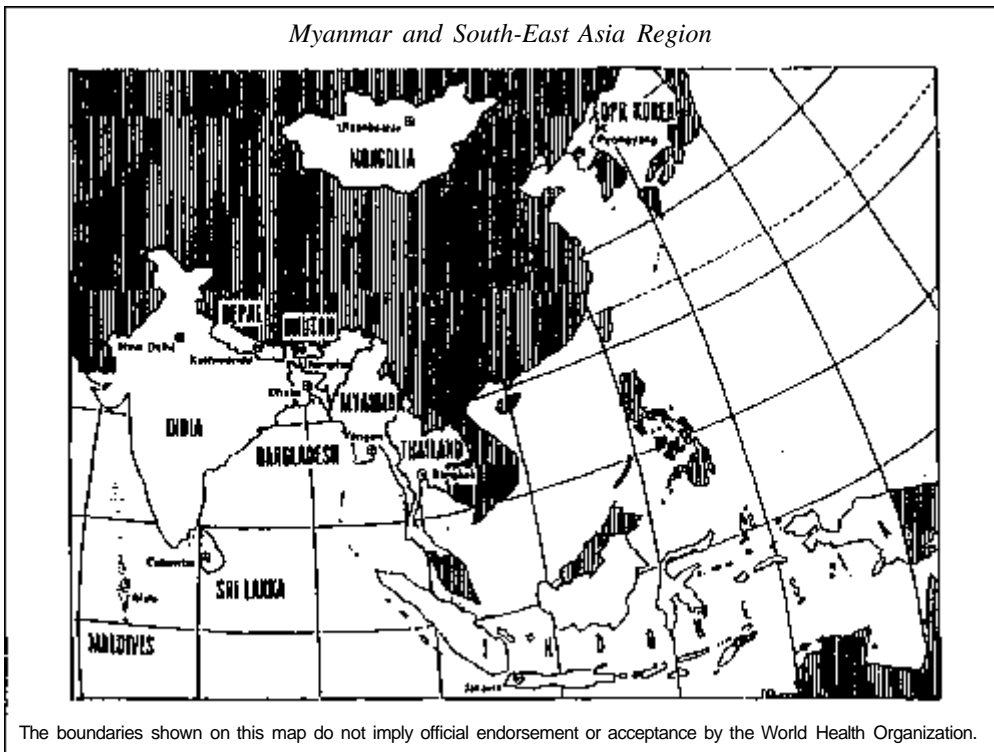
- (a) A primary health care system with concentration on outreach is in place. In Myanmar, the tradition of voluntary work was a great help in achieving broad coverage of primary health services for children and their mothers.
- (b) A situation analysis is undertaken before the activities are started so that the programme is planned on the basis of adequate knowledge of the problems and resources.
- (c) Concentration is maintained on a few priority activities carried out well with sufficient detailed planning.
- (d) A 'cascading' model of detailed training of health workers, including regular refresher courses at all levels, is implemented with carefully developed complementary educational content and messages.
- (e) Support and supervision is regularly provided at all levels with frequent, planned evaluation and feedback.
- (f) Nutrition surveillance, including growth monitoring at the local level, is implemented routinely but interpreted creatively so as to maintain both knowledge and enthusiasm and draw attention to changes needed.
- (g) Flexible implementation is facilitated, using the programme monitoring and surveillance results to aid decisions.

## 2. BACKGROUND

### 2.1 *The Situation Analysis*

Myanmar, previously known as Burma, is a tropical Asian country of around 39 million inhabitants. Administratively, there are fourteen States and Divisions, subdivided into 314 townships. A township (district) comprises both rural and urban areas. JNSP, implemented in 17 countries around the world, is administered by national governments and is managed jointly by WHO and TJNICEF. The funding comes from the Government of Italy. In Myanmar, JNSP was planned to cover all townships (districts) over a period of four-and-a-half years. This aim of nationwide coverage is unique among the countries participating in the programme.

The decision to plan for total population coverage rather than concentrate on one state or division or on a small number of townships was made because the health authorities knew what was needed to be done: in 1982, two years before the start of the programme, a comprehensive situation analysis of the content and implementation of the nutrition component of primary health care had been carried out as a part of a WHO-sponsored regional research programme.



The situation analysis provided comprehensive and detailed recommendations on how to improve the nutrition component of the existing primary health care services. JNSP provided the opportunity to act on these recommendations.

The situation analysis concluded that nutritional monitoring and nutrition education should be simplified and restricted to only a few messages to make it effective. A training module for midwives, including both content and methods, had been developed and was in use. It had demonstrated that midwives could function very effectively in nutrition monitoring as long as they were properly trained, equipped with growth charts and weighing machines and had pre-tested visual aids for use in nutrition education.

Similar teaching modules were needed for all health workers and auxiliary midwives. It should be explained here that midwives are government peripheral health workers. They technically supervise the auxiliary midwives who are volunteers selected by their communities. Both these categories perform ante-natal care, deliveries and post-natal care. They also provide infant and pre-school child services.

The situation analysis also revealed that township medical officers needed reorientation to prepare them for their roles as nutrition field managers and trainers, providing supervisory support to health workers.

Intervention priorities were drawn up based on the situation analysis and directed towards vulnerable groups (children under three years of age, pregnant women and nursing mothers). Two nutrition conditions were given priority in planning JNSP. These were: protein-energy malnutrition and iron deficiency anaemia which were to be addressed in rural areas in all parts of Myanmar.

Intervention measures, identified as being feasible and appropriate in the context of primary health care, were planned. These included regular monitoring of nutritional status coupled with local-level intervention measures. The target group for such growth monitoring and support was set as infants and children under three years of age since growth retardation associated with faulty weaning and infections occurred mainly in this age-group. The counselling was planned to concentrate on proper food choice and feeding for the prevention of malnutrition and nutrient deficiencies, early management of minor ailments, personal hygiene, and oral prevention of dehydration in diarrhoea.

The situation analysis led to plans to improve regular ante-natal care, including weighing and consumption by pregnant women of ferrous sulphate and folate tablets during the latter half of pregnancy, use of ante-natal charts, and appropriate counselling.

## *2.2 JNSP Strategic Approach*

With the adoption of the primary health care approach, health workers previously dealing with specific diseases have been integrated into the basic health staff in Myanmar. Since 1978, health activities have been implemented through a series of People's Health

Plans. JNSP was planned as a vehicle through which the People's Health Plan could be re-programmed for more effective performance. Thus it was easily integrated into the existing nutrition services which formed a part of the Community Health Care Project of the People's Health Plan.

JNSP is, therefore, based on the hypothesis that sustainable nutritional improvement can best be made through increasing the capacity of the health personnel to plan, implement and control programmes in conjunction with community participation. The JNSP objectives are set out in the box below.

### **General Objectives of JNSP**

- To implement the existing strategy of the People's Health Plan by strengthening the nutrition component of primary health care and extending the nutrition services to the entire rural population and some of the urban areas of Myanmar.

### **Specific Objectives of JNSP**

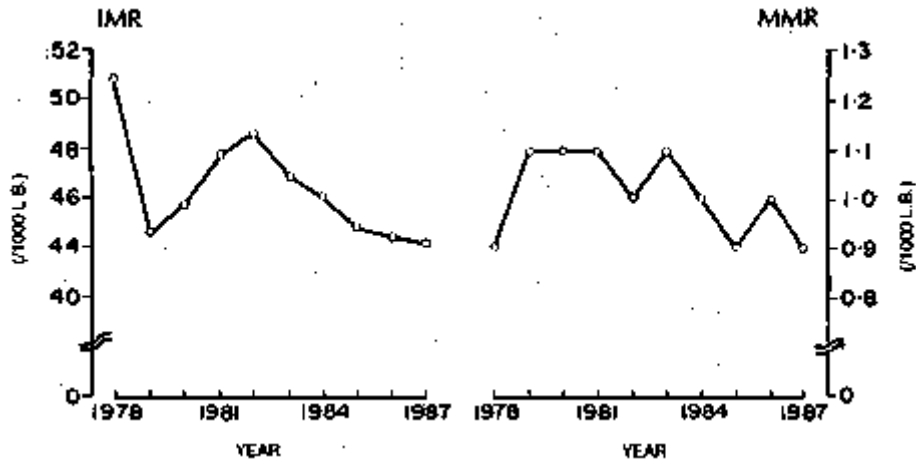
- To reduce mortality and morbidity due to malnutrition and diarrhoea;
- To improve 'the' growth of infants and young children;
- To improve maternal nutrition, including reduction of anaemia in pregnant women;
- To provide refresher training in nutrition and diarrhoea management at all levels;
- To complete the creation of an effectively-functioning infrastructure at the central, intermediate and peripheral levels of the health services;
- To expedite delivery of effective convergent nutrition inputs through community-based primary health care in all<sup>1</sup> townships in the country, and
- To establish effective linkages with other existing and planned nutrition programmes.

These objectives and the strategy have remained constant throughout the six years of the programme. Naturally, course corrections were made with each of the annual plans of action and following the mid-term review in 1987.

## **2.3 Programme Environment**

In Myanmar, health expenditure constitutes about 1.2 per cent of the total net output of goods, service consumption and investments. The national GNP per capita is assessed at US\$ 200 (1986). Topographies vary, and the terrain is often difficult. Security problems limit the implementation of government services in some areas. Protein-energy malnutrition is ranked as among the top ten priority diseases in the People's Health



*Figure 1. Vital statistics of Myanmar*

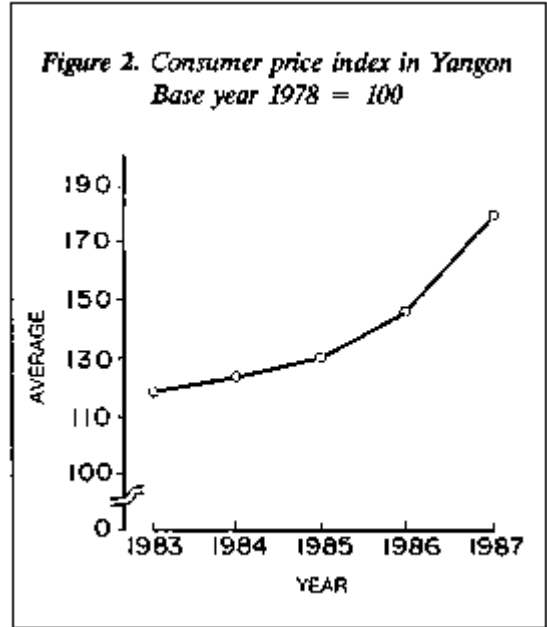
Source: Reports to Pyithu Hluttaw

Plan. The nutrition situation analysis in 1982 indicated its prevalence among pre-school-age children as being around 42 per cent. Flattening of growth curves occurs mostly between the ages of six and eighteen months. This is due mainly to inadequate and inappropriate supplementary feeding. About 20 per cent of babies start life with a low birth weight. The maternal mortality rate was 1.2 and the infant mortality rate 47.2 per thousand live births in 1983; 20 years ago, the Directorate of Health Services had reported rates of 4.7 and 121.8 respectively. Iron deficiency anaemia was also highly prevalent in pregnant women, being found in 68 per cent of them in a survey by the Department of Medical Research in 1979.

Iodine deficiency disorders are highly prevalent in focal endemic areas throughout Myanmar. Diarrhoeal diseases, which are inter-related with malnutrition, were ranked second amongst diseases of national significance by the People's Health Plan Central Level Information Team in 1985.

The Government and the administrative political system at the start of the programme was relatively centralized. Government employees at all levels had to work within guidelines setting out norms and practices. Township councils and village tract peoples' councils implemented policy at local levels and linked up with health and other service staff. Changes in the programme environment have taken place during the life of JNSP.

JNSP has itself caused a greater decentralization of management to state, division and township (district) levels, including programme review, problem analysis, priority setting and setting of objectives. The township medical officers are the assigned field managers of all basic health staff and community health volunteers stationed within the jurisdiction of the township area. The situation analysis revealed that they did not have any active role in nutrition activities and, despite briefing in nutrition, were not clear about the specific activities of the different health workers they supervised and the importance of the identified priority tasks. Thus, sensitizing and upgrading of the skills of township medical officers became an important component of JNSP.

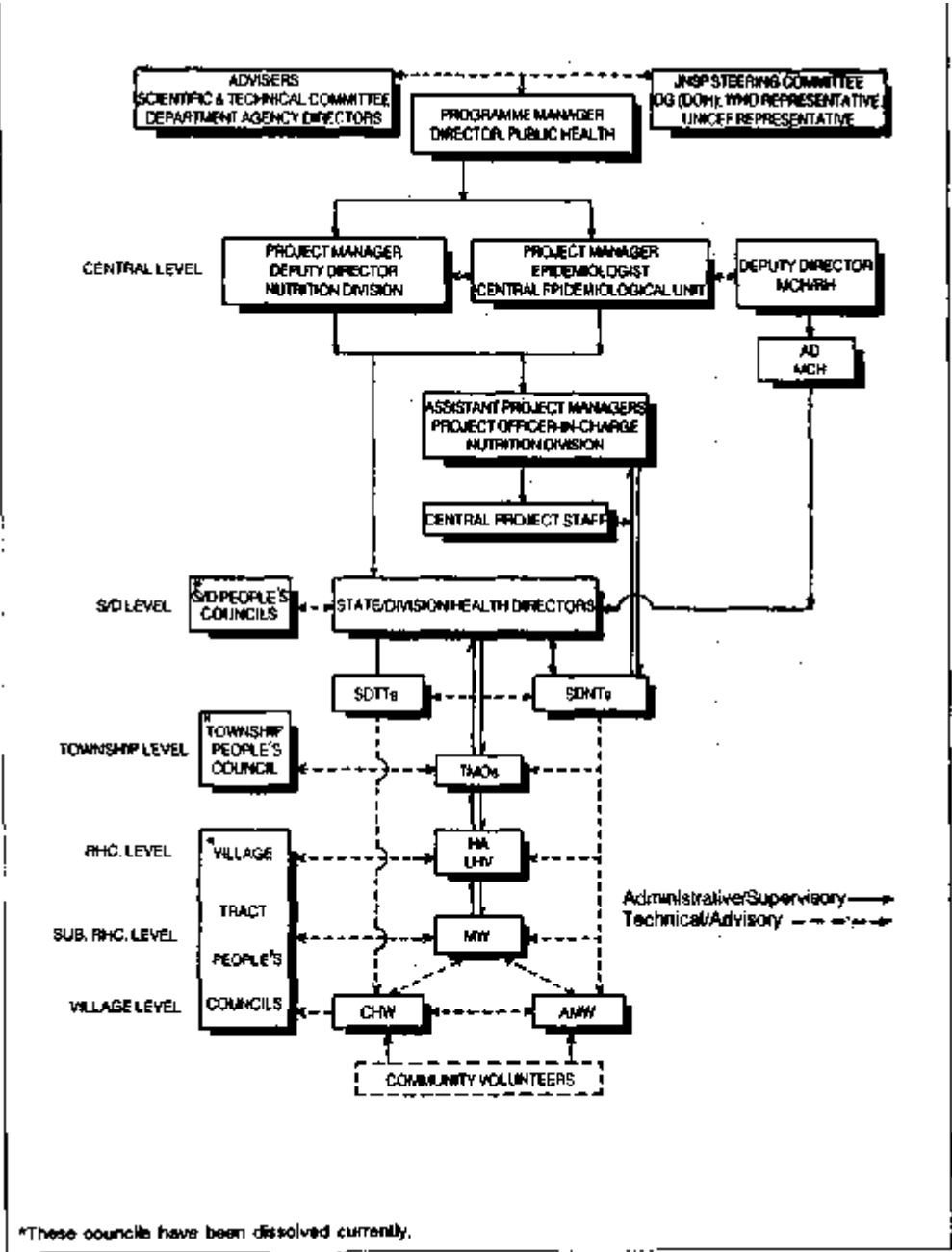


Serious political problems surfaced in 1988 and many programme activities had to cease during that time. By 1989, food prices had risen considerably; for example, the price of rice had quadrupled.

## 2.4 Management

The Nutrition Division of the Ministry of Health shoulders the major responsibility for implementing the programme under the overall supervision of the Director of Public Health and in collaboration with the Central Epidemiological Unit (especially with regard to diarrhoeal disease control). A National Steering Committee decides on all major issues relating to the implementation of JNSP. It is chaired by the Director-General of the Department of Health and its members include WHO and UNICEF representatives, Director (Public Health), Deputy Director (Nutrition), Epidemiologist from the Central Epidemiological Unit and Assistant Project Manager from the Nutrition Division. JNSP has a State and Division training team in every State and Division for training, supervision and monitoring. The organizational chart below summarizes the management system of JNSP from central to community level.

Figure 3. Organizational Chart - Joint Nutrition Support Programme



### 3. ACTIVITIES AND OUTPUTS

#### 3.1 *Nutrition Monitoring and Counselling*

The national chart used for monitoring the growth and development of infants and pre-school-age children contains curves corresponding to the Harvard reference weights for age from birth to 60 months. It incorporates three colour zones: the green zone being between 80 and the median, the yellow from 60 per cent to 79 per cent and the red below 60 per cent. Children are categorized according to the zone in which they fall and the weight gained since the last visit: their growth is considered satisfactory if at least 0.5 kg is gained monthly up to one year of age and at least 0.5 kg every three months from one to three years.

The weighing schedule corresponds to the above: within 24 hours of birth, then monthly for the first year, and then three-monthly if the weight gain is satisfactory and monthly if not. The emphasis is on infants and children under three years of age.

The probable causes of weight failure or other problems are discussed with the mother and several solutions suggested from which she commits herself to the most feasible. The child is examined for any sign of nutritional deficiency or infection and is treated accordingly. Oral rehydration therapy, using ORS packets, is used for diarrhoea. High-potency retinol is also used in cases with vitamin A deficiency and for children in the red zone of the growth chart or with measles. Nutrition monitoring consists of weight recording as well as recording of recent illnesses, administration of retinol capsules or ferrous sulphate/folate, and special advice or treatment given to the child or pregnant mother. Counselling emphasizes face-to-face interaction with specific advice based on nutrition education messages which have been identified and incorporated into the task-oriented training.

Each midwife or auxiliary midwife is responsible for monitoring all the women in the latter half of pregnancy and all the children under three years residing in her village. There are no other support measures such as food stamps, food supplementation or income supplements. The village level staff have to rely on community leaders and community organizations for support.

#### 3.2 *Food and Nutrition Surveillance System*

The objectives of the national food and nutrition surveillance system which was developed by JNSP are:

- (a) To monitor operational efficiency at the periphery;
- (b) To assess regularly and by season the food and nutrition situation in all regions of the country so that policy-makers and planners can be influenced early and effectively, and



**Figure 5. Nutrition monitoring monthly sentinel format**

Village/Village head \_\_\_\_\_ TSP \_\_\_\_\_ S/D \_\_\_\_\_  
 Overall population \_\_\_\_\_ UHF \_\_\_\_\_  
 Rural health centre \_\_\_\_\_ [ 18 \_\_\_\_\_ month ] MVI \_\_\_\_\_  
 or \_\_\_\_\_ AMW \_\_\_\_\_  
 Urban health centre/ACH \_\_\_\_\_

Sr. No.	Target Group	No. Registered	No. Weighed	No. Weight Gain	No. Weights lost/no. no. Weight Gain	Activity Education Times	No. of Deaths	No. of Diarrhoea		No. of Overweight given ORT		Remarks
								Case	Death	Case	Death	
1.	Pregnant Women	OLD										
		NEW										
2.	New Born (One Day)			Above 2 1/2 kg								
				2 1/2 kg								
3.	(0-1 year)											
4.	(1-5 years)											
5.	(2-3 years)											
6.	(3-5 years)											

NOTE: Pregnant women: weight gain: 12-14 kg; 14-16 kg; 16-18 kg; 18-20 kg; 20-22 kg; 22-24 kg; 24-26 kg; 26-28 kg; 28-30 kg; 30-32 kg; 32-34 kg; 34-36 kg; 36-38 kg; 38-40 kg; 40-42 kg; 42-44 kg; 44-46 kg; 46-48 kg; 48-50 kg; 50-52 kg; 52-54 kg; 54-56 kg; 56-58 kg; 58-60 kg; 60-62 kg; 62-64 kg; 64-66 kg; 66-68 kg; 68-70 kg; 70-72 kg; 72-74 kg; 74-76 kg; 76-78 kg; 78-80 kg; 80-82 kg; 82-84 kg; 84-86 kg; 86-88 kg; 88-90 kg; 90-92 kg; 92-94 kg; 94-96 kg; 96-98 kg; 98-100 kg; 100-102 kg; 102-104 kg; 104-106 kg; 106-108 kg; 108-110 kg; 110-112 kg; 112-114 kg; 114-116 kg; 116-118 kg; 118-120 kg; 120-122 kg; 122-124 kg; 124-126 kg; 126-128 kg; 128-130 kg; 130-132 kg; 132-134 kg; 134-136 kg; 136-138 kg; 138-140 kg; 140-142 kg; 142-144 kg; 144-146 kg; 146-148 kg; 148-150 kg; 150-152 kg; 152-154 kg; 154-156 kg; 156-158 kg; 158-160 kg; 160-162 kg; 162-164 kg; 164-166 kg; 166-168 kg; 168-170 kg; 170-172 kg; 172-174 kg; 174-176 kg; 176-178 kg; 178-180 kg; 180-182 kg; 182-184 kg; 184-186 kg; 186-188 kg; 188-190 kg; 190-192 kg; 192-194 kg; 194-196 kg; 196-198 kg; 198-200 kg; 200-202 kg; 202-204 kg; 204-206 kg; 206-208 kg; 208-210 kg; 210-212 kg; 212-214 kg; 214-216 kg; 216-218 kg; 218-220 kg; 220-222 kg; 222-224 kg; 224-226 kg; 226-228 kg; 228-230 kg; 230-232 kg; 232-234 kg; 234-236 kg; 236-238 kg; 238-240 kg; 240-242 kg; 242-244 kg; 244-246 kg; 246-248 kg; 248-250 kg; 250-252 kg; 252-254 kg; 254-256 kg; 256-258 kg; 258-260 kg; 260-262 kg; 262-264 kg; 264-266 kg; 266-268 kg; 268-270 kg; 270-272 kg; 272-274 kg; 274-276 kg; 276-278 kg; 278-280 kg; 280-282 kg; 282-284 kg; 284-286 kg; 286-288 kg; 288-290 kg; 290-292 kg; 292-294 kg; 294-296 kg; 296-298 kg; 298-300 kg; 300-302 kg; 302-304 kg; 304-306 kg; 306-308 kg; 308-310 kg; 310-312 kg; 312-314 kg; 314-316 kg; 316-318 kg; 318-320 kg; 320-322 kg; 322-324 kg; 324-326 kg; 326-328 kg; 328-330 kg; 330-332 kg; 332-334 kg; 334-336 kg; 336-338 kg; 338-340 kg; 340-342 kg; 342-344 kg; 344-346 kg; 346-348 kg; 348-350 kg; 350-352 kg; 352-354 kg; 354-356 kg; 356-358 kg; 358-360 kg; 360-362 kg; 362-364 kg; 364-366 kg; 366-368 kg; 368-370 kg; 370-372 kg; 372-374 kg; 374-376 kg; 376-378 kg; 378-380 kg; 380-382 kg; 382-384 kg; 384-386 kg; 386-388 kg; 388-390 kg; 390-392 kg; 392-394 kg; 394-396 kg; 396-398 kg; 398-400 kg; 400-402 kg; 402-404 kg; 404-406 kg; 406-408 kg; 408-410 kg; 410-412 kg; 412-414 kg; 414-416 kg; 416-418 kg; 418-420 kg; 420-422 kg; 422-424 kg; 424-426 kg; 426-428 kg; 428-430 kg; 430-432 kg; 432-434 kg; 434-436 kg; 436-438 kg; 438-440 kg; 440-442 kg; 442-444 kg; 444-446 kg; 446-448 kg; 448-450 kg; 450-452 kg; 452-454 kg; 454-456 kg; 456-458 kg; 458-460 kg; 460-462 kg; 462-464 kg; 464-466 kg; 466-468 kg; 468-470 kg; 470-472 kg; 472-474 kg; 474-476 kg; 476-478 kg; 478-480 kg; 480-482 kg; 482-484 kg; 484-486 kg; 486-488 kg; 488-490 kg; 490-492 kg; 492-494 kg; 494-496 kg; 496-498 kg; 498-500 kg; 500-502 kg; 502-504 kg; 504-506 kg; 506-508 kg; 508-510 kg; 510-512 kg; 512-514 kg; 514-516 kg; 516-518 kg; 518-520 kg; 520-522 kg; 522-524 kg; 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692-694 kg; 694-696 kg; 696-698 kg; 698-700 kg; 700-702 kg; 702-704 kg; 704-706 kg; 706-708 kg; 708-710 kg; 710-712 kg; 712-714 kg; 714-716 kg; 716-718 kg; 718-720 kg; 720-722 kg; 722-724 kg; 724-726 kg; 726-728 kg; 728-730 kg; 730-732 kg; 732-734 kg; 734-736 kg; 736-738 kg; 738-740 kg; 740-742 kg; 742-744 kg; 744-746 kg; 746-748 kg; 748-750 kg; 750-752 kg; 752-754 kg; 754-756 kg; 756-758 kg; 758-760 kg; 760-762 kg; 762-764 kg; 764-766 kg; 766-768 kg; 768-770 kg; 770-772 kg; 772-774 kg; 774-776 kg; 776-778 kg; 778-780 kg; 780-782 kg; 782-784 kg; 784-786 kg; 786-788 kg; 788-790 kg; 790-792 kg; 792-794 kg; 794-796 kg; 796-798 kg; 798-800 kg; 800-802 kg; 802-804 kg; 804-806 kg; 806-808 kg; 808-810 kg; 810-812 kg; 812-814 kg; 814-816 kg; 816-818 kg; 818-820 kg; 820-822 kg; 822-824 kg; 824-826 kg; 826-828 kg; 828-830 kg; 830-832 kg; 832-834 kg; 834-836 kg; 836-838 kg; 838-840 kg; 840-842 kg; 842-844 kg; 844-846 kg; 846-848 kg; 848-850 kg; 850-852 kg; 852-854 kg; 854-856 kg; 856-858 kg; 858-860 kg; 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2032-2034 kg; 2034-2036 kg; 2036-2038 kg; 2038-2040 kg; 2040-2042 kg; 2042-2044 kg; 2044-2046 kg; 2046-2048 kg; 2048-2050 kg; 2050-2052 kg; 2052-2054 kg; 2054-2056 kg; 2056-2058 kg; 2058-2060 kg; 2060-2062 kg; 2062-2064 kg; 2064-2066 kg; 2066-2068 kg; 2068-2070 kg; 2070-2072 kg; 2072-2074 kg; 2074-207

### 3.3 *Competency Development*

Curricula were prepared, after pre-testing, together with training aids for the training of trainers and for task-oriented learning of all newly-recruited staff and refresher trainees. Participatory learning was introduced at every level, and task-oriented learning modules and materials for nutrition were developed for the peripheral field workers, the midwives and the community volunteer auxiliary midwives. They were produced locally and were utilized for nutrition training in the health service and introduced into the regular training schools.

Management of orientation and training workshops presented a real problem to the project managers because of the nation-wide coverage, shortage of trainers in nutrition, and the task-oriented nature of learning. Small group training is a necessity for participatory learning but given the massive population of trainees - about 6 000 midwives and 10 000 auxiliary midwives - the only solution possible was to have a decentralized "cascade" type of training. This had been done in previous years, but, as shown by the situation analysis, it had been unsatisfactory because of a lack of training aids, insufficient training hours (due to lack of funds) and weak orientation of the field managers and supervisors.

The public health nurses heading the State and Division nutrition teams were given job-oriented training since they were to train the township-level trainers, lady health visitors and selected midwives. These public health nurses conducted small training courses combining two to three townships (districts), the number of trainees not being allowed to exceed 25 per course. They reported monthly on their training activities and maintained contact for discussion on constraints and problems faced in the field.

The top-level orientation of field managers (township medical officers) was conducted in the form of one-week workshops culminating in individual micro-planning. The township medical officers conducted orientation training of field supervisors, station hospital medical officers and health assistants who would be overall supervisors of the rural health centres assisted by lady health visitors. The lady health visitors and selected midwives trained other midwives and volunteer auxiliary midwives at each rural health centre.

A large number of training aids and educational materials were produced to support training and public education. All the educational materials were based on messages identified before JNSP at a nutrition education workshop in 1981 and improved upon following the weaning practices survey and the situation analysis in 1982. They were all pre-tested.

### 3.4 *Supervision*

Public health nurses are the backbone of supervision averaging 6-8 supervisory tours to townships (districts) every year. Each township receives about one such visit a year, except for the sentinel townships which are visited about four times a year.

Monthly meetings are held at township and rural health centre levels where adjustments can be made, instructions given and refresher training carried out. The auxiliary midwives, being volunteers, are neither required to attend such meetings nor to submit reports; the midwives who supervise them and give them on-the-job training do this for them.

### *3.5 Community Mobilization*

This was carried out through three broad strategies: a nutrition education campaign, the literacy campaign, and community nutrition education. In addition, the community-level services to an extent mobilized communities or, at very least, sensitized them.

The nutrition education campaign comprised cooking demonstrations, baby shows, school competitions and debates using community nutrition centres as focal points. 20 000 readers in nutrition were produced by the Nutrition Division and incorporated in the already existing and important National Literacy Campaign.

Nongovernmental organizations, such as the maternal and child welfare societies, were mobilized for community nutrition education so that 60 to 120 women in each of the twelve townships were trained concerning diet in pregnancy, breast-feeding, supplementary feeding, food hygiene, proper food preparation, oral rehydration therapy, immunization, preparation of nutritious local snacks, handicrafts or animal husbandry and home gardening.

### *3.6 Urban Nutrition Promotion*

The main emphasis of JNSP has been on the rural population. Since the mid-term review, urban malnutrition has been addressed through urban health centres and maternal and child health centres. Because of the high population density and small number of staff, home-based monitoring and counselling has not been feasible. Consequently, the staff at the urban centres have been trained for weighing and nutrition status assessment, nutrition education and demonstration feeding so that the centres can function as "nutrition stations" or "weighing stations". Training has been halted because of the civil disturbances. However, one urban township in Yangon has functioned well. The weight chart results have stimulated the community leaders and the Law and Order Restoration Council to arrange supplementary feeding and extra food quotas for young children with severe protein-energy malnutrition.

### *3.7 Research on Anaemia Control*

The strategy of anaemia control was to ensure that every pregnant woman in the villages where the midwives or auxiliary midwives had their residence took two iron/folate tablets



every day during the last trimester of each pregnancy. This amounts to 180 tablets per pregnancy. While 90 per cent of the pregnant women received iron/folate tablets, the dosage received was known to be insufficient to have any beneficial effect on anaemia or iron deficiency.

This problem was investigated as an operational research project. Fourteen townships (districts) which had received substantial quotas of iron sulphate tablets were selected. Five study villages that had a resident midwife were chosen from each of these townships. Nearby villages, where there were no resident midwives, were selected for comparison. All pregnant women in the villages as also midwives from the study villages, health assistant responsible for their supervision, lady health visitors and township medical officers were interviewed.

It was found that in 'resident' villages pregnant women received only 14-20 iron tablets per visit which amounted to only about 40-50 tablets per pregnancy compared with the intended 180 tablets. In villages where there was no resident midwife or auxiliary midwife, fewer pregnant women received iron tablets. Iron tablets were inadequately distributed to pregnant women in resident villages primarily because the supply to midwives and auxiliary midwives was irregular and insufficient. This made the staff cautious over the amount to give at any one visit. 73 per cent of the pregnant women were seen at least three times during their pregnancy; very few were seen fortnightly. However, many midwives and volunteer auxiliary midwives, partly because of the supply problems, gave only two weeks' supply of iron/folate tablets at any one time.

The iron tablets came mainly through the Maternal and Child Health Services and the Nutrition Division. In those townships where the midwives and auxiliary midwives received packaged drug sets (containing five tins of ferrous sulphate), the supply of iron tablets to pregnant women of the villages where a midwife was resident was sufficient.

### 3.8 *Research on Iodine Deficiency Disorders*

The salt iodation programme in operation since 1969 in Chin State, and Sagaing and Magwe Divisions was suspended in 1980 after introduction of a policy to de-control the salt trade. Soon after, a programme to widely administer iodated oil was started. It continues with UNICEF support.

An operational research project to explore the feasibility of reintroducing iodated salt as a long-term measure for the control of iodine deficiency disorders was undertaken under JNSP. A non-experimental descriptive methodology was used. The sampling frame included production areas, refineries, warehouses, transportation systems, distribution networks, markets and consumers of common salt. Three townships (districts), one from Shan State and two from Chin State, were selected. A two-stage stratified random

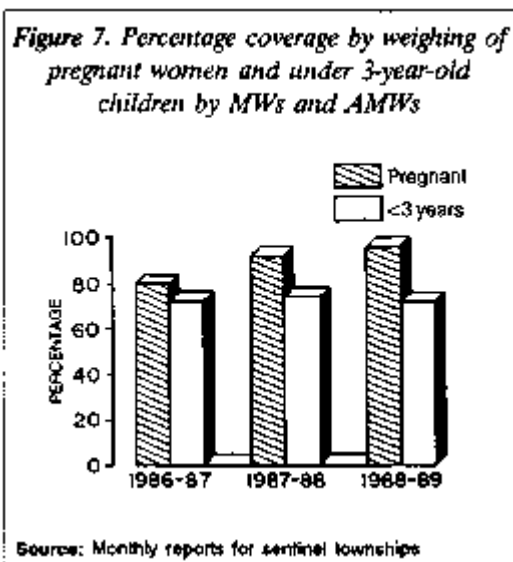
sample selection procedure in villages and households was applied for study at the consumer level. Observation, personal interviews and self-administered questionnaires were used in the study.

Communities were found to be fully aware of the problem and to have positive attitudes towards iodated salt consumption. Based on the findings, it was recommended that the iodated salt distribution programme be reintroduced with full coordination and integration of the ministries and departments concerned. Refineries with attached iodation plants and dumping stations were recommended to be located at strategic points near the affected States so that the potency loss would be minimal and salt flow would be more timely and smooth.

At a multisectoral workshop in early 1987, representatives from the Ministries of Cooperatives, Trade and Industry 1 and the Nutrition Division of the Ministry of Health discussed joint efforts to effectively distribute the iodated salt.

#### 4. PROGRAMME COVERAGE

Initially, JNSP activities were started in 67 of the 314 townships (districts) in the country and now cover 244 (78 per cent). It was found that the workload and travel difficulties of the midwives and auxiliary midwives, who carried out the monitoring activities of JNSP, were such that they could only cover the populations of the villages in which they were resident. The total populations covered by JNSP have been estimated by projecting a 2.01 per cent increase each year from the 1983 national census and estimating that villages where midwives and auxiliary midwives were resident contained 30 per cent of the township population.



Taking into account the above estimate, plus the period for which JNSP has run (4 years) and the period over which a child is entitled to participate (the first three years of its life), it is estimated that the total target population of JNSP is 1.81 million children under three-years-old. The reports from the midwives and auxiliary midwives indicate that around 1.63 million such children have participated in the programme since its inception. This represents 90 per cent of the targeted number.

Similar calculations have been applied to estimate the coverage of pregnant women. An estimate of 30 pregnant women per thousand population has been assumed. This may be on the high side since in some townships a rate of 21 per thousand is reported. It has been assumed that a woman is 'in the system' for six months and may be in it again in about two years' time. From this it is estimated that the total target population of pregnant women is 1.06 million.

Reports from the midwives and auxiliary midwives indicate that the cumulative number of pregnant women covered since the start of the programme is 550 000. Thus, about half of the pregnancies in villages where there is a resident midwife or auxiliary midwife have been covered by JNSP in the townships served.

The general objective of JNSP in Myanmar was "to implement the existing strategy of the People's Health Plan by strengthening the nutrition component of primary health care and extending nutrition services to the entire rural population and some of the urban areas of Myanmar". How far has this objective been achieved? It can be calculated from the above that JNSP in Myanmar has enabled functional nutrition monitoring and counselling services to reach mothers and children in villages where midwives (government servants) and auxiliary midwives (community volunteers) are resident. Currently, this means that a coverage of about 30 per cent of the population of Myanmar is achieved through JNSP.

## 5. CHANGES IN ACTIVITIES DURING IMPLEMENTATION

The programme was implemented in four phases up to the present evaluation. It should be recalled that it was preceded by a thorough situation analysis as described earlier. A plan of operation was drawn up for the planned five years of the programme and annual plans of action were devised. However, within the constraints imposed by the People's Health Plan there was considerable flexibility.

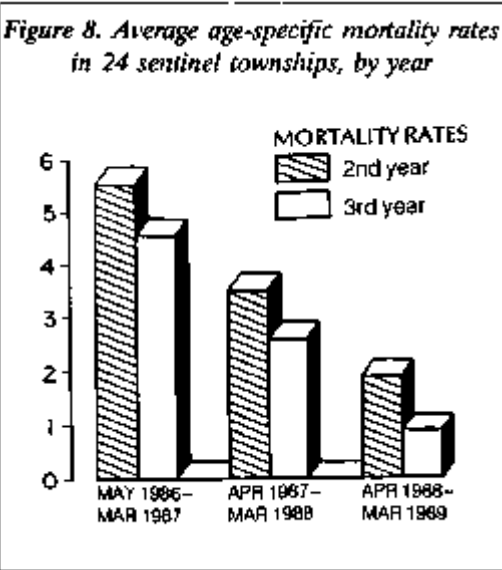
Following the mid-term review, decisions were made to promote urban nutrition through linking of community nutrition centres and hospital nutrition units to JNSP, to include economic activities in the nutrition education component, to utilize the mass media, and to develop surveillance as an extension of the monitoring system. However, unforeseen national disturbances in 1988 inhibited the application of these changes. A decision to modify the national growth chart so as to accommodate new immunization schedules was carried out.

## 6. IMPACT ANALYSIS

The impact objectives of JNSP in Myanmar are to reduce infant and young child mortality and morbidity due to malnutrition and diarrhoea, to improve the growth of infants and young children, and to improve maternal nutrition including reduction of anaemia in pregnant women.

6.1 Changes in Mortality and Morbidity

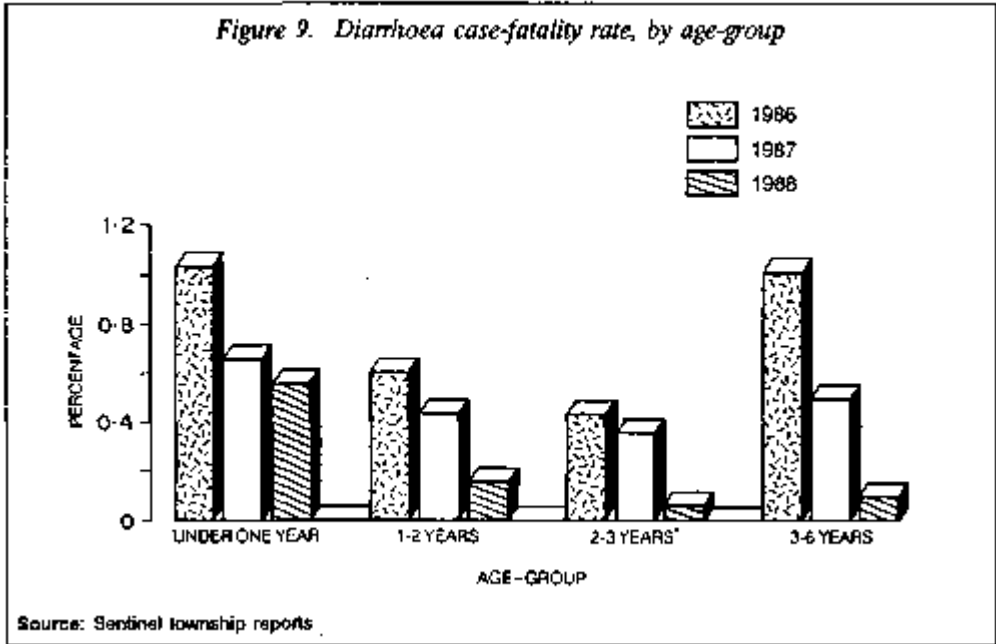
Figure 8. Average age-specific mortality rates in 24 sentinel townships, by year

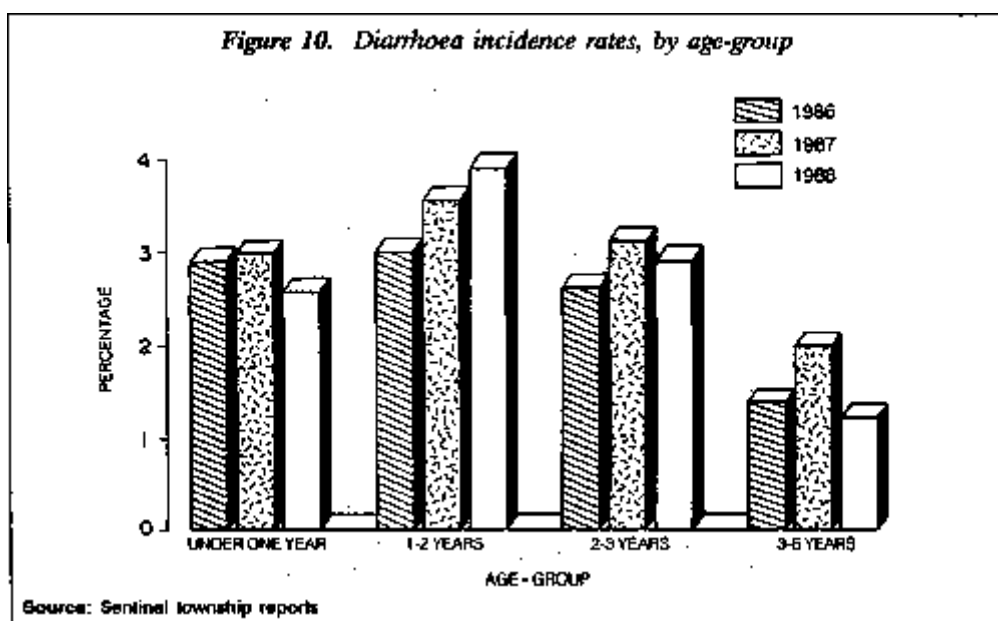


Mortality and morbidity data are available from the sentinel townships (districts) for the three years 1986-89. There has been a steady decline in mortality in both the second and third years of life.

Diarrhoea case fatality rates in infants and in children in their second and third years of life and aged from three to under-five years have declined steadily between 1986 and 1989. Morbidity data from diarrhoea shows that the number of cases peak in May and June during the monsoon season in all geographic zones, with highest rates in the second year of life. There has been no trend in the number of diarrhoea cases over the three year period.

Figure 9. Diarrhoea case-fatality rate, by age-group





## 6.2 Infant and Young Child Growth Rates

JNSP has produced five sets of data on weight-for-age below specified cut-off points. These are all derived from the nutritional surveillance and monitoring systems. The five data sets are:

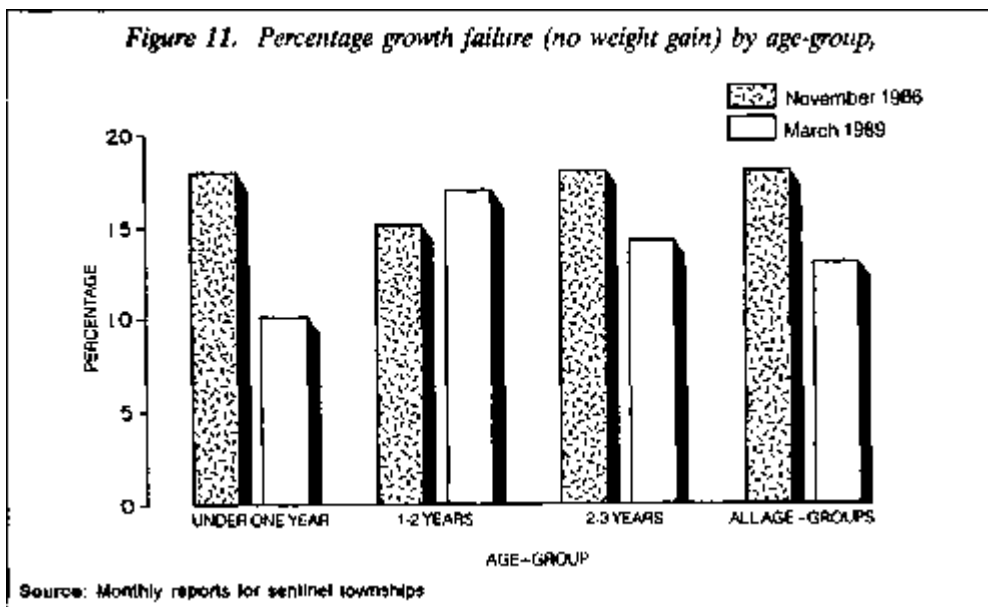
- Monthly growth monitoring reports from the sentinel townships
- Cluster samples comparing 1982 with 1987 and 1989
- Community health care evaluation data
- Data from weight-charts
- Low birth-weight

### *Monthly reports from sentinel townships (districts)*

Sentinel reporting covered children in the second year of life only and not the whole under-three-years age-group. Children were classified as having protein-energy malnutrition if they fell into the red or yellow zones of the growth chart. This corresponds to below 80 per cent of the Harvard reference median weight for age.

The regular data available covers the period October 1987 - March 1989. This has been analysed by six-monthly periods which correspond roughly to winter, summer (rainy) and winter. The protein-energy malnutrition prevalence rates are 38.5 per cent, 38.3 per cent and 37.2 per cent respectively for the three periods. The 95 per cent confidence range for all these figures is about  $\pm 0.4$  per cent and the differences, while very small, are all significantly different from each other at the  $P < 0.001$  level. These data combine all areas of the country. They do not indicate any national trend in this age-group over this period.

Failure to gain weight is also recorded. A gain of half a kilogram is expected monthly in infants under one year, and every three months between one and under three years of age. The proportion of infants failing to gain weight in this way declined considerably between 1986 and 1989.



#### *Cluster samples comparing 1982 with 1987 and 1989*

The situation analysis, conducted in 1982, provides data collected over the whole year from the entire country. The 1987-1988 surveillance surveys were conducted in two periods (winter/1987 and summer/1988). They were based on cluster samples of 0-35-month-old children in proportion to population size in the four geographical zones of the country (hilly, coastal, dry and delta). As in the previous study, data were analysed

to show the proportion of subjects who fell below 80 per cent of the Harvard reference median weight for age. The data have been analysed geographically and by age-group over time.

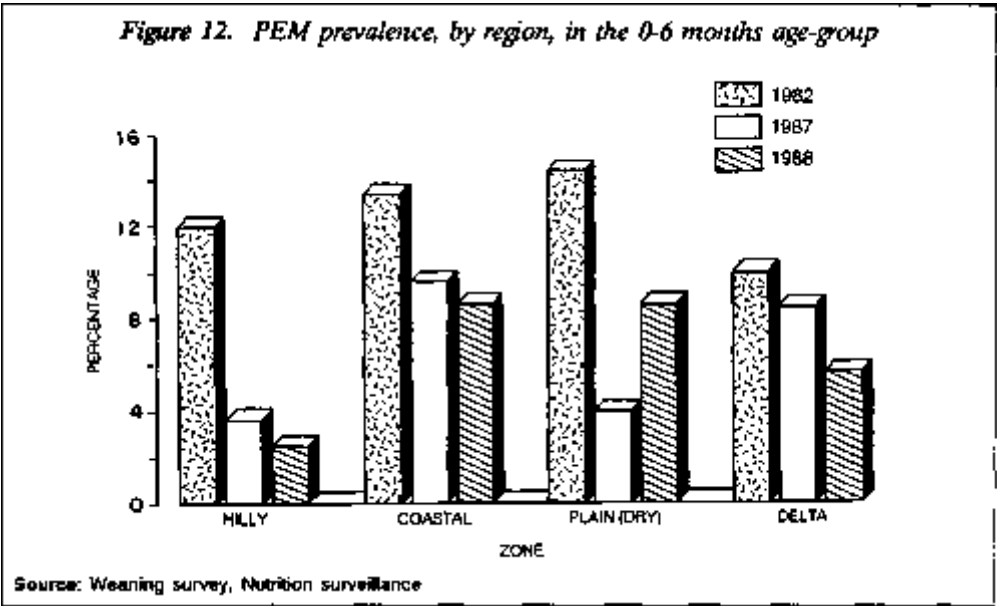
The country-wide prevalence of underweight in this population was 42.1 per cent in 1982 (covering the whole year). In winter 1987/88, it was 35.0 per cent, rising to 42.2 per cent in summer/1988. The 95 per cent confidence range for all these figures is about  $\pm$  1.4 per cent. The two-season average for 1987/88 was 38.6 per cent. Thus, there has been a significant, though small, improvement in nutritional status in 0-35-month-old children nationwide in the five years since the start of JNSP. As expected, malnutrition is less in winter.

The 1982 figures have been compared with the average of 1987-1988. This is reasonable as it allows a comparison of similar year-round averages. The results are shown in the table below.

Age in months	Percentage of children with weight-for-age below 2SD of the Harvard reference	
	1982	1987-88
0-5	<b>11.4</b>	<b>5.0</b>
6-11	31.7	31.2
12-17	58.1	51.7
18-23	<b>48.1</b>	54.0
24-35	57.6	52.5
0-35	42.1	38.6

The above figures indicate that nutrition status has improved over the JNSP project period with the exception of the 18-23 month age-group. The most marked improvement is evident in the under-six-months age-group. In this group, the rates more than halved, from 11.4 per cent in 1982 to 4.6 per cent in the winter of 1987 and 5.4 per cent in the summer of 1988.

Myanmar has four recognized geographical zones: hilly, plains (dry), coastal and delta. As far as the under-six-months infants are concerned, the national improvement shown above took place in all four zones. Otherwise no real trend can be demonstrated through a zonal analysis. Despite this one observation can be made. The hilly zone has the lowest proportion of clusters classified as 'developed'. Development, in this context, was indicated by such factors as availability of electricity, markets, primary schools, libraries, radio, TV, or reading matter, roads, housing standards, etc. Despite being the worst off by these criteria, the hilly zone showed the greatest reduction in protein-energy malnutrition prevalence among 0-6 month infants over the period of JNSP. However, for other indices there is too much variability within zones for any inter-zonal differences to manifest themselves.



*Community health care evaluation*

The expansion of JNSP to all parts of the country took place in three phases. Comparisons of weights-for-age were made from the annual evaluation data from townships (districts) entering the programme at three different times. Data were available from 20 townships where JNSP had been active since 1984 or 1985, 32 townships which had had up to two years of implementation, and 11 townships where the programme had just started. The findings can be seen in the following table:

Year of study	Prevalence of underweight by year in which JNSP activities started		
	1985	1987	just started
1985	42.2	42.9	33.6
1986	39.7	49.1	32.6
1987	33.7	45.2	33.6
1988	31.5	41.1	36.1

The above figures indicate that, in communities entering JNSP first, there was a constant decline in under-nutrition over the four years of the programme. These further suggest that, in communities that entered the programme later, there was an initial worsening that corrected itself over the three years that JNSP was in operation. Those



communities that had only just entered seemed to have had a much better nutrition status throughout the period. Linear correlation analysis done on this data by the least squares method supports this analysis.

### *Weight charts*

Weight charts of children aged 0-3 years from 19 sentinel and eight non-sentinel townships were analysed over five years 1985 to 1989. The numbers each year were 2 253, 8 444, 11 165, 6 874 and 1551. The proportion of children in the green zone of the chart, indicating a weight-for-age of between 80 per cent and 100 per cent of the Harvard median curve, were determined for each year. The results were expressed as the proportion of the children exhibiting normal growth in three six-monthly age-groups between birth and 18 months.

The proportion of well-nourished infants below six months of age rose steadily over the five years from 35.7 per cent in 1985 to 84.9 per cent in 1989. The proportion of well-nourished children aged 6-11 months started at 34.1 per cent, rose in the first year and stayed constant thereafter at around 50 per cent. The proportion of well-nourished in the 12-17-months age-group declined from 60.8 per cent to 42.9 per cent over the project period.

### *Low birth-weight*

Birth-weights were recorded from two sources. They were monitored in 24 sentinel townships (districts) over a three-year period, 1986-87, 1987-88, 1988-89. Low birth-weight (defined as under 2.5 kg) was found in 3.6 per cent, 3.6 per cent and 3.0 per cent of the new-borns respectively. An analytical study of 6 866 weight charts collected in 27 townships from 1985 through 1989 showed a similar level of low birth-weight: 3.0 per cent. These findings are surprisingly low and may reflect under-reporting (see Sections on Sustainability and Replicability).

## *6.3 Conclusions on Mortality and Child Growth Impact*

Mortality rates among children 1-2-years and 2-3-years-old have shown a steady decline over the period of JNSP. There has been a small but significant improvement in weight-for-age of under-three-year-old children in the populations served by JNSP. This improvement is marked in younger children. It is independent of season (although partially masked by seasonal changes). Children in areas not covered by JNSP have shown a slight deterioration in weight-for-age over the programme period.

Could these positive changes in mortality and child growth have been due to the JNSP activities? It would seem likely, and would have been more so if appropriate behavioural changes had taken place in response to the training, nutrition services and nutrition counselling components of the programme. This is discussed below.

#### *6.4 Changes in Knowledge, Attitudes and Practices*

JNSP instituted a 'cascade' system of training designed to increase the competency of the basic health staff and volunteer auxiliary midwives. It started at the central level, then moved out to the village and community levels. Educational objectives and educational materials were based on the nutrition education messages identified in multisectoral workshops conducted as part of the situation analysis as well as from the weaning practices study. These had elicited information on the attitudes and behaviour of mothers in relation to health and nutrition services.

Curricula were prepared for all levels and task-oriented training materials and aids were produced and used in the refresher training programmes.

##### *Training outcome*

A two-part evaluation was conducted from April to August 1989 to determine the training impact on midwives and auxiliary midwives and the community response to nutrition services delivery. Changes in knowledge, attitudes and practices of basic health staff were assessed by a questionnaire, observation, interviews and record assessment. The formats, designed by the Central Nutrition Division, were pre-tested. Study areas were selected by a two-stage stratified random sampling. Public health nurses, after a week's training, carried out the survey among 407 midwives and 308 auxiliary midwives from rural health centres in 76 townships from all States and Divisions in the country.

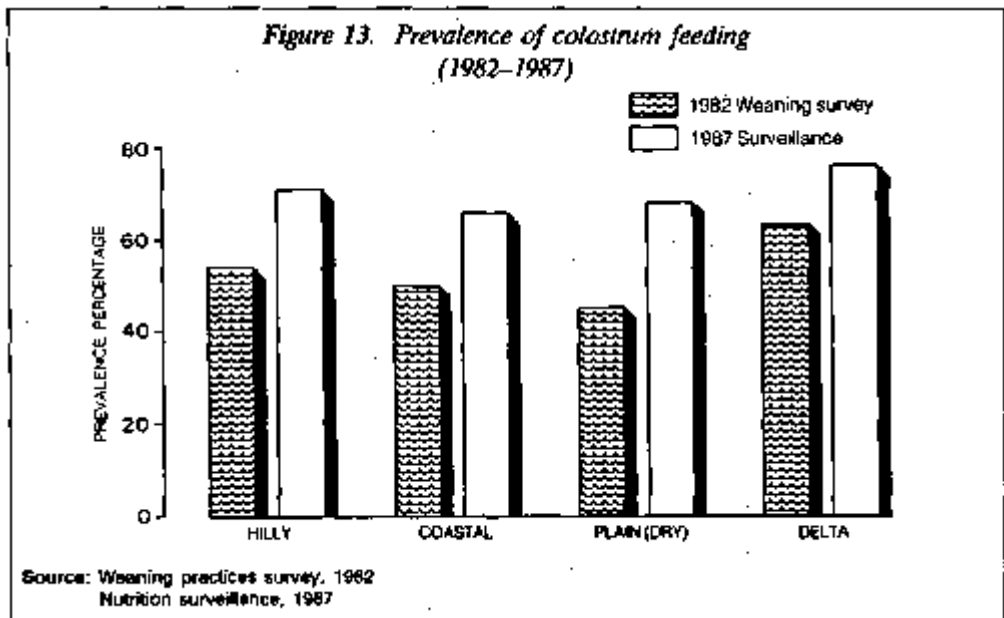
General knowledge of the health staff about nutrition was assessed. 30 out of the 32 field supervisors examined were found good in this respect. Out of the 455 lady health visitors and midwives, 89 per cent were judged good and 10 per cent satisfactory. Out of the 329 volunteer auxiliary midwives, 76 per cent were found good and 20 per cent satisfactory. Those tested had participated in the JNSP activities for varying periods. It can be concluded that regular monitoring, supervision, on-the-job training and annual review workshops had contributed to this good response.

Knowledge, attitudes and performance of midwives and auxiliary midwives were also assessed. Their capabilities in ante-natal care, under-three-year-old registration, weight charting, growth monitoring and nutrition counselling were judged by observation and a questionnaire.

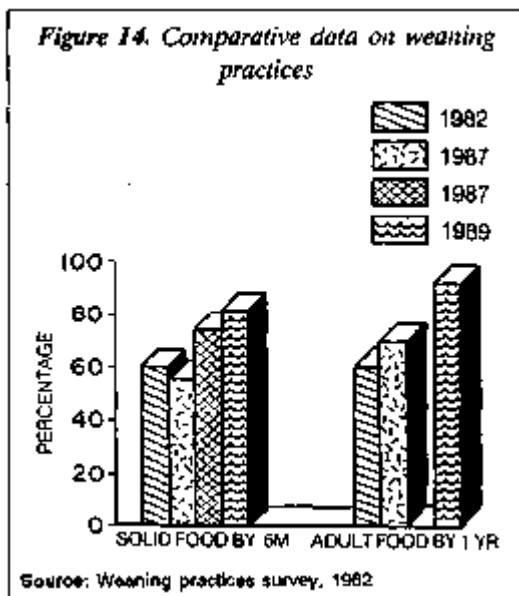
In those townships (districts) which did not yet have the refresher training, there was not much difference in these competencies between midwives and auxiliary midwives. However, in those townships that had completed such training, midwives had greater competence. Thus, the training had significantly improved the functional competence of the midwives.

##### *Health education outcome*

The second broad area of assessment of behavioural changes due to JNSP was of community response to nutrition services delivery and counselling. 421 mothers from villages in non-JNSP



townships (districts) and 2 353 from villages in JNSP townships were interviewed by public health nurses from the respective State and Division nutrition teams to assess



their ante-natal care practices. A higher proportion of women in JNSP townships (47 per cent) made five or more ante-natal visits than in non-JNSP townships (40 per cent), and three-fourths as compared with two-thirds of the new-borns were weighed.

Between 1982 and 1987, colostrum feeding in JNSP villages increased from 52 per cent to 73 per cent. The introduction of solids before six months of age increased over the same period from 60 per cent to 81 per cent. The proportion of children receiving adult food by their first birthday increased from 60 per cent to 91 per cent.

### *6.5 Conclusions on Knowledge, Attitudes and Practices Outcome and Impact*

These behavioural improvements relate directly to JNSP messages. There has been no other major change in the communities over the programme period which may have made this difference. Thus, it can be confidently concluded that JNSP is responsible for the better ante-natal and delivery care and the specific nutrition counselling that now takes place. This counselling concentrates not only on the promotion of use of colostrum and starting solid foods before six months but also facilitates other practices. It is reasonable to conclude that these activities have together led to these beneficial behavioural changes. In turn, these changes can largely explain the decrease in the protein-energy malnutrition prevalence rate and the declining mortalities.

### *6.6 Operational Impact of JNSP*

The experience of JNSP has provided the responsible nutrition and health staff with considerable skill in planning and management on a large scale. They have also become familiar with the administrative procedures essential for building infrastructure which is normally not taught to the medical practitioners. The staff have learnt how to adapt themselves to the inherent constraints of local conditions and how to respond to new problems which become apparent through surveillance. They have acquired the capability to deal with assorted field data, derived from monitoring the sentinel areas, so as to solve the operational problems that come in the way of nutrition action at the village level in sentinel townships. They have developed managerial skills through coordinating implementation in more than 200 townships. They are now able to identify early from the surveillance reports and review meetings the environmental changes detrimental to nutrition.

The nutrition staff have also gained skills in managing task-oriented, active-learning group-participatory workshops in preparing specific curricula, and in conducting training for small groups. They have benefited from the experience of pre-testing the educational materials developed. Coordinated efforts with mass media representatives in developing training and educational aids and a video documentary on nutrition action have created new perspectives towards the nutrition profile. The staff have also learned the capabilities and limitations of the education strategy options in dealing with nutrition problems through the health sector.

The State, Division and township (district) health staff have become experienced in integrating nutrition programmes, in micro-planning, and in evaluation at the local level. They now know the nutrition tasks and tools that midwives and auxiliary midwives need for nutrition monitoring and counselling in the detection of growth failure and the prevention of malnutrition.

The peripheral workers, midwives and volunteer auxiliary midwives have become more skilled in monitoring than shown in the base-line survey of 1982-83. Their knowledge level was already satisfactory and had not increased much whereas their practical skills in weighing, recording and counselling had increased significantly. Such nutritional counselling promotes the educational side of nutrition monitoring, using the three-colour weight chart as an educational tool. The peripheral workers have also become experienced in planning and managing their several duties and the new workload imposed on them. They now recognize nutrition action as a part of their job, which was not the case before JNSP.

At the community level, both the Government and community leaders (previously People's Party and Council members) organize volunteers for health work. Mothers have become more aware of ante-natal care, and colostrum is given more often. Nutrition messages have increased the knowledge and resulted in behavioural changes.

JNSP has concentrated on education through individual counselling as the main intervention for the targeted weaning age-group. JNSP has demonstrated that this can be appropriately delivered through primary health care and that this strategy is feasible as a means to provide effective minimum care for a large population. This system of monitoring and counselling can be based on trained basic health staff and community volunteers with appropriate supervision.

7. PROGRAMME EFFICIENCY

7.1 Economic Analysis

An analysis of the US\$ 3.7 million of the external JNSP resources spent between the start of the programme (1984) and 1989 reveals the following percentage breakdown between broad components:

Operational supplies and equipment	62.5%
Competency training	14.7%
Strengthening Nutrition Unit	8.6%
Training aids and educational material	8.4%
Monitoring and evaluation	2.5%
Nutrition intervention	2.0%
Logistics and contingency	1.3%

The total external inputs from the Government of Italy through WHO and UNICEF to JNSP, Myanmar, are US\$ 5.63 million. It is calculated that the input from Government sources is US\$ 5.43 million and that from the communities US\$ 9.29 million. Thus the ratio of external to internal financial inputs is 1:1.6.

The capital costs on such items as motor cycles, computers, air conditioners, etc., totalled only US\$ 72 000. This is very low (1.3 per cent) compared to the total external inputs (US\$ 5.63 million). Thus these items have no significant influence on annualized unit costs. Therefore, no correction is made in this analysis for capital versus recurrent costs. Such a breakdown gives a broad picture but provides no indication of the costs of sustaining the impact or replicating the direct services. These are calculated in the following paragraphs.

The total JNSP external inputs are US\$ 5.6 million. Of this amount, US\$ 4.8 million (86 per cent) go to nutrition service delivery for pregnant women (25 per cent) and under three-year-old children (75 per cent). The remainder goes to such activities as nutrition surveillance, operational research, consultancies, fellowships, and service charges.

National resources contributing directly to the Programme can be considered in two categories: Government and community. These are further broken down and discussed below.

It is assumed that midwives contribute 20 per cent of their time to services for pregnant women, including deliveries, and the under-three-year-old children. Based on this assumption, Government's direct inputs for JNSP activities are estimated at 20 per cent of the salaries of midwives over the JNSP period (1984-1990).

Communities provide the volunteer auxiliary midwives. This contribution is assessed at 150 Kyats per month per auxiliary midwife. 20 per cent of this is assumed to be used in nutrition service delivery.

From the above assumption, the following costs have been calculated:

Resource	Unit cost per capita per annum			
	Pregnant women		Under-three-year-old children	
	Kyats	US\$	Kyats	US\$
<b>External JNSP inputs</b>	3.82	0.57	3.82	0.57
<b>Government inputs</b>	4.29	0.64	<b>4.29</b>	0.64
<b>Community inputs</b>	3.08	0.46	3.08	0.46
Total	11.19	1.67	11.19	1.67

The identical figures in the above table are fortuitous. It can be seen that the annual costs for each pregnant woman or each under-three-year-old child are the same: US\$ 1.21 from JNSP and Government taken together and US\$ 0.46 from the community.

There are no other activities carried out in the country with the same or similar objectives; therefore, there can be no within-country comparison of cost-effectiveness of JNSP in Myanmar. However, the programme is already implemented on a nation-wide scale under the umbrella of the National Economic Plan and is fully integrated into the People's Health Plan which has adopted the primary health care approach. It is clear that there is no alternative approach that would reduce the per capita costs of JNSP activities and improve cost-effectiveness under the present strategy. (Further justification for this statement is provided in the following section.) This is not to say that, as experience accumulates, improvements cannot be introduced, evaluated and incorporated into the systems, as has already happened during the course of the Programme. Lessons can continue to be learned over the next few years for Myanmar and other countries.

## *7.2 Efficiency of the Programme Process*

### *Strategy*

The objective of JNSP in Myanmar was to provide minimum effective nutrition care to the groups at risk in the context of primary health care. There was a deliberate focus on education coupled with nutrition monitoring, operated through the existing health services infrastructure, reaching the village health tract level and then extending further to community health volunteers (assistant midwives). The JNSP outcome data and, to a limited extent, the impact data, indicate improvements in skills and practices in the defined nutrition tasks of midwives and auxiliary midwives, an improvement in knowledge and attitude of township health managers and field supervisors, some signs of improvement in the nutrition status of the breast-fed and weaning groups, as well as significant changes in the infant feeding behaviour and community awareness of health and nutrition services. A study of the village development status in the same areas indicated no relationship between this and the nutrition situation. Therefore, the nutrition monitoring and counselling strategy seems to have maintained and improved the growth of young children and lowered morbidity and mortality.

The narrow scope of the strategy was deliberately designed to complement the national primary health care programme aiming for wider outreach with minimum effective input. An emphasis on multisectoral collaboration and intersectoral action might not have allowed such a focused effort to work efficiently through the health services.

### *Operational efficiency of the nutrition monitoring and counselling service at township (district) level*

This was assessed at the 1989 Annual Review Meeting. The participants were the township medical officers together with one health assistant, one lady health visitor and

one midwife randomly selected from each township. The JNSP assistant project manager and medical officer in-charge facilitated the group discussions. The results are presented below under three headings: management and evaluation, supervision, and field action.

### *Management and evaluation*

Some township medical officers and their teams used imaginative management ideas. For example, some had developed charts showing monthly and yearly changes in the number of children in the red, yellow and green zones of the growth chart. These were used at advocacy meetings and evaluation workshops. Another example was the development of charts that demonstrated the peaks in diarrhoea incidence rates that were shown to precede peaks in protein-energy malnutrition rates. The casual links between the two conditions and the longer-term dangers of diarrhoea were then appreciated.

Nutrition needs to be considered as a priority and awareness of the nutrition problem is necessary by senior decision-makers. Much of the People's Health Plan needs action at the township (district) level which adds to the administrative responsibilities. This requires adequate staff and continuity of their service as well as good logistics. Frequent transfers lead to untrained township medical officers and health officers. Poor logistics lead to late arrival of weight charts and an inadequate and irregular drug supply. Administrative responsibilities can overload staff. These issues were discussed and the proposed solutions were coordinated during micro-planning and the situation analysis data and micro-plans were presented to the local administrative bodies and community leaders at advocacy meetings.

### *Supervision*

The field supervisors identified the following constraints: lack of specific instruction on nutrition management; frequent transfers; lack of means to identify sources of supplies and equipment; lack of control over the volunteers and low reporting from them, and lack of stationery. They had solved some of these problems themselves by exchanging information at the township meetings, keeping local registers of supplies and equipment and instructing midwives to obtain the reports from auxiliary midwives. Some health assistants were very capable having prepared nutrition assessment charts for their respective rural health centres based on the nutrition report forms. They supervised the midwives and auxiliary midwives in part by discussing their monthly reports.

The lady health visitors identified their main problems as insufficient registers and insufficient drugs, especially for tuberculosis and respiratory tract infections.

### *Field Action*

This was discussed by the midwives. While ante-natal coverage in villages where midwives were resident was complete, women were weighed only about three times, usually during the



second half of their pregnancy. Monthly weighing was difficult as mothers could not come regularly and the midwives were not able to carry both a Salter scale for children and a bathroom scale for mothers to the village weighing sessions. Only about 14 iron-folate tablets were given to each mother at each ante-natal visit, but midwives did distribute them to mothers on request or during home visits. Only a few midwives had bicycles.

Low reporting of birth-weight was admitted; this was partly due to the missed weighing, especially of children who died soon after birth. However, the midwives reported what they perceived as a decline in the number of low birth-weight babies.

Coverage of under-three-year-old children was 78 per cent. It has been difficult to increase this as some parents take their children away from the village when they are transplanting or harvesting rice, collecting firewood or trading.

Another problem occurred in those 20 per cent of the villages where there were 200-300 children under three years; this was too large a number for one midwife to cover fully. The meeting decided that normally midwives would cover all children under three, but where the village population was over 2 000 the midwife would cover only infants.

## 8. SUSTAINABILITY AND REPLICABILITY

The main strategy of JNSP in Myanmar has been to improve the continuing training of staff at all levels with a concentration on the periphery. Associated with this has been a strong emphasis on nutrition education of the vulnerable groups. Unlike the JNSP in other countries, the programme in Myanmar has mainly relied on the existing structures and mechanisms. Most of the staff posts established at the beginning of the programme have been taken up in the regular Government budget. The 'start-up' costs of this new training and education approach have been spent in the first years of the programme. The continuing costs are relatively small and will be spent through the existing health infrastructure as far as funds allow. However, careful planning and integration of the activities into the on-going and future People's Health Plans will be critical if resource allocation is to be assured.

The JNSP activities were able to reach about one-third of the population. If coverage is to be total, basic health services coverage has to be expanded to reach a target of one auxiliary midwife in every second village. If this is to happen, there must be a corresponding expansion in the supervisory staff.

The economic analysis suggests that, to sustain the programme and its associated benefits, or to extend it to cover the remaining two-thirds of the population, it will cost US\$ 1.67 per child per annum. This cost would have to be shared between the communities, the Government and any other interested partner. The same amount is estimated for each pregnant woman. Expansion will entail the added costs of expanding the total health delivery system on which JNSP depends.

## 9. CONCLUSION

In 1983, a Consultation on Current Views on Nutrition Strategies to avert the 'crisis of dying children' listed three major constraints: lack of appropriate technology and infrastructure, high costs of implementation and low coverage of targeted groups. It emphasized two important approaches to reduce child mortality: primary health care and poverty reduction. It recommended effective and large-scale implementation of a focused, low-cost child-saving mix of measures as an answer to this crisis. JNSP in Myanmar concentrated on the first approach: primary health care. It did not assume responsibility for poverty reduction.

Levinson, in a review of what worked in combating malnutrition, concluded that any number of approaches might work as long as there was a threshold level of commitment, imagination and financial and political support. He considered that support and commitment to the principle of meeting basic human needs was more critical than the technical choice of intervention or its design. He found that programmes that depended on imported food resulted in more harm than good, and concluded that it was unrealistic to expect to eliminate poverty-related protein-energy malnutrition inexpensively. In five of the six programmes reviewed by Levinson, the provision of food was an important element. In the sixth, the Indonesian Family Nutrition Improvement (UPGK) Programme, it was planned to give food only to malnourished children at nutrition rehabilitation centres.

The Indonesian programme is discussed in some detail by Rohde and Hendrata. They conclude that the feeding elements overwhelmed both the mothers and programme personnel. They define six critical elements for success:

- (1) Clear, simple, achievable and objectively measurable programme objectives.
- (2) Emphasis entirely on behavioural change leading to monthly weight gain.
- (3) Village staff chosen from, among, and by the participating village women.
- (4) A high degree of community participation and self-reliance.
- (5) Highly standardized procedures.
- (6) The monitoring and reporting system designed primarily as a stimulating and motivating tool.

JNSP in Myanmar emphasized exactly these points. It avoided getting involved in the provision of food on the grounds that this was neither sustainable nor replicable.

Field reviewed nutrition programming from the standpoint of implementation. While acknowledging that the problem of protein-energy malnutrition was embedded in a total ecology of deprivation, he concluded that programmes that involved conceptual and operational complexities were bound to fail. He described 'comprehensive planning'

as an 'albatross' that inhibited action, however appealing it was intellectually. To these negative factors he added the long-time frames, which inevitably lengthened as the programme continued, and unreasonable reliance on the beneficiary support and participation. Field concluded that far more attention needed to be given in nutrition programmes to 'how to do it' rather than just 'what to do', in other words to 'implementation'.

JNSP in Myanmar resisted pressure to plan comprehensively. It concentrated on a simple approach mainly within the competence of the Ministry of Health. It emphasized implementation rather than planning; this was made possible by the knowledge gained from the situation analysis carried out just before JNSP.

In a later paper, Field concluded that the multisectoral approach to nutrition planning was a mistake. He identified twelve lessons for intersectoral initiatives against malnutrition:

- (1) Downgrade the importance attached to planning.
- (2) Do not divorce planning from operational responsibility.
- (3) Do not leave nutrition isolated in policy space.
- (4) Integrate nutrition with mainstream activities.
- (5) Keep things as simple as possible.
- (6) Subordinate data acquisition and analysis to action.
- (7) Eschew machine theory (and remember that the implementors are people).
- (8) Avoid the temptation to treat the beneficiaries as passive receptacles or as objects of manipulation.
- (9) Try to operationalize the concept of 'backward mapping' (i.e. planning from the periphery).
- (10) Recognize that the capacity of new technologies is highly dependent on the organization that uses them.
- (11) Be wary of blueprints and formula approaches developed elsewhere or derived from pilot experience.
- (12) Be sensitive to political and other contextual parameters.

JNSP in Myanmar was planned and implemented by the health sector with the same considerations as listed by Field for intersectoral initiatives.

Berg, in a rejoinder to Field's criticism of multisectoral nutrition planning, emphasized that multisectoral analysis was different from multisectoral implementation, and considered that there was no *prima facie* case for ruling out multisectoral operational efforts. He did, however, acknowledge mistakes in nutrition planning in the past, in particular,

the presumption that policy people would be concerned with nutrition; a lack of the managerial expertise to anchor policies in established interest groups or ministries, and a lack of attention to the 'ultimate clients'. Berg made a plea for a balance between bottom-up and top-down planning and between intersectoral and intrasectoral planning.

The global management of JNSP had suggested a broad approach in participating countries to achieve the Programme objectives of reducing infant and young child mortality and morbidity, improving child growth and development and improving maternal nutrition. The initial emphasis of the two agencies managing JNSP was on support for what can be done directly by the health sector, but also including what the health sector can do indirectly through cooperation with other sectors. They thus suggested including actions directed at incomes and food prices, food supply, knowledge and attitudes leading to changed family behaviour, the status of women, and health care services. This was a much broader and more multisectoral approach than that chosen by the JNSP programme in Myanmar.

Seventeen countries participated in JNSP. All, except Myanmar and the Caribbean countries, chose to concentrate their programme in only a part of the country. They all chose, to a greater or lesser extent, to have activities in various sectors. Myanmar, on the other hand, chose a programme virtually confined to the health sector and covering all regions in the country.

A useful comparison can be made between JNSP in Myanmar and that in Tanzania . The Tanzanian programme was confined to the Iringa region which has about 2.1 million inhabitants. The Myanmar programme covered a population of about 11.7 million. The total external budget in Tanzania (US\$ 5.7 million) was similar to that in Myanmar (US\$ 5.6 million). However, the per capita costs were much higher in Tanzania than in Myanmar. In Tanzania, approximately US\$ 8 were spent per child per year from external funds with a further US\$ 2 from the national sources plus US\$ 9 for start-up and expansion. In Myanmar, the total yearly costs per child were much less, about US\$ 1.67, of which US\$ 0.57 were external JNSP inputs. The Tanzanian programme, besides being more expensive, was more comprehensive than that in Myanmar. It covered water and environmental sanitation, household food security and income generating activities. This befits the emphasis on a comprehensive, though simple, 'conceptual framework' explaining the causes of young child deaths in the project communities. This conceptual framework formed the basis for the selection of activities in Tanzania. None of these areas were tackled by JNSP in Myanmar.

Another difference between the Myanmar and Tanzanian JNSP programmes was in the area of community participation. Tanzania developed the use of the 'Triple A Cycle' to motivate and maintain community participation. This can be contrasted with Myanmar which concentrated on training of volunteer village-level workers (the assistant nurse midwives) and their supportive supervision. Both programmes placed heavy emphasis on growth monitoring. Each had a successful outcome. Although the impact,

as indicated by child growth performance, was considerably greater in Tanzania, its replicability will probably be easier and more affordable in Myanmar.

Are the differences in the results of the two programmes due mainly to the differences in programme strategy, to the different per capita costs or to the socio-political-geographic differences between Tanzania and Myanmar? The Tanzanian approach is much more expensive (although replication costs can perhaps be reduced). It also tries to get to the underlying causes of malnutrition (but not the basic ones). The Myanmar approach concentrates on ensuring the best possible use of services. It lays great emphasis on ensuring that training, motivation and supervision are as good as possible.

Probably the most useful conclusion is that both approaches are needed. The experiences of the Myanmar JNSP can be applied universally. They can be replicated at little cost in all countries that implement primary health care and the probability of benefit is high. The main limiting factor to its replicability elsewhere may be the tradition in Myanmar of voluntary work. The assistant nurse midwives are volunteers. This is a basic issue for primary health care in general rather than just for nutrition. It concerns how to ensure adequate and affordable coverage of all the population.

The Tanzanian approach addresses the underlying causes of malnutrition but its replicability elsewhere depends to a large extent on the political and social context. There is a tradition of a considerable amount of community decision-making in Tanzania. The approach of the Tanzania JNSP is not all that different to the 'Basic Minimum Needs' approach adopted by Thailand in the South-East Asia Region. The Myanmar JNSP approach bears some relationship to the Indonesian National Family Nutrition Improvement Programme.

One last comment is due. All implementors of and commentators on nutrition programmes accept that malnutrition is caused by a combination of factors, some of them running very deep in the structure of a society and its economy. Most will agree with Beghin *et al.* that a solution of the nutrition problems requires action in a variety of sectors as well as international cooperation. Myanmar decided to use JNSP to do a few things very well at as low a cost as possible. This resulted in a real advance in family-level practices and local services and a reasonable improvement in nutritional status. This was in spite of the economic decline. The programme was at a low cost and was thus almost certainly sustainable.

In the continuing debate between comprehensive and selective nutrition planning and implementation it may be worth recalling two proverbs, one from Jamaica and the other from Myanmar:

*'One-one coco make full basket'*

*'One day one step;  
Pagan City, where will it run to?'*

## 10. FURTHER READING MATERIALS

JNSP in Myanmar, Evaluation Report, Ministry of Health, 1990 (mimeo.).

Protecting Nutrition during Period of Adjustment - Country case study, Burma. Nutrition Division, Department of Health, 1988 (mimeo.).

Behold the Blossom - a video presentation of the JNSP, 1990 (Myanmar and English versions available).

Any of the above are obtainable for people with a real need (the publications are bulky and the videos in short supply) either from the Nutrition Division, Department of Health, Yangon, Myanmar, or the World Health Organization, Regional Office for South-East Asia, New Delhi, India.

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