

***information for action***  
***issue paper***

# **Program Activities for Improving Weaning Practices**

**Prepared for UNICEF by the**

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# CREDITS

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# Introduction

Weaning is the time when a child's diet changes from breastmilk to family foods. During weaning, the child is at high risk of infection, particularly diarrheal diseases, and of malnutrition. Because of the high mortality rate of these children, improving weaning practices is a critical objective of child health care.

Historically, efforts to improve the health and nutrition status of weaning age children have focused primarily on the production of nutritious, low-cost weaning foods. Often these foods were centrally processed to take advantage of newly developed technologies. Some foods were sold; some distributed at no charge. UNICEF supported some of the early food-processing programs but also invested in the improvement of homemade weaning foods. However, few of these initial efforts were successful, in part because weaning is not only a food problem. The solution is not solely technological, and it must be as multifaceted as the problem.

This paper advocates a combination of activities, embracing a number of disciplines in addition to nutrition and food science: including health, education, marketing, communications, anthropology, and operations research.

Instead of undertaking independent weaning projects, existing programs should be used to improve weaning practices. Weaning support activities can be part of ongoing health and nutrition programs. Programs in agriculture, education, sanitation, and income generation can include weaning activities. This integration of activities is more cost efficient, is the most practical way to reach the child and family and increases overall program effectiveness.

The weaning age child is increasingly the target of many complementary programs. The 1984 UNICEF



*The weaning-age child is the focus of many programs to improve child health. Photo: Breastfeeding Information Group, Kenya.*

report on the 'State of the World's Children' emphasizes four basic techniques—growth monitoring—breast-feeding, oral rehydration therapy and immunization that if implemented worldwide could significantly improve child health. The report identifies three other needs to be addressed: food supplements, education for women and family spacing. As with efforts to improve weaning practices, all of these activities are more effective when they are part of an ongoing comprehensive effort to improve child health than when they are isolated interventions. For example, a successful growth-monitoring program that lets a breastfeeding mother know how well her child is growing also signals when she should begin supplementing the child's diet. Education activities that teach a mother how to prepare an oral rehydration solution if her child has diarrhea can also assist her in preparing an improved weaning food with local ingredients.

By discussing a variety of interrelated program options, this paper attempts to answer a number of questions for planning weaning support activities: How do poor weaning practices fit into the overall child health problem? What are the barriers to adopting new practices and how can programs be designed to overcome them? How and where should weaning foods be produced and distributed? What roles do education, promotion, and communications play in improving weaning practices?

These questions are posed in the context of lessons from previous programs:

- Before beginning any activities, clearly identify the weaning problem and the reasons for poor practices.
- Involve the family and community in all phases of program design: identifying the problem, establishing objectives, and implementing activities. Community support is essential to ensure long-term continuation of activities.
- Weaning foods that can be made in the home or in the community are generally preferable to centrally-manufactured foods.

We have tried to stress practical program experience as much as possible. Examples from programs are used throughout the paper and one section is devoted to summaries of weaning program activities. This information was necessarily limited by what was available in the literature.

This paper is part of a series prepared for UNICEF that analyzes technical information for use in support of program planning and implementation.

# I. Questions And Answers About Weaning

The weaning age child is currently the subject of numerous efforts to reduce infant mortality and improve child health. This chapter answers some frequently asked questions about weaning and the weaning-age child. These answers summarize available information and are the basis for the program recommendations made in the paper. Health and nutrition issues are covered as well as determinants of weaning practices. This section draws on a number of references in the annotated bibliography and especially Cameron and Hofvander's "Manual on Feeding Infants and Young Children".

## What is weaning?

Weaning is the transitional stage when a young child's diet gradually changes from one of milk alone to a diet based on what the family eats. Weaning begins when the child is introduced to foods other than breastmilk (or a breastmilk substitute) and is completed when the child is fully accustomed to the regular family diet. During weaning, the child should continue to be breastfed, since breastmilk is an important nutritional supplement to the weaning foods.

Weaning also has a social and psychological aspect. The special relationship between mother and child evolves as the child becomes more independent and other family members assume responsibility for the child.

## Why is the weaning period a dangerous time for infants and young children?

During weaning the incidence of diarrhea and malnutrition is high, making the risk of mortality greater than at any other time in life.

The foods offered to the child and the preparation and storage methods used may cause health problems. The weaning food, in most cases, is a watery, starchy porridge that provides fewer nutrients than breastmilk at a time when the child's nutrition requirements are increasing rapidly to meet the demands of normal growth. The porridge may be prepared with contaminated water, unclean utensils and then stored for several hours before serving. The result is a food with enough harmful bacteria to cause gastroenteritis.

## When should weaning begin and how long should it last?

The exact time for the introduction of food will depend on how well the child is growing. However, since rela-



*During weaning, foods from the family diet are gradually added to the child's diet of breastmilk. Photo: World Neighbors*

tively few children participate in growth monitoring programs, the best advice is to begin weaning when a child is between 4 and 6 months of age. By that time children are able to swallow and digest bland semisolid foods without difficulty. Generally, between 4 and 6 months of age, the rapidly growing child needs food in addition to milk to ensure that nutrient requirements are met.

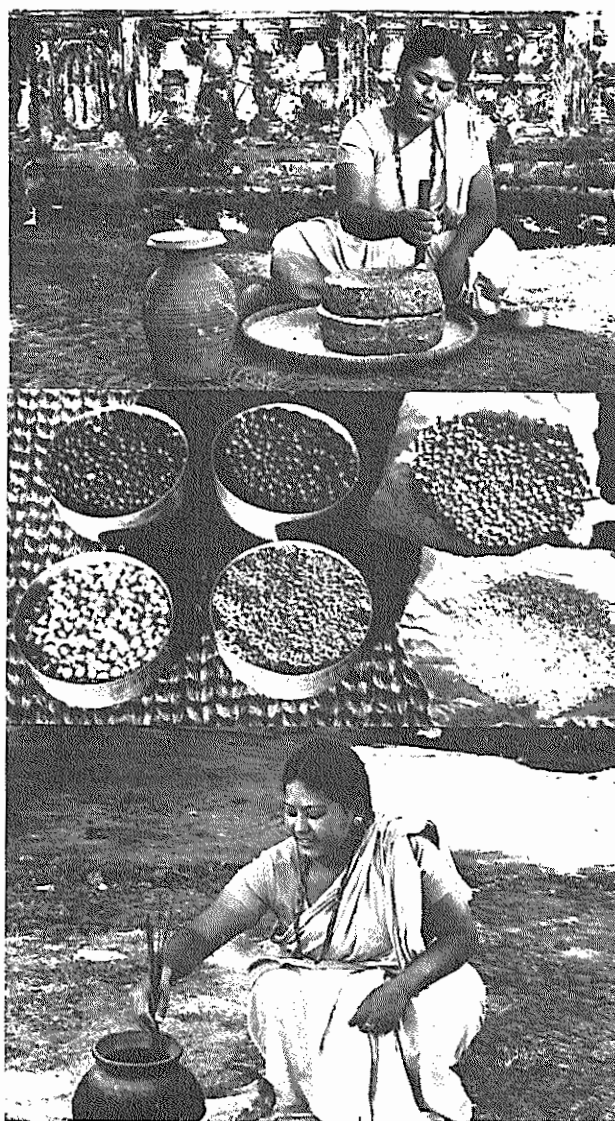
Both the early and late introduction of foods have been linked with child health problems. Introducing foods before 4 months leads to an increased incidence of diarrhea and may lead to increased mortality. On the other hand, the introduction of foods too late may mean nutrition requirements are not met, beginning the malnutrition process and leaving the child more vulnerable to other common childhood diseases.

The duration of the weaning period varies among cultures and communities because the duration of breastfeeding and the age when children eat adult foods differ. Weaning can be completed when the child is 12 months of age if the duration of breastfeeding is short and the transition to solid, "adult" foods rapid. Or, it can last through the second year of life in cultures where breastfeeding is prolonged and the introduction of foods from the family pot delayed.

### **How should foods be introduced to the weaning age child?**

The introduction of foods should be gradual. First foods should be given using a teaspoon, a few spoonfuls at a time. The mashed or pureed first food can be given after breastfeeding if it is well accepted or before breastfeeding (when the child is hungry) if acceptance is a problem. Initially, the food can be given once a day, but within a month, the quantity, frequency, and types of food should increase. By 6 months the child should receive food 2 to 4 times a day. Children learning to eat often spit out the food. Mothers should be told this and reassured that it is not a sign that the child does not want to eat. A cup and spoon should be used for feeding since they are easiest to clean. Most infants can learn to drink from a cup by 6 months of age.

Once a child is accustomed to eating (by 6 or 7 months), solid foods can begin to contribute significantly to the child's total nutrient intake. However, the amount that can be eaten at one time is limited by the child's small stomach. (A one-year-old cannot eat more than 1 to 1½ cups, or 200 to 300 ml., of food in a meal.) Therefore, the food must be a concentrated source of nutrients or must be given more frequently. It is recommended that these foods contain oil, fat, or sugar and that the child be fed a total of 4 to 6 times per day, counting both meals and snacks. To ensure that youngsters receive the food they need, their food should be separated from the family pot and served in their own



*Local foods can be combined to make a nutritious weaning food.*

*Photo: Miriam Krantz*

bowls. Gradually, food consistency can change: at 9 months children can manage small pieces of easily chewable foods. Food quantity should also increase. By 12 months, children can eat most of the family foods. At about 18 months they should be eating half the adult quantity. This is an easy way for mothers to estimate food quantities.

### **What kinds of foods are suitable for the weaning age child?**

A variety of foods are suitable. The kind of food depends on what is traditionally fed to children, what food the family has available, and the amount of time the mother has to prepare weaning foods.

After the initial introduction of the weaning food, it is recommended that the food does not rely on a single ingredient. The ideal weaning food combines different



types of foods and is fed to infants along with breast milk for as long as the mothers are able to breastfeed.

The first foods should be bland, not fibrous, and well-mashed or pureed. The most common first foods are fruits, vegetables, and the local staple grain or tuber. As the infant begins to eat more, a *basic mix* of two ingredients, the staple grain or tuber plus a legume (nut or bean), should be substituted for the single ingredient porridge. Porridge from the basic mix should be richer in calories and provide much more protein than the traditional porridge.

After the first six months, when solid foods begin to supply a major portion of the child's nutrients, basic mixes can be replaced by *multimixes*, one-pot foods that make a complete meal. If the ingredients are combined in suitable proportions, the multimix will supply enough calories (from carbohydrates and fats), protein, and vitamins and minerals to meet the nutrient requirements for maintenance and growth. They can be prepared from foods just for the child or from foods cooked for the family (as long as they are not spicy). Multimixes have four basic ingredients:

1. A staple, or carbohydrate food grains (rice, wheat, corn, millet, sorghum, or oats) are recommended over roots or green bananas because their protein content is higher and their fiber content is lower.
2. A protein supplement: this can be a plant protein, such as beans, lentils, and nuts, or an animal protein, like eggs, yogurt, milk, fish and meat.
3. A vitamin and mineral supplement: the best foods are those high in vitamin A, such as dark yellow or orange squash, sweet potatoes, and deep orange or yellow fruits, like ripe papaya.
4. A calorie supplement: the addition of fat, oil, coconut milk, or sugar will make the food more "calorie dense," because these foods provide calories without adding volume.

#### **What are other factors that determine weaning practices?**

Economic, social, cultural and environmental factors all play a role in what children eat and how they will be fed.

The mother is principally responsible for feeding the child, and she is key to efforts to improve infant feeding practices. The child is dependent on her understanding of appropriate feeding practices and the limitations that prevent her from implementing appropriate feeding practices. Programs must take account of these realities:

- The mother's beliefs and practices concerning weaning. These practices will be influenced by the family, community and culture. For example, mothers living in urban areas may begin weaning earlier than mothers in rural areas, because in many urban areas there is no breastfeeding support structure.

- The mother's level of formal schooling. This factor often parallels the mother's knowledge of nutrition and has been shown to be positively correlated with her children's health status. (Mosley, 1982). The health status is likely to be better the more years of school the mother has attended.

- The role of women in the society and in the family. For example, how much voice the mother has in how the family income is spent. This will influence if income is used to purchase additional foods for the infant.

- The mother's health status. If the mother is pregnant, or ill, she may have little energy to prepare a separate weaning food, or feed her child more frequently, in addition to her other responsibilities.

- The amount of time the mother has available for food preparation. Women are usually responsible for child-care and housework. Many women also work in the fields, market or factory. The amount of time they have available will determine whether, for example, they will be willing to prepare a multi-ingredient food separately for children, and the time they can spend processing ingredients before cooking. Busy mothers often cook foods early in the morning and store it for later consumption. In hot climates particularly, bacteria in the foods multiply rapidly and cause diarrheal diseases in children.

- The availability of household resources. Lack of water, sanitary facilities and cooking utensils may also make it difficult for mothers to guarantee their children uncontaminated food. These conditions may also preclude the use of multistep cooking procedures that require processing equipment.

Other factors that influence infant feeding practices are:

- Food availability. Some foods may be available only during certain times of the year. For example, groundnuts may be available only 6 months of the year. Many of the family staples or the food available in the markets may be scarce or expensive during the time before harvest.

Food availability in the family is directly related to food production and the food marketing system of the country. Food production is influenced by climate, land tenancy system, farming methods (the types of cropping, fertilizer, and seeds), and the availability and use of agriculture extension services.

- Fuel availability. Cooking fuel (charcoal, wood, gas and kerosene) may be scarce, expensive, and time consuming to obtain. (Many of these same constraints apply to water). Infant foods that require a long cooking time, such as improved *khichuri* and *suji* mixture (from Bangladesh) that needs an hour to cook, will not become part of a daily routine.

(For additional information on these issues, see the annotated bibliography.)

## II. Determining The Need For Weaning Support Activities



*Growth monitoring can help determine if a weaning problem exists in the community.*

Before adding weaning activities to an existing program or to a new program, the need for these activities must be well documented. Most countries already have some information to document the health and nutrition problems during the weaning period. However, poor health has many causes, and specific information about the nature of the problem may be required. Information about child health and nutrition problems often is available from hospital and clinic records or from social science research. In addition, informal discussions with mothers and health workers can help identify the reasons for weaning problems.

The addition of a weaning food component to any health program has the potential to enhance the program's overall impact. The immediate benefits of improved weaning practices such as decreased morbidity and reduced health care costs should be emphasized as well as the longer term benefits of lower mortality rates and a generation of healthier children.

To help determine the need for program activities for the child, these questions should be answered.

1. Is a large percentage of the weaning age population at high-risk nutritionally?
2. Are poor infant feeding practices, especially the first semisolid food(s), a cause of the nutrition problem?

Growth statistics, food consumption surveys, studies of feeding practices, and informal surveys of health workers are useful to answer these questions and to identify:

- The severity and prevalence of the nutrition problem.
- When the problem is most severe.
- Where the problem is most severe.
- What feeding practices most influence nutrition status.

Table 1 summarizes the type of information to examine.

### **Determining the severity and prevalence of the nutrition problem.**

The first step is to look at mortality data. Infant death rates above 100 per 1,000 live births are a sign of a critical problem. Death rates between 50 and 99 per 1,000 live births for this age group indicate a serious problem. For children 1-4 years old, death rates above 5 per 1,000 suggest problems with early childhood nutrition.



**Table 1. Documenting Nutrition/Health Risks And The Weaning Problem**

TO DETERMINE	EXAMINE	LOOK FOR:
I. Health and nutrition risk	Mortality data	Death rate: <ul style="list-style-type: none"> <li>• above 100/1,000 live births of 0-1 year/critical</li> <li>• 50-99/1,000 live births 0-1 year/serious</li> <li>• 5/1,000 in children of 1-5 years/serious</li> </ul>
	Data on nutrition status	Malnutrition: <ul style="list-style-type: none"> <li>• 25% or more children 0-5 years classified as moderately or severely malnourished by any measure or by using weight/age; 25% or more children fall below 75% of the median or 3rd percentile.</li> <li>• vitamin A and iron deficiency</li> </ul>
II. Inadequate infant feeding practices	Data from food consumption surveys	High infant malnutrition rates: <ul style="list-style-type: none"> <li>• the percentage of children with moderate or severe malnutrition as high or higher in children 0-2 as in children 3-5 years old</li> <li>• growth retardation during the first year of life, especially the second half</li> <li>• different child growth patterns by geographic or socioeconomic categories</li> <li>• the impact of seasonality</li> <li>• the prevalence and severity of deficiencies in the intake of calories, protein, and vitamin A.</li> </ul>
	Information on feeding practices from mothers and others responsible for child care	<ul style="list-style-type: none"> <li>• At what age are foods introduced?</li> <li>• What kinds of foods are given?</li> <li>• How frequently are they given?</li> <li>• How much food is offered?</li> <li>• How is food prepared? (By mother, sibling, taken directly from the family pot?)</li> <li>• Have there been any alterations from normal feeding patterns</li> <li>• What are the motivations or beliefs for each of the practices described?</li> </ul>

The second step is to gather statistics on children's nutrition status. These statistics will indicate how well children are growing, and will be influenced by illness and inadequate food intake. The ministry of health, hospitals, and clinics should have nutrition status information about children in their care. Health practitioners can also be asked about the frequency of edema, severe wasting, vitamin A deficiency, anemia, and goiter in community children. Although this information is from a variety of sources, it will help document the severity of the nutrition problem as well as the age groups and geographic areas where malnutrition is most prevalent.

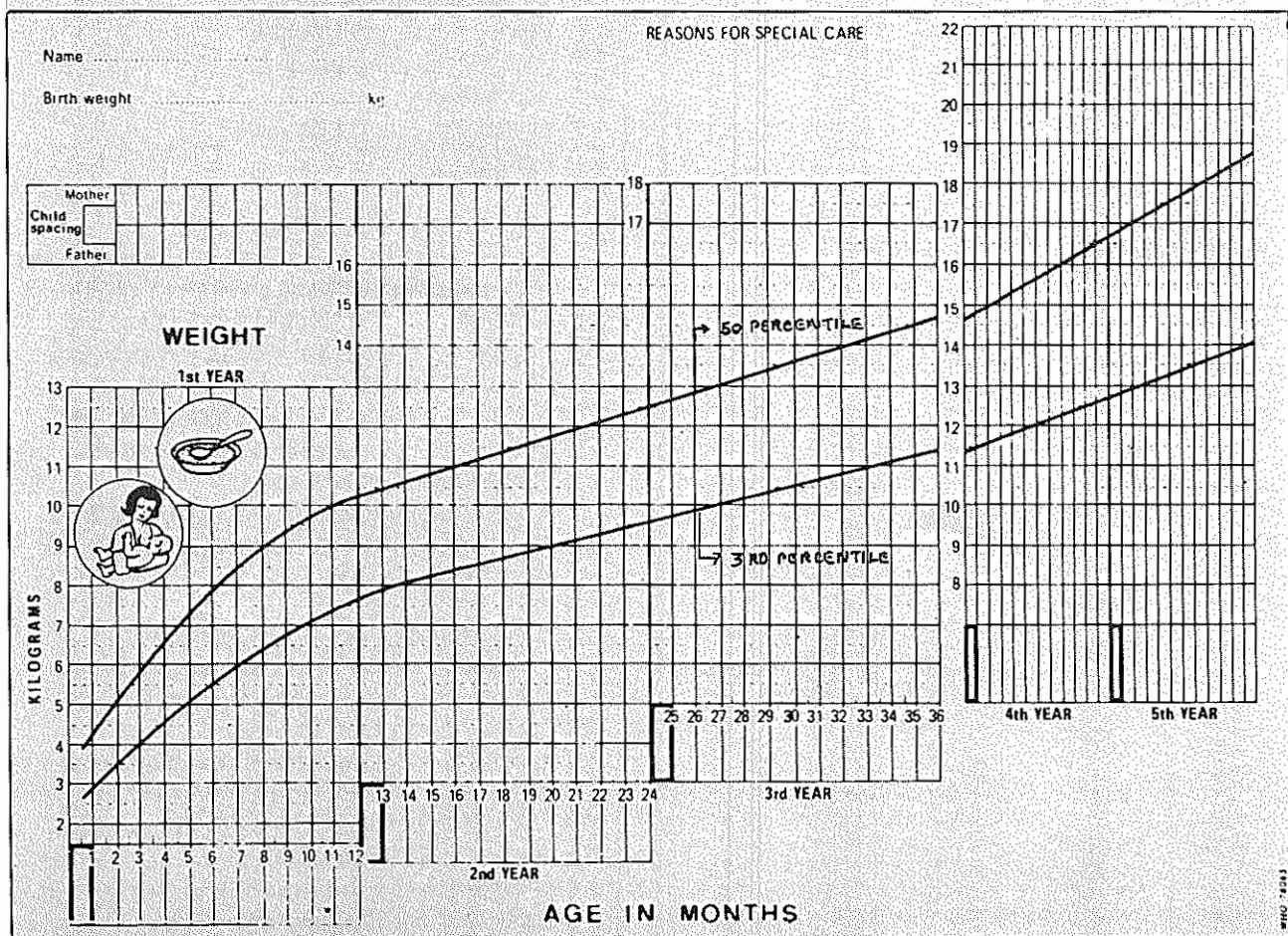
In addition to the child's physical appearance, nutrition status is often determined by measures of a child's size. A child's weight or height is compared to a standard (what the child should weigh or measure) for the child's age. Other techniques include measuring arm circumference and comparing a child's weight to a stan-

dard for the child's height.\* Each of these measures provides a different picture of the child's growth and the information to judge whether the child is malnourished. Low height-for-age (stunting) may be the result of past malnutrition or infection. Low weight-for-height (wasting) reflects malnutrition at the present time. Low weight-for-age shows the combined effect of these two elements and is a good indicator of mortality risk.

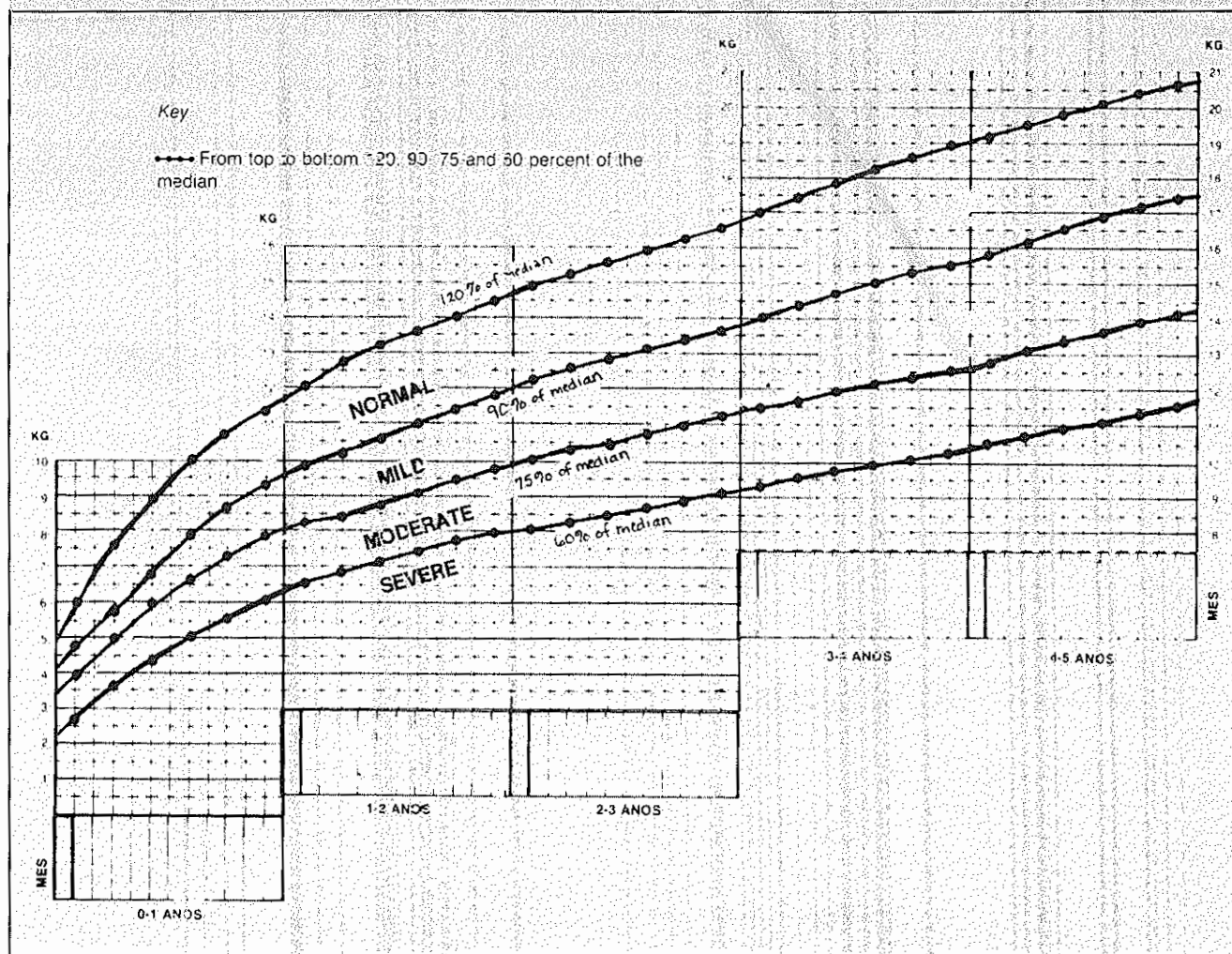
Defining well-nourished and malnourished is critical. Most countries use weight-for-age and a classification system with either two categories—normal, and malnourished (Figure 1) or with four categories—normal, mild, moderate, and severely malnourished. (Figure 2)

\*For more thorough discussion of growth monitoring, See Griffiths, Marcia, *Growth Monitoring*, Primary Health Care Issues Paper, APHA, Washington, D.C., 1981.

**Fig. 1 The WHO "Road to Health" card using percentiles of the NCHS (National Center for Health Statistics) standard.**



**Fig. 2** The "Gomez" classification system using percentages of the median of the NCHS (National Center for Health Statistics) Standard.



Countries using the classification system with four categories generally agree that children with mild malnutrition do not need immediate attention. For example, if it is necessary to limit the number of children admitted to a feeding program—these children are usually treated as normal. Overlapping the two graphs demonstrates that the critical line for defining malnutrition is approximately the same for both systems, falling at the third percentile, or 75% of the median. (Figure 3).

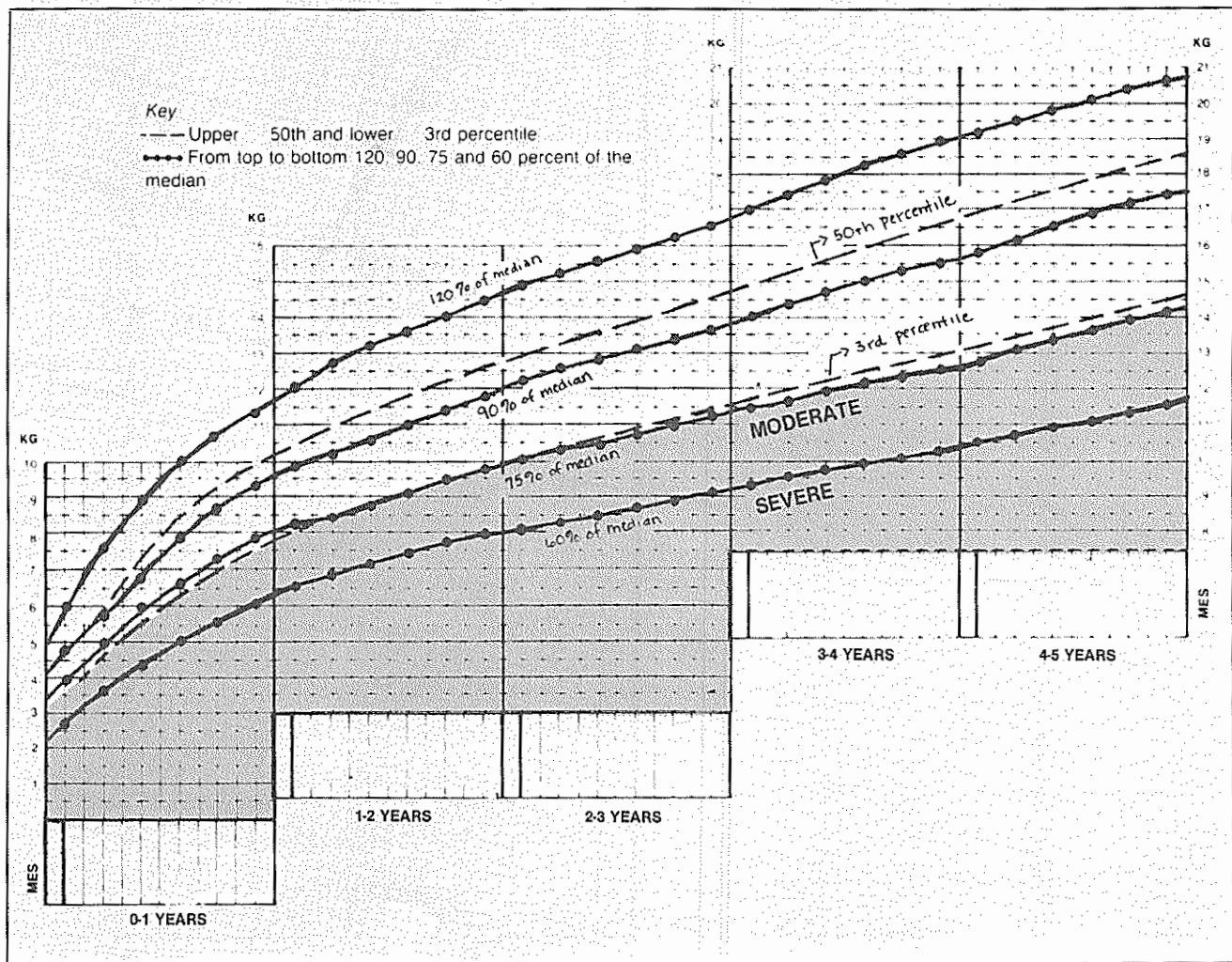
If 25% of the population is below this line, or if a significant proportion of the population is near this line, there is a nutrition problem. In addition to growth statistics, information on vitamin A, iron and iodine deficiency (goiter) should be added to this diagnosis.

#### **Determining when nutrition problems are most severe**

It is important to determine at what age children's nutrition problems are severe, and if there is a time of year when problems are more severe.

Often nutrition status surveys report results by age—(e.g., the status of children from birth to 1 year is reported separately from that of children 1-2 years old). If the percentage of moderately or severely malnourished children between the age of 1 and 2 years increases significantly over the first year of life and continues at about the same level during the 3rd, 4th and 5th years (the typical pattern in most countries), there is reason to suspect feeding problems for the child.

**Fig. 3** A comparison of the 50th and 3rd percentile curves with curves at 120, 90, 75 and 60 percent of the NCHS median. The shaded zone indicates the area of agreement for defining malnutrition.



To identify when the child feeding problems begin, look at growth charts for increased percentages of moderately and severely malnourished children or growth faltering. If growth data have been tabulated by age and month for a large sample, the mean weights can be plotted on a chart. If the sample of children is small (from only one to two communities), the weights of all the children can be plotted on one growth chart. The line, or trend, of their weights can be compared to the "ideal" line on the chart.

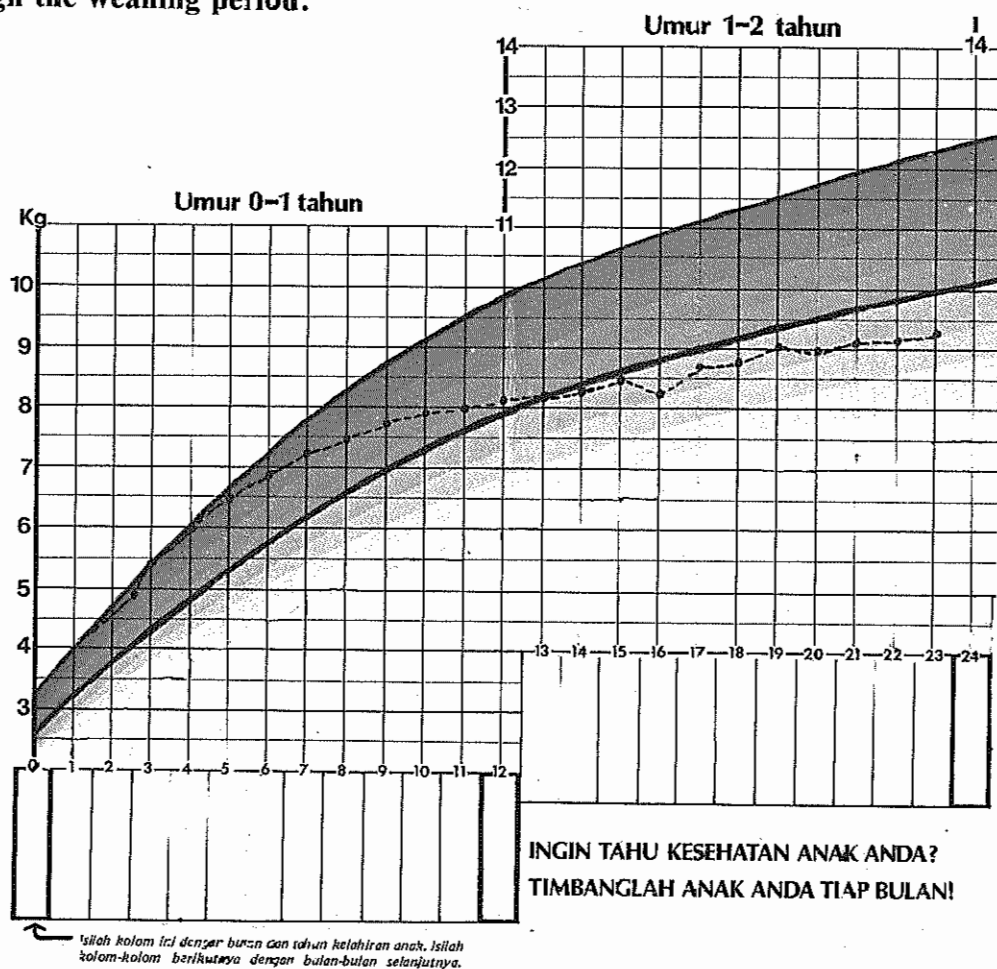
In figure 4, the ideal growth curve is between the solid lines. The dotted line represents the growth curve for the community children. One can see that growth faltering begins in the 5th month.

Growth retardation or an increase in malnourished children at 5, 6 or 7 months of age points to problems

with the introduction of weaning foods. In some cases, the foods are introduced too late; in other cases, the wrong kinds of food are offered. When growth faltering begins in the first months, the problem is usually bottle feeding or the improper use of breastmilk substitutes. If malnutrition rates increase later in the first year or early in the second year, the problem is probably inadequate quantity and quality of foods. In planning programs, it is useful to know when growth faltering begins. Activities can then be developed for children at this age, since 'catch up' growth often does not occur in children 3-5 years of age.

Seasonality also affects nutrition status. A child's nutrition status may vary in countries with one or more distinct rainy seasons. During the rainy months infections and diseases may increase and food intake may

**Fig. 4** The dotted line represents the average weights of community children plotted on an Indonesian weight-for-age chart. Between the 5th and 6th month of life the community children begin falling below their ideal weight. This trend continues through the weaning period.



decrease because of illness or because of a shortage of food. Since the rainy months are also the time for increased agriculture work, women's time for childcare is also reduced.

#### **Determining where nutrition problems are most severe.**

Using surveys of nutrition status, malnutrition rates can be compared between geographic areas and between rural and urban districts. If survey information is not available, statistics from a small sample of health centers or community programs in different areas can be compared.

This analysis will provide details about the kind of weaning problems that exists. For example, early

growth retardation may be more prevalent in urban centers if women use bottles and breastmilk substitutes or introduce inappropriate foods too early. In rural areas, where breastfeeding may be more prevalent, growth retardation often occurs later because foods are introduced too late and in insufficient quantities. However, the effect on the children by 9 months or 1 year of age is the same.

#### **Examining infant feeding patterns and practices to uncover the causes of growth failure.**

To understand why children of a particular age or living in a particular village are not growing as well as other children, it helps to look at what they are eating. Their diets should be evaluated to determine if they meet



nutrient requirements, if there are any detrimental or beneficial feeding practices, and also how feeding practices are influenced by the family meal pattern. Information on the foods consumed and dietary practices is often available from the ministry of health, medical schools, nutrition institutes, universities, international organizations, and agencies that administer feeding programs.

*Food consumption information* is usually compiled from dietary recalls of the foods served over a 24-hour period.\*

The nutrient content of the foods and the quantity consumed are used to calculate the child's nutrient intake. The adequacy of the infant's diet is determined by comparing the nutrients consumed with those required.

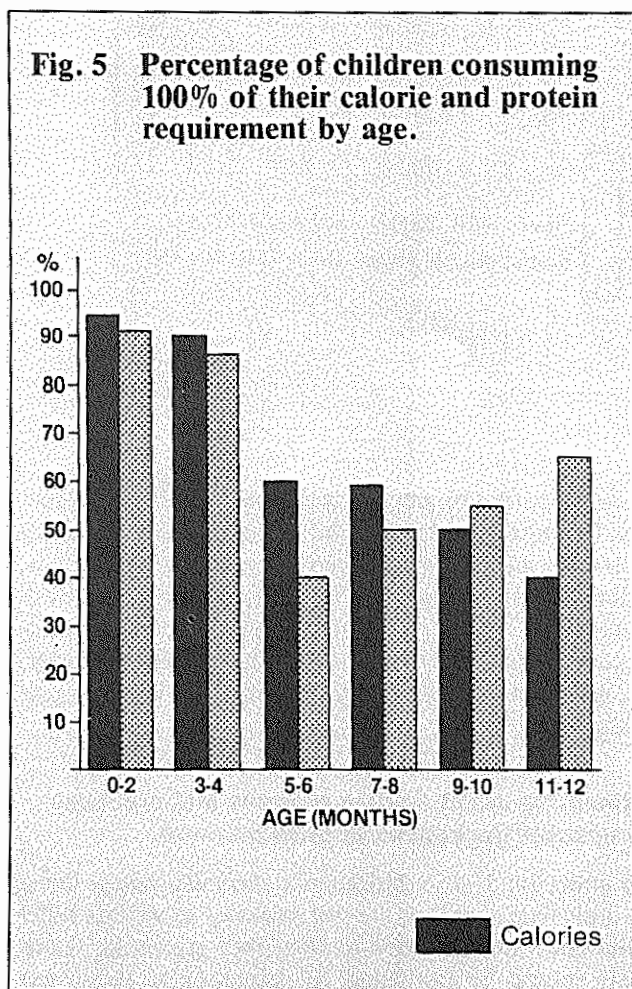
\*If food recall information is not available, interviews with a small sample of families can provide food consumption information.

If information is available on nutrient intake for children 0-2 years old or 6 months-2 years, this data can be shown more clearly with graphs. Two graphs (Figures 5 and 6) show particular trends by age, and are useful in explaining the dips in nutrition status at certain ages.

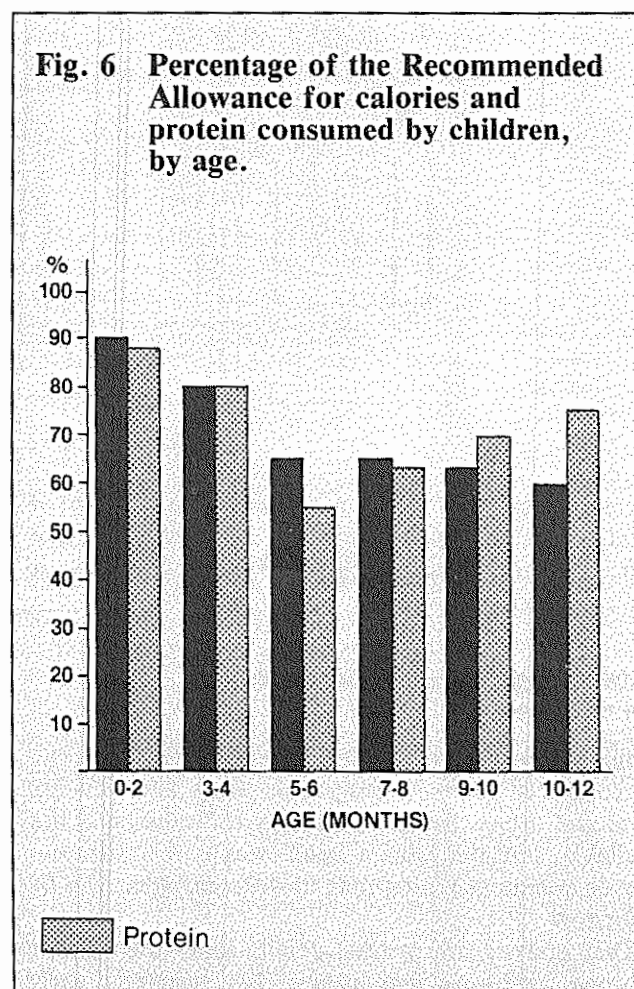
Figures 5 and 6 indicate that almost all children in this population are meeting their nutrient requirements in the first 4 months of life. But by the fifth month only about half receive their nutrient requirements. At this age, the average diet meets only about 65% of their calorie and 55% of their protein requirements. The dips on the graphs correlate with the introduction of a thin rice gruel and a decrease in breastmilk consumption. After six months, the percentage of children who do not meet the requirement for calories from 6-12 months of age is the same level. After one year of age, the protein intake rises for most children since they are eating food from the family pot.

*Studies of local feeding practices* can provide additional insights into consumption patterns such as decreases in nutrient adequacy or differences between

**Fig. 5** Percentage of children consuming 100% of their calorie and protein requirement by age.



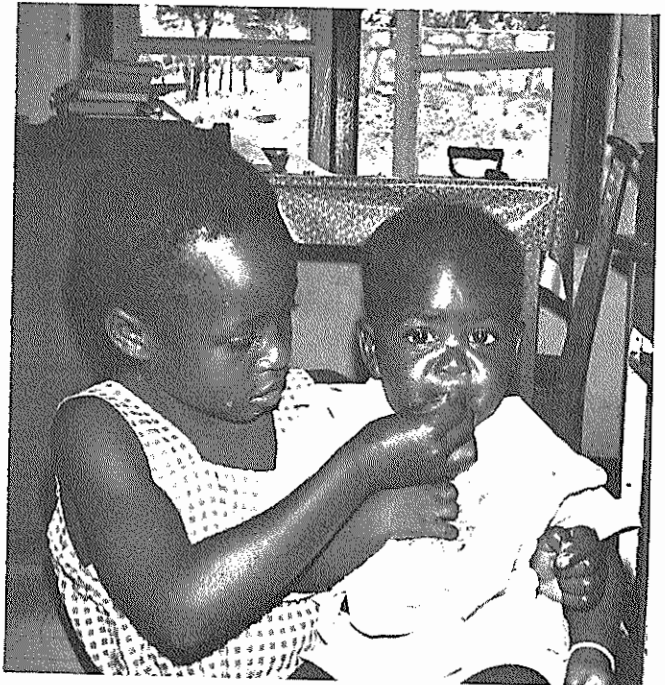
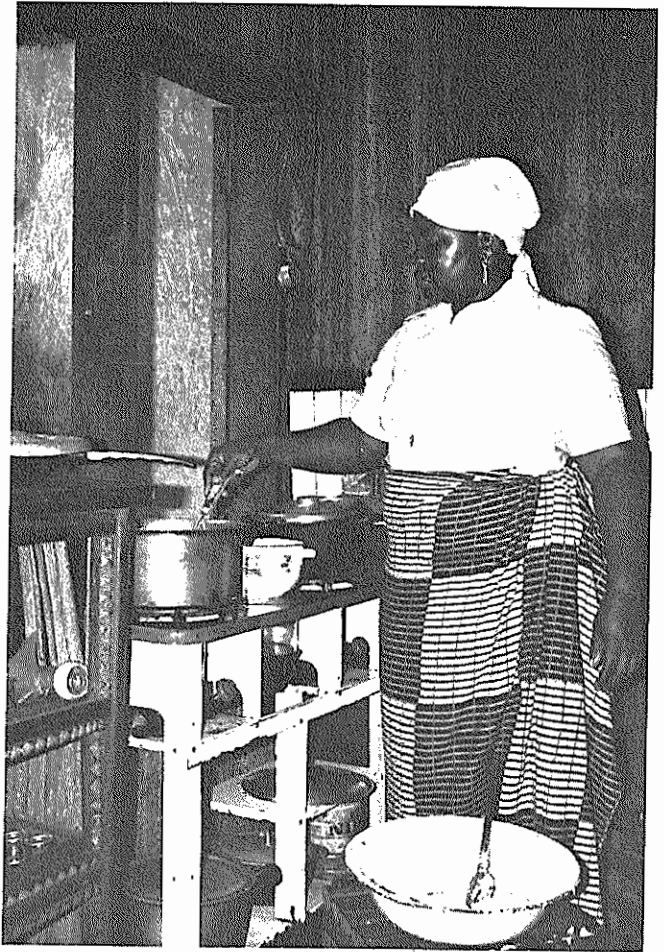
**Fig. 6** Percentage of the Recommended Allowance for calories and protein consumed by children, by age.



calorie and protein intake at a particular age. Questions about feeding practices are often added to nutrition status surveys. Useful information can also be collected from informal interviews with mothers and others responsible for the care of children. However, because these interviews may not be based on a large sample, generalizations about dietary practices for geographic, ethnic, and economic groups should be made carefully. Questions to ask might include:

- What do the mothers think is the biggest problem in feeding children?
- At what age are foods other than breastmilk introduced?
- How long is breastfeeding continued?
- What foods are given?
- How often is food cooked for the family and for the child?
- How is cooked food stored for the child?
- How are foods given? (bottle, hand, spoon, cup)
- How frequently is food (both breastmilk and other food) offered to the child?
- How much food does the child eat?
- Who prepares the meals and feeds the child?
- How is food stored in the household?
- How does feeding differ during illness?

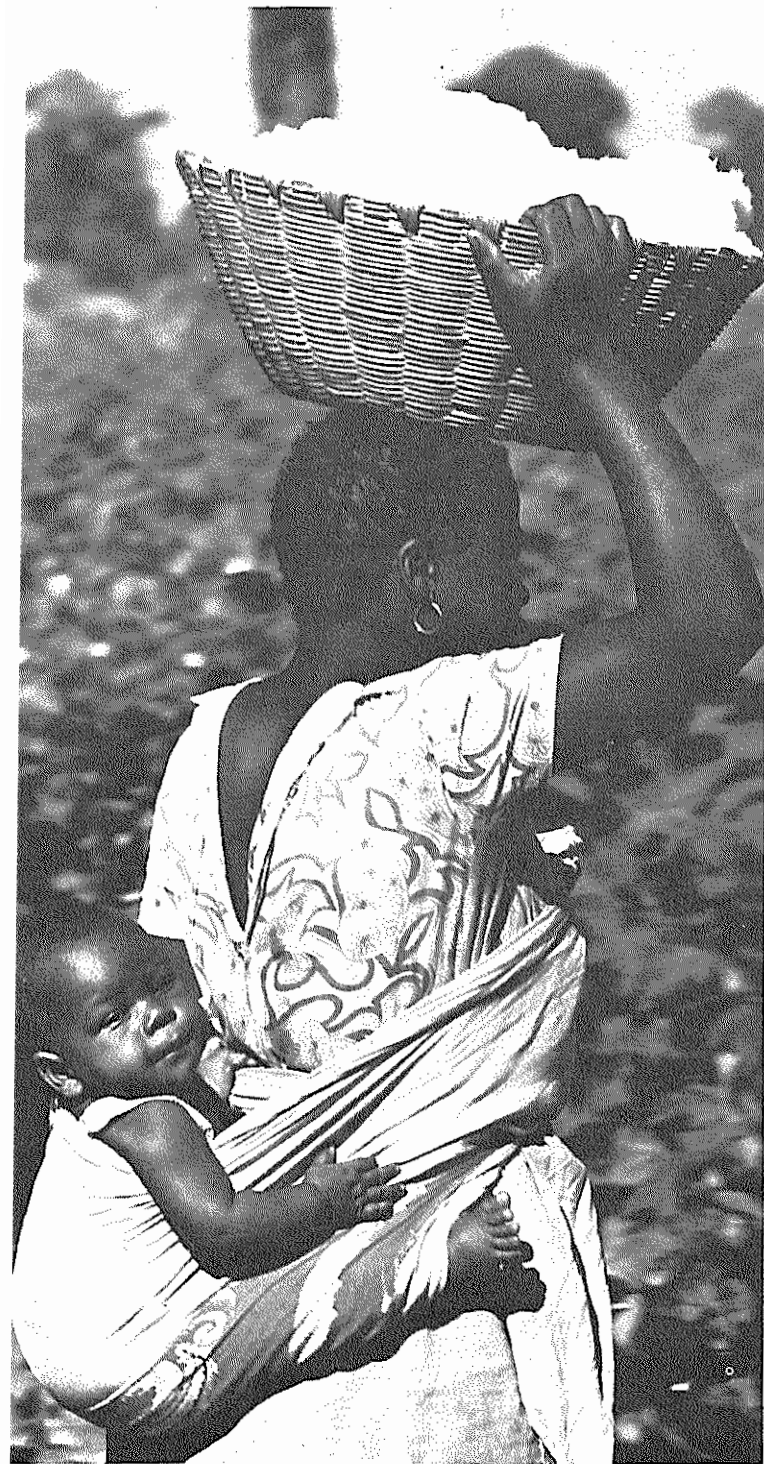
These interviews are crucial in program planning because they bring survey statistics to life. The words of the women whose children are malnourished document the urgency of the problem and the need for programs to help families feed their children. These interviews enable potential beneficiaries to actively participate in the first stages of program design: the identification of the problem. Information from the mothers provides a partial explanation for the trends in dietary adequacy, nutrition status, and mortality statistics seen in the population of young children.



*Information about who feeds the child and how food is prepared can be obtained by talking with community mothers.*

*Photos: Susan Cclgate Goldman*

### III. Developing Objectives For Program Support Activities



Changing feeding practices, many of which are repeated 4-5 times daily, is not easy. It is challenging since no single solution exists that will be successful in every situation.

A good plan to improve weaning practices can be developed by examining the infant feeding problem and then setting appropriate objectives. Experience has shown that programs fail when decisions are made about the program strategy before objectives are clearly identified.

Information about the infant feeding problem is essential at this stage. The current situation should be defined as clearly as possible using the methods previously described.

- What are the general needs common to most mothers?
- Who is most at risk? All weaning-age children? Only children living in a particular area? Only children from the poorest families? Only children from landless families?
- Is malnutrition seasonal?
- What are the causes of the nutrition problems for the target children? Not enough food? Not enough of the appropriate foods? Inadequate number of feedings? Improperly prepared or stored food? Improper introduction of food? Poor water and sanitation?

Answers to these questions will define the parameters of the program.

In addition to a statistical description, it is critical to consult the program participants. Their guidance will help in developing realistic program objectives and also promote self sufficiency. If what planners believe is desirable turns out to be something that is impossible for the participants to achieve or is contrary to their beliefs or desires, there is little chance for program success. Determining program objectives that are achievable for the majority of families can only be determined by working with a small sample of families, particularly with the mothers of high-risk children.

The benefits of working with families during program design is illustrated by the Indonesian Nutrition Communication and Behavior Change Project (See project summary). This project showed a high correlation between mothers who knew the project messages and followed the recommended practices and children whose nutrition status improved. After 13 months, children in the project group were growing significantly better than children in a comparison group. This success

*The many demands on women's time must be considered when planning activities for improving weaning practices.  
Photo: World Bank*



was due in part to thorough investigations with village mothers *before* determining project objectives.

The preliminary investigation was qualitative and used participant observation and marketing techniques. The prevalence of a practice was not quantified; rather the reasons for certain practices were examined. The interviews with participating families were not rigidly set. The questions were open-ended and followed a question guide. (See Appendix A) The format of the interviews allowed family members to discuss their feelings and experiences, and was similar to the process companies go through before introducing a new product or launching an advertising campaign. Qualitative investigation has been crucial for business in convincing people to change the brands they buy. Similarly, those involved in improving infant feeding practices can benefit from the same kind of activities.

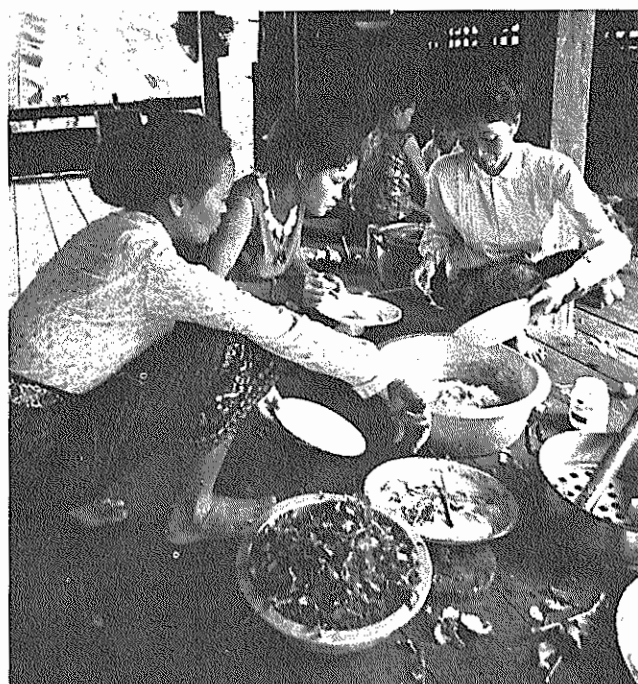
The preliminary investigation in Indonesia examined how weaning practices might be improved. A sample of 30 households with a malnourished child between 4 and 9 months of age was selected. This sample included families from each of the project's three geographic regions. If these families could improve infant feeding practices, it was reasoned, then so could other families.

The preliminary investigation in Indonesia examined how weaning practices might be improved. A sample of 30 households with a malnourished child between 4 and 9 months of age was selected. This sample included families from each of the project's three geographic regions. If these families could improve infant feeding practices, it was reasoned, then so could other families. (Although the recommended changes were appropriate for the majority of families, about 8% of the families were not able to adopt the recommended changes because of their economic situation.)

During the qualitative investigation, families were visited three times. During the first home visit an investigator talked with the mother about infant feeding practices. Then, the child was weighed, the growth chart checked, and a 24-hour dietary history was taken and analyzed for the child's intake of calories, protein, and vitamin A. After the dietary recall, the investigator and the mother discussed the ways the mother might improve her child's diet. Often the solution was to try to enrich the weaning food with greens and a fat source.

If a weaning food was to be prepared with the mother, a second visit was made the next day. During this visit, the investigator and the mother shopped for food at the market, prepared the food, and fed the baby. They agreed on a recipe that was nutritionally adequate and feasible for the mother to make during the week.

The third visit was one week later. The investigator returned to see if the mother had made the food, how



*By observing how mothers currently prepare weaning foods, appropriate options for improving such foods can be identified.*  
Photo: WHO

she made it, if she liked it, and if she had any problems. A 24-hour food recall was again recorded and analyzed. Finally, the mother was asked to describe to a friend how to make the food. Her words were recorded for later use in the education message.

For each family information was collected on:

- Current household practices: Food procurement, cooking practices, child care, water and fuel availability, and attitudes about child feeding and child development.
- Options for improving dietary practices: For example, how can the calories be increased in the weaning food? What is the likelihood that a new practice will be adopted as daily routine? Was the practice seen as too time consuming or without benefit?

Using this information the constraints to improving feeding practices are identified and appropriate activities can be developed. The major constraints may be cash availability, food supply, sanitation, lack of information, or a combination of these.

Although this process may seem time consuming, it is worthwhile if it prevents program failure. Second, the initial investment is cost efficient because the information can be used again to develop other program activities. Third, this type of qualitative research is not expensive, if the sample is small and a flexible interview format is used.

Numerous practices can be modified or adapted to suit a particular community or region. The team in Indonesia learned that not everyone wanted to cook the

porridge in coconut milk. Some women preferred to fry the *tahu* or *tempe* before mashing it in the porridge. In Brazil, instead of adding oil to the porridge, women preferred to grate an oily nut and mix it with the porridge. The nutrition objective is the same: to increase the caloric content of the weaning food, but the method of increasing caloric content is decided by the families. All weaning support activities have the same goal: to improve the nutrition status of children between the age of 4-30 months. While the goal of all weaning programs is universal, the program objectives vary. The program objectives developed with families in the Indonesia project were:

- **Continue breastfeeding, using both breasts at each feeding.**

During discussions with breastfeeding women, interviewers found that many women favored one breast for feeding. They believed one breast contained water and the other food. If the child seemed satisfied after receiving the 'breast with food' the other breast was not offered.

- **Feed infants a homemade mixed porridge 4 times a day.**

Most women were already making a rice porridge for their children, sometimes enriched with one other food. Instead of increasing the serving size of each meal, feed-

ing frequency was stressed because women were willing to add one meal a day, giving their infants a total of four meals.

- **Make the porridge with rice, green vegetables and soybean curd, and cook it in coconut milk, or make the porridge with soft rice, well cooked green vegetables and fried tempe and mash all ingredients together.** Two recipes were needed for different geographic areas. These recipes reflect the modifications made by mothers during the week of trials to adapt a standard recipe to their preparation preferences.

In a Thailand weaning project, the objectives were:

- **Continue breastfeeding;**

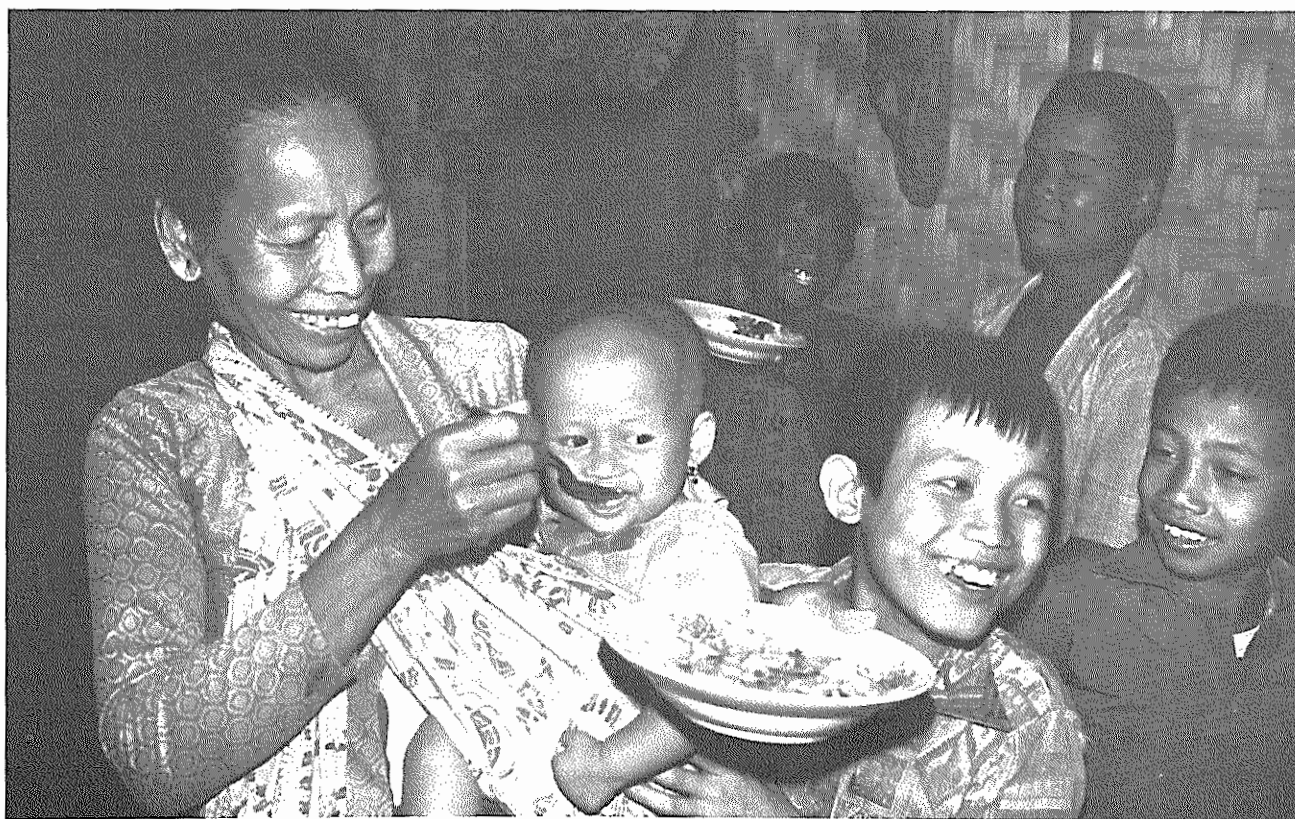
- **Purchase a weaning food made by the local women's cooperative;**

- **Cook the weaning food in the correct amount of water;**

- **Feed the child 4 times a day.**

If the objectives are specific, the program options for improved weaning practices becomes much clearer. Objectives may signal the need for education, food production capabilities or expanded community support. However, the objectives do not specify how each of these activities will be carried out in the context of a program.

*Indonesian mothers participated in the development of an improved weaning food. Photo: Marcia Griffiths*





## IV. Implementing Weaning Support Activities

After identifying the program audience and defining realistic objectives, decisions must be made about which activities to implement and how to implement them most effectively.

A parallel can be drawn between planning weaning support activities and designing a strategy for marketing a product. A marketing strategy identifies how products or services will be promoted to the largest audience. The marketing of coffee is a good example. Coffee merchants sell a number of products. The green, unroasted coffee beans have the broadest appeal, require the least preparation to sell and are the most affordable. But marketing research showed that a portion of the people who bought the green coffee beans would pay more for the convenience of having them roasted, and some of these consumers wanted their coffee beans ground as well. Thus, both roasted and ground coffee were made available to consumers. Research also showed that another group of coffee drinkers would drink more coffee if they had an easy-to-make, "instant" coffee. Some of the instant coffee drinkers also preferred their coffee without caffeine. Both of these groups were willing to pay more for the instant coffee and for the coffee without caffeine. Each product meets a special demand and has a distinct promotion strategy in the overall plan to promote coffee consumption. The introduction and promotion of each product is tailored to the different needs of consumers.

The steps involved in planning activities to promote improved weaning practices are similar. Several different "products" may have to be introduced to reach the population. Qualitative research, which helps determine program objectives, will also help identify what the majority of the population needs most, what families can do, and which families will need special services.

The poor health of the weaning-age child has many causes and it is unlikely that one program activity will solve them. Improving the health of the child requires the implementation of a range of activities through a variety of program channels.

Separate weaning programs can give a program high visibility, but a separate infrastructure is not necessary to provide the needed services to the target population. Though program management will need to be centralized initially, it is more cost efficient and increases the likelihood of program continuation if existing programs implement activities for improving weaning practices.

There are several types of programs to consider for weaning-support activities. Examples of the programs



*Weaning support activities can be integrated with a variety of programs in the community. Photo: UNICEF*

identified below can be found in the project summaries.

**Education programs.** As a rule, these programs do not provide food but work with program participants to better utilize already available foods. The education component concentrates on the preparation of a weaning food in the home and the improvement of related practices. Examples of education programs include:

- *Yako, Upper Volta Project*, where home improvement agents were trained to make a better infant food and worked with mothers' groups to encourage its preparation.
- *Indonesia Nutrition Communication and Behavior Change Project*, where objectives and messages about infant feeding and an improved food were defined with program participants. Village-level nutrition workers were trained to deliver the messages, supported by radio, in the context of a community growth monitoring program.
- *Philippines Mass Media Project*, which tried to teach improved weaning practices, including a homemade weaning food, via radio.
- *Nepal Sarbottam Pitho Project*, which evolved from a food distribution project to one that teaches mothers to prepare an improved homemade food.

**Preventive feeding programs.** These programs provide food to participants to promote better health and development, and to prevent future nutrition problems. The food is usually a high nutrient supplement, or complete meal. Daycare and preschool feeding programs are examples of these programs. Generally, such programs provide food to everyone in the program, not just the malnourished children.

**Curative feeding programs.** These programs are targeted to children with health and nutrition problems and offer food and services to meet an immediate individual need. They are generally run by hospitals or health centers, although some are community based. The Sarbottam Pitho Project began as a curative supplementary feeding program, and Project Thripasha in Sri Lanka is a curative program.

**Commercial ventures.** These enterprises produce food for profit. Their operations can be community based or national in scope. In Thailand a local women's group processes, packages and sells a food using local ingredients to community families. Nutri-Pak, in the Philippines, is made with local foods and is packaged at

the district level and sold in communities for a small profit. Incaparina is a centrally processed food sold commercially in Guatemala.

Select programs that are compatible with the specific objectives for improving weaning practices. For instance, if the objective is to improve a traditional food, a curative feeding program may be a less desirable option than a primary health care program. In Nepal, food promoted by the curative program was considered suitable only for malnourished children, not for healthy children and women were reluctant to make it at home.

To assess the appropriateness of a program, specific questions should be asked:

- *Can the program reach those who need it?*

A program that is part of health center activities, for example, will reach only a certain number of families, fewer families than a more community-based program. If the program needs to reach a wide audience, then a mass media campaign, adult education, or literacy program might be considered.

- *Can the program undertake education support activities?*

Changing weaning practices or introducing a new food may involve face-to-face education as well as other media, including radio, television and print materials.

- *Can the program support logistical and managerial demands?*

A literacy program, for example, may not be able to include a weaning component that requires food distribution. However, that same program might be successful at managing education sessions on how to make weaning foods or managing a national effort to encourage mothers to begin feeding their children additional foods at 6 months of age.

- *Can the program provide services that are culturally appropriate?*

Certain donated foods for example may not be culturally appropriate for use in weaning foods. Weaning food programs that use foods from outside sources need to be careful that these foods do not create a dependency or a dissatisfaction with the local equivalent.

- *Can program services be provided with available resources?*

An activity should not be undertaken without careful consideration of the cost. Programs that distribute or subsidize food may be difficult to sustain.

## V. Improving Weaning Foods

*Often, an ingredient available locally can be added to a homemade food to make a nutritious weaning food. Photo: UNICEF*



Most weaning support activities have focused on promoting an improved weaning food. The emphasis is on deciding what type of weaning food and which specific mixed food to promote: one that can be made at home, one prepared for on-site feeding or one packaged for cooking at home.

There are several ways to improve weaning foods, and they can be considered together or separately:

1. Add locally available ingredients to a homemade food.
2. Add one or two "new" ingredients to a food. These ingredients may not be available locally and are usually packaged by the program.
3. Use a pre-mixed or prepared food that can be served by the program or used at home.

Experience indicates that under most circumstances, a homemade food will be the most cost-efficient option. The Indonesia, Nepal, Upper Volta and Philippines (Mass Media) projects illustrate different ways to formulate and promote homemade foods.

Some countries, however, have chosen to promote a prepared, packaged food. The advantages of prepared foods are that the quality can be controlled and the quantity fed to the child can also be specified. A prepared food could be the best option in areas where

women work outside the home. Supplying a subsidized prepared food may also be the most appropriate way to help the poorest families.

Prepared or packaged foods may or may not be commercially made. They can be made locally (by the village or district) or centrally (by the state or nationally). Some of these foods are imported or use ingredients brought from outside the country. Examples of programs that use different types of prepared, packaged foods are: the Philippines Nutri-Pak project, the government nutrition program in Thailand, the Thripasha project in Sri Lanka, and Incaparina in Guatemala.

The advantages and disadvantages of homemade versus processed and packaged foods are summarized in Table 2.

Which option or alternative is chosen will depend, like the overall program plan, on what meets the needs of the majority of potential program participants and what food is the most cost-efficient. In the preceding chapter, developing a plan for an activity was compared to developing a product marketing strategy. This same analogy is useful here. Like the coffee merchant who markets several types of coffee products, when planning weaning activities, first consider what weaning foods can be made in the home and then begin to explore the role a packaged, processed food could play.

**Table 2. Advantages And Disadvantages Of Methods And Food Sources To Improve Weaning Foods**

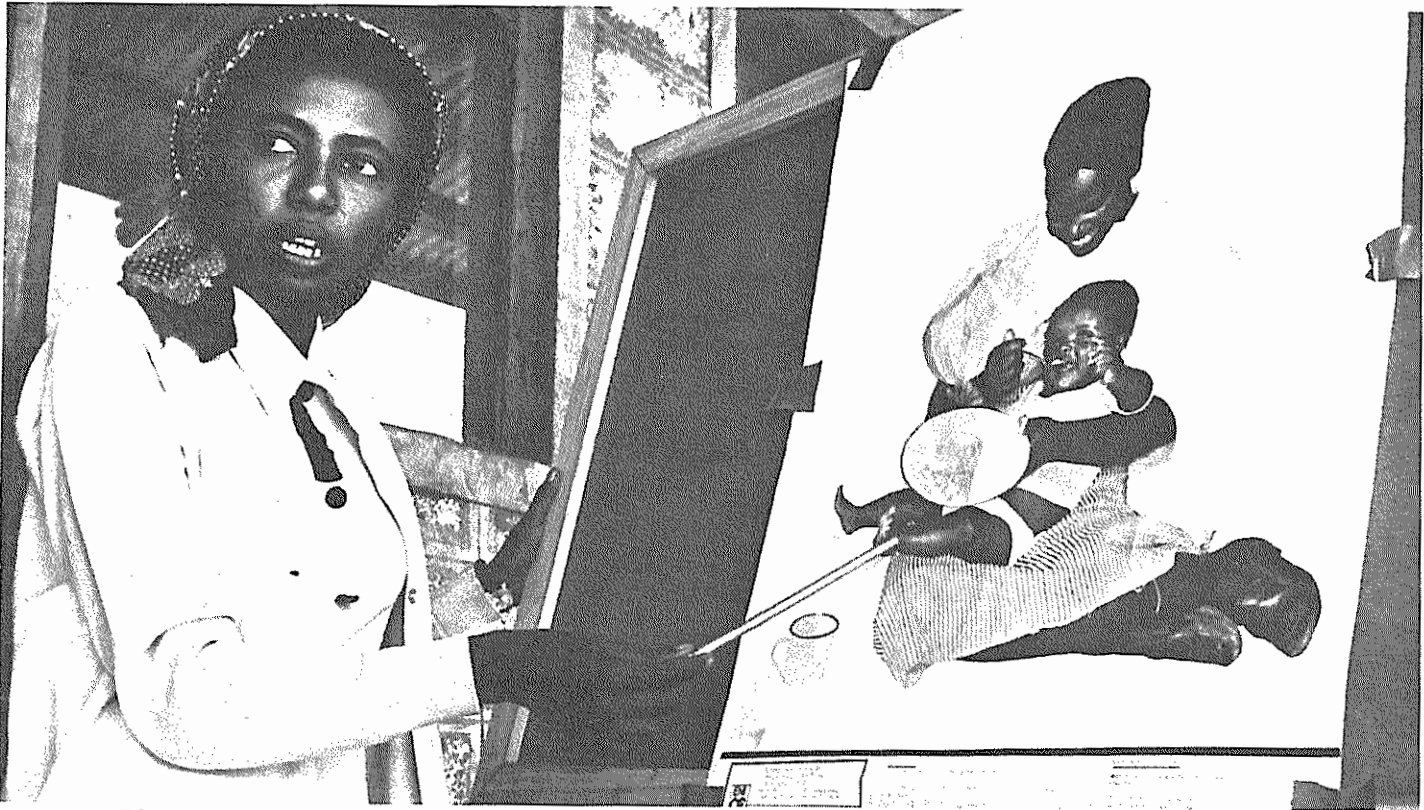
<i>Type of Preparation:</i>	<i>ADVANTAGES</i>	<i>DISADVANTAGES</i>
<b>1. Home-prepared foods (family pot)</b>	<p>Cost to a family can be minimal.</p> <p>Have potential to affect everyday behavior with high probability that these changes will continue over time.</p> <p>Ingredients available locally.</p> <p>No new technology needed.</p> <p>Distribution and packaging costs nil.</p>	<p>May require more of women's time in processing and preparation.</p> <p>Require serious nutrition education effort: staff and money. Personnel must be trained in the basic messages and how to communicate them.</p> <p>Food quality variable.</p> <p>Seasonal variations may leave families with few options during some months.</p>
<b>2. Village/Group prepared foods</b>	<p>Food is made with some supervision. Quality and hygiene should be ensured.</p> <p>Less expensive than central processing.</p> <p>Better practices are learned when foods are prepared in a group situation than if centrally processed.</p> <p>Allow for some processing that would be too time consuming for mothers at home.</p> <p>Have potential to generate income.</p> <p>Can serve as a demonstration of benefits of new local foods.</p> <p>Can generate community enthusiasm and other benefits through group work on a project.</p>	<p>Make people dependent on purchased food and on food processing that cannot be done at home.</p> <p>Can be difficult to organize.</p> <p>Chance of long-range, home-based change, less than with a homemade food.</p> <p>Raw materials may be difficult to supply in a timely fashion.</p> <p>Require capital for "start up" costs and then maintenance costs must be met.</p> <p>Require small business management skills and personnel willing to stay with the project.</p> <p>Need a strong education and promotion effort: staff and money.</p>
<b>3. Foods processed at central location</b>	<p>Foods are made under supervision, so the nutrient content is controlled.</p> <p>Save time for the person preparing the food.</p> <p>May save fuel.</p>	<p>Cost of the product is high either to the government or families.</p> <p>Make families dependent on purchased food.</p> <p>Require capital investment for physical facilities for storage and processing.</p>

<i>Type of Preparation:</i>	<i>ADVANTAGES</i>	<i>DISADVANTAGES</i>
	<p>Foods unsuitable for consumption by infants without processing can be made into good, nutritious food.</p> <p>Can promote awareness of need for timely introduction of food.</p> <p>Can be stored without contamination.</p> <p>Easily prepared.</p> <p>May be the most cost efficient way for the government to provide food to those families who cannot afford more or different foods.</p>	<p>Requires a marketing plan to ensure that price policies, distribution networks, and promotional strategies are finely tuned.</p> <p>Commercial foods may not reach the target group, but only those who can afford it.</p> <p>Raw materials may be difficult to supply in sufficient quantity because of poor crop yields or irregular deliveries of imported foods.</p> <p>Packaging and distribution costs high.</p> <p>Changes in feeding practices made as a result of foods may not be easily sustained if foods are no longer available.</p>

<i>Food Sources</i>	<i>Advantages</i>	<i>Disadvantages</i>
<b>1. Imported foods (Donated or Purchased)</b>	<p>Could provide higher cost ingredients, e.g. milk powder, than consumers can afford.</p> <p>Help governments subsidize cost of foods for low income families.</p>	<p>If imported food is different from local staples it may create dependence on foods difficult to replace locally.</p> <p>If the food must be purchased, use valuable foreign exchange.</p> <p>Supplies uncertain.</p> <p>Require extensive storage, packaging, and distribution operation; thus government costs are high.</p> <p>Nutrition education efforts may not be applicable to local foods.</p> <p>May be a disincentive to local production or to village efforts to meet infant food problem.</p>
<b>2. Local foods</b>	<p>Call on people's creativity to utilize or produce local resources to meet a need.</p> <p>Effort is more likely to be sustained over time.</p> <p>Can have a positive economic impact in the family and community through increased agricultural production.</p>	<p>May require more time spent on the part of families or village to meet a local need.</p>



## VI. The Role Of Education And Communications In Weaning Support Activities



*Education is an essential component of activities to improve weaning practices. Photo: World Bank*

Education and communications activities are key elements in improving weaning practices. Again, marketing provides a useful model, where no new product is introduced to consumers without communications activities. Whatever the program objectives, promotion and education activities have to be an integral part of the plan. This will ensure that the target population knows about the recommendation, understands why it is important and is motivated to take action.

If carefully designed and implemented, the education/communications component can help coordinate what might otherwise seem to be isolated activities among policymakers, program staff and participants. This component should:

1. assist program managers to convince policymakers about the importance of the program
2. keep program managers informed about project activities
3. support training and continuing education of field workers

4. ensure that messages for the public are consistent and meet the needs of the population.

The success or failure of many weaning programs has been determined by how well the education/communications program was conceived, executed and followed-up.

The following considerations are essential in planning an education/communications activity:

**Message Formulation.** The messages are the core of any education program and must be consistent in all the materials produced. Qualitative research, which was done to define project objectives, will also supply the information needed for message formulation. Messages are effective when they translate project objectives into actionable recommendations and motivational statements.

Message construction requires adherence to several principles. Messages should:

- address the major constraints uncovered in qualitative research,
- be culturally relevant

- contain a single concept,
- be action oriented,
- motivate, and
- be believable.

One of the messages used in the Indonesia project was "Beginning at 5 months, your child should be fed *bubur campur* in addition to breastmilk. *Bubur campur* is made by cooking 4 tablespoons of broken rice with a handful of finely chopped, well-cooked, green leafy vegetables, and 1 piece of soybean curd in a half-cup of coconut milk. This food will satisfy your child."

The action component is to feed children *bubur campur*. The motivational element is that children will be satisfied. The word "satisfied" was chosen because it connotated well fed and because women said they thought the children were no longer satisfied with breastmilk alone. The satisfaction promised in the message was not an overstatement of the benefit mothers could derive from feeding the weaning food to their children.

Motivational statements, in addition to describing benefits, should be used to address particularly sensitive ideas or practices. For example, Indonesian mothers initially believed the green leaves in the weaning food recipe were indigestible for 5-month old infants. By describing how the leaves were prepared, the messages convinced mothers the leaves were digestible. The message stressed that finely-chopped and well-cooked green leaves are soft and can be digested by 5-month-old children. Soft is the key word here; it is a response to the mothers' perception that green leaves are too rough for their infants. Motivational statements are needed for all weaning foods. Promoters of commercially prepared weaning foods should consider both the advantages of their product and the needs of their audience. Motivational statements should not come from program planners but from the mothers who will use the food.

**Media Selection.** In any communications program, the media must be carefully chosen so the message will reach those who need it. A knowledge of how infant feeding information presently reaches families is helpful, but other media options, such as radio and television, should be considered. The media should be appropriate for the message. For example, radio is not suitable for explaining issues that need visual presentation. Radio is, however, an excellent way to reinforce the instructions the target audience received at the health center. Health professionals and field workers are crucial to the media strategy, especially when detailed explanations or demonstrations are called for. Although posters may be suitable for reinforcing particular messages, pictures can easily be misinterpreted and no medium requiring literacy skills should be used when the literacy rate is low.

When designing a plan that involves mass media, the preferences of program families should be explored. Their favorite radio and television stations and the newspapers or magazines they read most often should be identified. Peak listening hours and favorite programs should also be taken into account. Once these preferences are known, the education spots can be played when most of the target audience is listening. The media plan should allow for repeated exposure to a message, but should not repeat a single message too often. It is good to have several different spots that convey the same message to hold the audience's interest. An alternative method is to broadcast a series of spots that build on one another.

**Materials Development.** The materials to be developed for an education effort should not be decided before the messages or the media have been selected. The materials must be suited to carry the message and fit the medium. Materials developed—radio spots, flip-charts, slide presentations, etc.—should catch the audience's attention and be remembered. To ensure that the message is understood, culturally relevant, persuasive, and memorable, the materials should be pretested with a small sample of project participants. Pretesting can save time and money since mistakes are corrected before the materials are produced and distributed.

**Tracking Studies.** After the materials have been distributed and the program under way for 6 months, progress should be assessed in a few locales. Have the materials been received and are they being used appropriately by fieldworkers or health professionals? Are radio or television spots being broadcast at the agreed upon times and by the most appropriate stations? Are project participants aware of the messages? Have they begun to change practices in response to them? This type of follow-up offers important guidance for refining the program in progress and improves the chances of success.

**Communications and Training for Project Staff.** The managers and staff of a program should be informed about the content and messages. If the central messages are not clear to them, then the messages they convey to families will not be clear. Often a newsletter is enough to inform managers, but field workers may need more information. Fieldworkers working with families need to know the messages and how to communicate them. Elaborate background or overly technical explanations may confuse fieldworkers about the key tasks and messages. Therefore, fieldworkers training should be task oriented: how to talk with mothers, and how to deliver messages and explain their implementation. Communications and education are skills, just as much as making an appropriate weaning food, and these skills must be learned.

## VII. Program Activities For Improving Weaning Practices

A review of weaning food activities shows that the majority of successful activities have been part of larger programs. Because infant feeding problems are prevalent, weaning activities are an important component of health programs. However any program already reaching target families should be considered for a weaning food component.

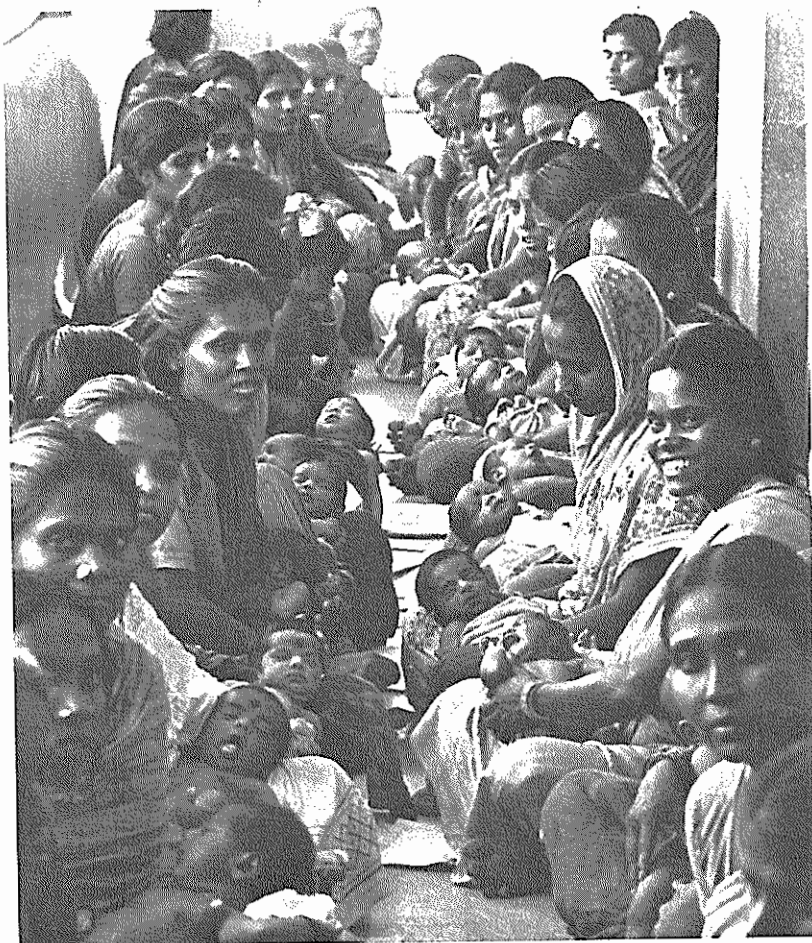
This chapter discusses a variety of program options. Some of the programs regularly include weaning activities, others are potential options for weaning support activities. Each program has advantages and disadvantages. Table 3 compares the characteristics of the different programs. Some of the programs, such as adult education, CHILD-to-Child, and agricultural programs, have low investment and management requirements. These programs reach a broad audience and could be used to promote awareness about weaning practices. However, these programs probably would be inadequate for food distribution or comprehensive education efforts. If the aim of the weaning activities is education, with the potential for targeting and adapting messages and for face-to-face communications, primary health care, breastfeeding promotion, and home economics extension programs may be the most compatible. However, these programs require more management, training, and supervision. If food production and/or distribution activities are necessary, high initial costs should be expected in addition to expenses for maintenance, supervision, and training. The last option is the most expensive, especially when coupled with education, but it is also the most comprehensive.

Primary health care programs are an excellent option for weaning projects because:

- they are designed with similar, compatible objectives for improving the health and well-being of the target group;
- they typically have a team of community workers with education responsibilities; and
- they usually have a system for periodically monitoring participants, including home visits.

### Primary Health Care: Growth Monitoring.

Primary health care programs often have nutrition components, and in increasing numbers they have implemented community growth monitoring systems as their basic nutrition activity.



*Primary health care programs that already reach community mothers and children are good vehicles for weaning activities.*

Growth monitoring programs that regularly measure child growth activities are well suited to weaning activities because the weaning messages can be targeted individually. A growth monitoring project has other advantages as well:

- it is an activity in which all village families and their young children can participate;
- it provides regular opportunities to discuss a particular child's progress and to offer advice tailored to the individual child;
- it is an evaluation tool to assess whether the recommendations are being practiced, and thus provides a forum for continuing dialogue; and

- it allows for the identification of children who may need additional project services such as additional high-quality food.

The key to successful growth monitoring is the use of growth cards. Available in a variety of formats, the growth card shows the child's progress, and allows mothers and health workers to see if the child is growing, and if the child is "on the road to health." However, if the main activity does not go beyond just recording the child's measurement on the card, nothing will be gained. Health workers must interpret the information on the card and make recommendations to families. In the majority of cases, their recommendations call for improving infant feeding practices.

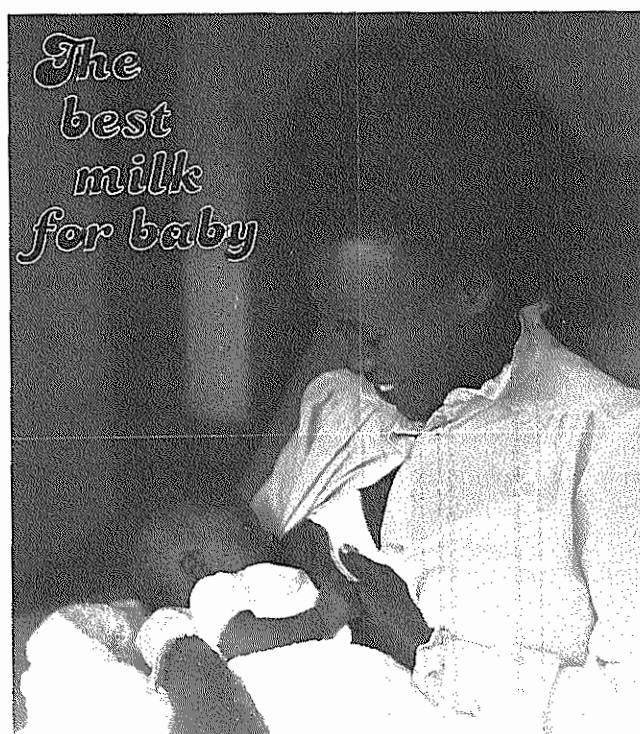
Activities added to monitoring sessions take time, but monitoring alone is of limited value. If the weighing session is to be used for education, messages and support materials should be developed for health workers to use for individual counseling with mothers after their children are weighed.

A model for this type of activity has been implemented in two Indonesian community nutrition programs: the national UPGK program and the Nutrition Communication and Behavior Change Project. In both projects age-specific messages were designed for health workers to deliver to mothers at weighing sessions. In the Nutrition Communication and Behavior Change Project, worksheets with the messages were given to the mothers to take home as a reminder of appropriate feeding practices. In the UPGK program, a flipchart was printed with age-specific messages. Generally, if a child gained weight every month it was assumed that the diet was adequate and the mother received support to continue what she was doing. Specific messages were also given for the child not gaining weight.

In some programs, growth data may also be used to determine eligibility for a supplementary feeding program. However, to keep this program aspect separate, many programs find it advantageous to provide supplementary foods at a different time than during growth monitoring and education activities. This ensures that the food supplement is available and that it is delivered in an educational setting designed specifically for families with malnourished children.

### **Primary Health Care: Diarrheal Disease Control (DDC) Programs.**

Oral rehydration therapy (ORT) and diarrhea control are common components of primary health care services. Occasionally a DDC program exists separately from a larger program. If DDC activities are ongoing, it is important that weaning food messages be integrated into the education package.



*Weaning components can be added to breastfeeding promotion programs. Photo: Breastfeeding Information Group, Kenya*

Good weaning practices should be encouraged, since a better nutrition state will reduce the dangers of diarrhea. In addition, there are specific messages pertaining to feeding during diarrheal illness and recovery that should be stressed. Continued feeding is necessary for the child with diarrhea to improve. However, many mothers believe that feeding the child with diarrhea is harmful. A communications project in Colombia experimented with several foods before deciding to promote a toasted rice gruel and a potato puree. Both foods were acceptable to mothers because they were not "cold or heavy." Recent evidence indicates that soft rice flour porridges and purees may also be effective in helping the child during diarrheal episodes in addition to the oral rehydration solution. Once the diarrhea stops, the child needs more food than usual. Messages about these practices should be part of the weaning package and distributed through diarrheal disease control projects to reach the population most in need of the information.

Proper handling and storage of foods is another area of concern in diarrheal disease control programs. Weaning foods may be contaminated because they are improperly prepared and stored. In hot climates particularly, bacterial growth in weaning foods may be excessive. If the infant's food is a source of contamination, improved storage techniques and changes in food preparation should be advocated. However, the success of



education about hygiene and food storage techniques has been limited. If education about these subjects is to have any impact, families in the community must be involved in the development of these activities.

### **Breastfeeding Promotion.**

Breastfeeding promotion programs, which already reach health professionals, paraprofessionals, and the public with messages about one aspect of infant feeding, are likely to have the infrastructure to train and educate the same groups about weaning. Before these programs adopt a weaning component, two questions should be answered:

- Who is the breastfeeding message reaching? The same population as the one with weaning problems? Only a portion of that population?
- Is the program administratively equipped to take on a new subject? Has the campaign been successful with the subject of breastfeeding?

Unless the program reaches the target audience and has successfully managed its campaign to promote breastfeeding, adding a weaning food component may be counterproductive. However, a breastfeeding promotion program might promote a few important weaning concepts. For example, the program could promote a message about the age when weaning foods should be introduced. Or, if the weaning project advocates a special mixed food, the breastfeeding program can recommend the weaning food in radio broadcasts or publications as the best first food for children when breastmilk must be supplemented.

Breastfeeding programs that undertake weaning should not forget the element that made their breastfeeding promotion efforts succeed: specificity. Broadening the scope too much, in an attempt to cover malnutrition, weaning, and general nutrition principles can weaken their effectiveness. When too many topics are discussed, none is treated thoroughly nor receives

**Table 3 Program Options for Weaning Support Activities**

<b>Programs Characteristics</b>	<b>Primary Health Care</b>	<b>Breastfeeding Promotion</b>	<b>Adult Education/ Literacy</b>	<b>Agriculture Extension</b>	
				<b>Agriculture</b>	<b>Home Economics</b>
Coverage	Nontargeted, community based	Nontargeted or women of child-bearing age	Nontargeted, community based	Targeted, usually to clubs, Rural-community based	
Potential for Food Delivery	Yes	No	No	No	Possibly
Potential for Education Activities	Excellent	Excellent	Excellent	Good	Excellent
Supervision and Management Required	High	Medium	Minimal	Medium	High
Special Staff Training Required	High	Medium	Minimal	Medium	High
Activities Can Be Tailored to Regional or Community Needs	Yes	Possibly	Possibly	Yes	Yes
Cost: Capital Investment	Medium	Medium	Low	Low	Medium
Maintenance	Medium-high	Low	Low	Low	Medium



the quality of attention that a public education campaign receives on a single topic.

### Literacy Programs.

Although these programs may not be appropriate for intensive nutrition education, weaning messages can be incorporated into literacy materials and activities. It is not expensive to add a message concerning weaning foods to the text of literacy materials. The coverage of literacy programs is generally national, reaching an audience who will benefit from infant feeding information—young adults.

### Agriculture Extension Programs.

Agriculture extension programs to improve food availability at the household or community level are excellent vehicles for weaning activities because extension agents have contact with individual families and can offer spe-

cific advice. However, these programs need to address themselves to women as well as men and be concerned with family food production as well as cash crops.

Home economists often work in agriculture extension programs. Generally, their work includes many food and nutrition activities. They may already be working with women's groups to improve household food conditions. With additional training, home economists could become effective promoters of weaning foods. They may also be the best people to work with families on improving food hygiene practices, and contribute to the design of more efficient cooking methods to help women prepare weaning foods. Once the home economists have been trained, supervising their teaching activities can be handled through the normal administrative channels.

Incorporating weaning activities into the activities of the agriculture extension worker may be more difficult. In some cases, the agriculture worker's salary may

CHILD to- Child	Food Supplementation and Rehabilitation	Commercial Ventures		
		Centrally Processed	Community Group	Individual Vendor
Nontargeted, community- based	Targeted, restricted to those with health problems, community based		Nontargeted	
No	Yes	Yes	Yes	Yes
Good	Good	Fair	Good	Good
Medium	High	Medium	High	Medium
Medium	High	Medium	High	Medium
Possibly	Possibly	No	Yes	Yes
Medium	High	High	Medium	Low
Medium	High	Medium	Medium	Low

depend in part on whether farmers in their districts meet crop production quotas. However, if their program is promoting small-scale food production, they may be able to complement other weaning activities by encouraging the production of one or two foods important to a weaning food mix. For example, in Thailand, women tend small gardens managed by their women's groups. The gardens produce grains and legumes used in a weaning food processed by the women's group.

If the introduction of new foods to existing agriculture programs is inappropriate, it may be sufficient to educate agriculture workers about other uses for foods currently being produced. A program in Haiti provided nutrition training to agriculture extension agents who in turn educated farmers on appropriate infant foods that could be made from their harvest. The farmers were receptive to the ideas and passed the information on to their wives. In Indonesia the national nutrition program (UPGK) has produced materials on home gardens for extension agents. Those materials encourage and promote the production of nutritious foods that can be combined with other foods and fed to weaning-age children.

An excellent example of the integration of nutrition and agriculture is the program handbook issued by UNICEF's regional office for South Central Asia on Education in Food and Nutrition in Agricultural Uni-

versities (EFNAG). The objective of this program is to "... improve the nutrition of rural families, particularly women and children. It will also strive for a wider understanding of nutrition issues in agricultural development ...". The types of community demonstration projects they hope to implement include: the "preparation of low cost nutritious recipes for children using locally available foods, preservation of fruits and vegetables using simple local methods and teaching the use and importance of safe drinking water ...". This program is a good model for future work with agriculture extension agents.

### **CHILD-to-Child Programs.**

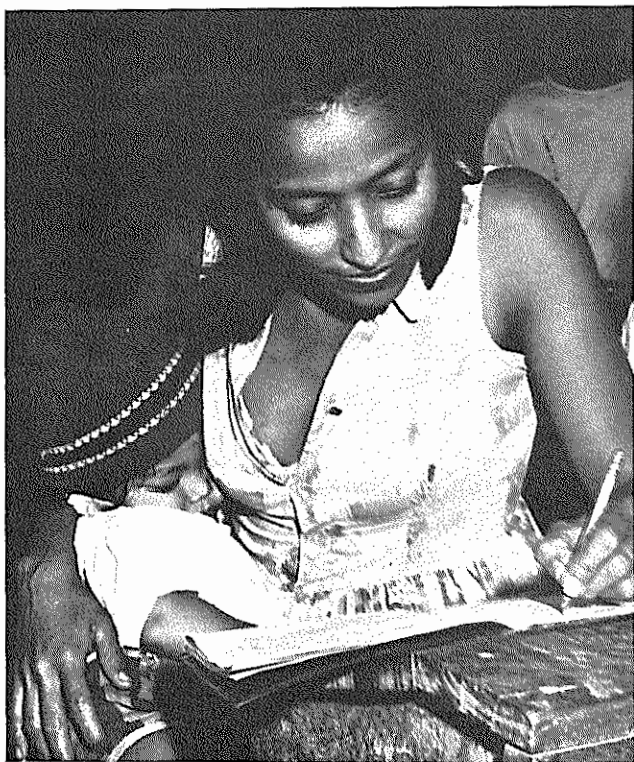
Many times an older sibling is responsible for the care of a younger brother or sister. In some schools in Mexico and Honduras the idea of "training" children in basic health care practices, particularly oral rehydration, has been tried with success. If a school program like this exists, a lesson on foods could be incorporated with recommendations about what foods school children could feed their young brothers and sisters. For example, the lesson might encourage the older child to mix vegetables and fish with rice and mix it into the younger brother or sister's porridge.

In a community health program in Santarem, Brazil adolescents work in nutrition rehabilitation centers. They learn the basics of infant feeding and preparation of nutritiously mixed foods for young children. These young people have learned to be advocates for good infant feeding practices in their homes and neighborhoods.

### **Food Supplementation and Rehabilitation Programs.**

Generally, in these programs food is provided to high-risk children. Food may be targeted specifically to malnourished children, or it may be distributed more widely to children from low-income families, or to those children participating in health center programs. Although many food supplementation programs are curative, they also have a mandate to prevent malnutrition. These programs can demonstrate the benefits of a food or practice by showing improvements in the health of the participating children.

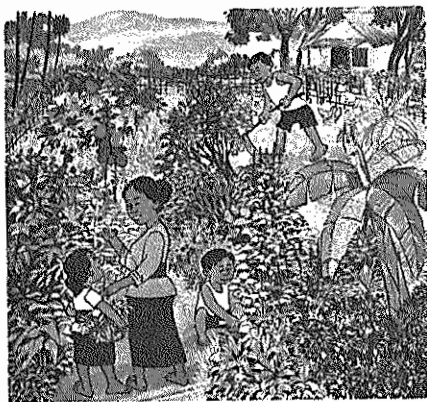
Traditionally, food supplementation programs were hospital based and focused on a specific food rather than improving practices at home. The food was usually selected for its protein and calorie content rather than its cultural appropriateness. Evaluation of these programs showed that the food provided to the child or family had little impact on their health status. Often the



*Literacy programs can include information about improving infant feeding practices. Photo: UNESCO*

# PENUNTUN KARANG GIZI

PENUNJANG USAHA PERBAIKAN GIZI KELUARGA



*This booklet on home gardens was produced for extension agents by the Indonesian national nutrition program.*

same children or younger siblings returned to the hospital or health center with nutrition problems. A longer term solution was needed.

From these hospital and health center experiences, the rehabilitation or mothercraft center programs developed. These programs provided education to the mother about preventing and treating malnutrition and provided food to the child. These programs however had limited coverage. Because they required trained staff, sizable budgets, and a fairly large population base, most of them had to be operated at the district level. Without a community base, it was difficult for them to establish an on-going program to support the family and prevent future malnutrition.

A better approach seemed to be a village-level food supplementation program, which either feeds children in a community center or distributes food to women for preparation at home. Based on experience, some guidelines have emerged. These programs should:

- Provide a food that is culturally acceptable and that can be a model for what mothers can prepare at home.
- Screen children for program admission and follow their progress.
- Link up with other community nutrition activities especially those with an education component.

Historically supplementation programs provided food free or at reduced costs and relied on imported ingredients. Recently, to reduce program costs and increase self-sufficiency, more emphasis has been given

to using local foods. The Nepal Sarbottam Pitho project initially distributed imported foods, but evolved to a program using local foods and processing, and home preparation. The Thripasha project in Sri Lanka is gradually replacing the imported ingredients in a centrally processed food mix with local foods.

The debate about whether the food should be fed to the children on-site or taken home is linked to the type of food provided and local practices. Advocates of on-site feeding say that this is the only way to supervise the preparation of the food, to guarantee quality, and to verify consumption. Opponents of on-site feeding argue that it removes the responsibility for the child's recovery from the family and makes the child's rehabilitation seem beyond the family's control. Additionally, the cost and organization required for on-site feeding are beyond the means of most community programs.

One positive example of on-site rehabilitative feeding is the Tamil Nadu (India) nutrition program. After one year of operation, the number of malnourished children has dramatically decreased. Program costs have been kept low using village workers and producing the snack food locally. A management and supervision system was initiated to ensure that the food would only reach those children who did not gain weight adequately. Children who do not gain adequate weight must come to a community nutrition center, where they receive food for 90 days.

One of the major problems cited with take-home food programs is that other family members receive the food, instead of the child. Two proposals have been tried to remedy this. One is to make a food that is only for children: for example, a cereal or biscuit that is considered "baby food" rather than a flour that might be used to stretch the family's supply. The second measure, used primarily in Catholic Relief Services programs in Africa, is a "contract" made with the family of a malnourished child. The family receives food as long as the malnourished child shows improvement at monthly weighing sessions. The terms of the contract are lenient, and the purpose is to ensure that the food is used for the child's rehabilitation. A child who improves, however slowly, will not be dropped from the program until fully rehabilitated.

Food supplementation programs have a role to play in efforts to improve the nutrition of children, but their role must be considered carefully. Because these programs require a large investment of money and time, their coverage and impact can be limited. However, the families of malnourished children may need the incentive of free food or food at subsidized prices. But, mixing curative and preventive activities in the same program can create problems. The message conveyed by the

distribution of free food may be misinterpreted by families. For example, families may think it is better to have a slightly underweight child in order to receive the program food. In other cases, families may believe that the homemade food is inferior to the distributed food, which contains imported ingredients. They may see no reason to begin making the weaning food at home with local ingredients. Additionally, those mothers with adequately nourished children may drop out of the program because they do not qualify for the food, which is an economic aid to their families.

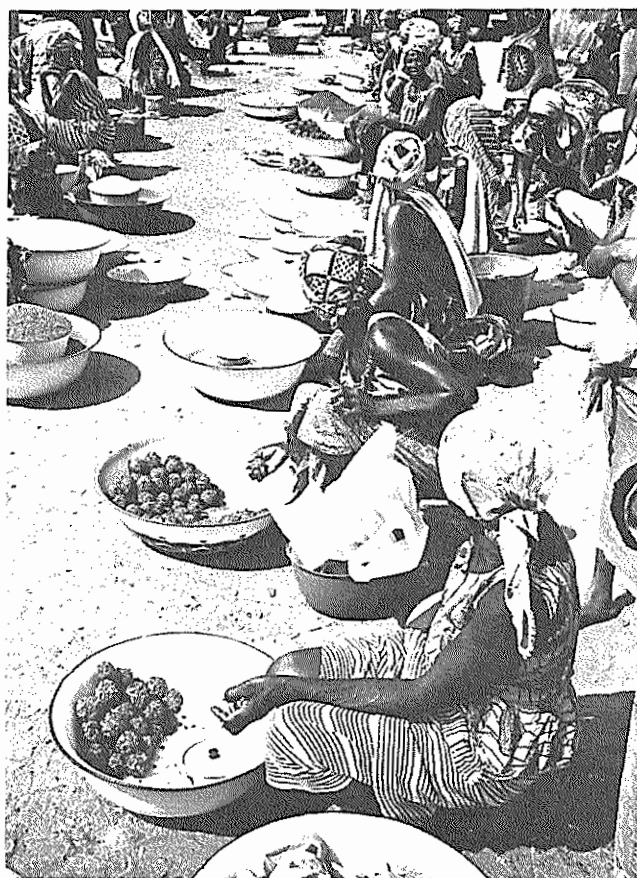
The best program is one that fits food supplementation into an overall strategy of nutrition improvement while keeping it operationally distinct. This integration is important because it ensures continuity of care for children. The Tamil Nadu and Thailand programs are good examples. In both programs, community children participate in either a growth monitoring (Tamil Nadu) or a screening activity (Thailand) that identifies malnourished children or those who have failed to gain weight. As part of the program, all families with children receive some kind of education and advice about how they can improve infant feeding practices at home. The feeding activity is restricted to those with growth problems, and it is not done at the same time as the preventive monitoring and education session. In Tamil Nadu, families with children in the feeding program visit the center each day for food. In Thailand, only families with a malnourished child are eligible to purchase the village processed weaning food at a subsidized rate.

### Income Generating Programs.

Commercial ventures with weaning foods can be carried out on several levels: centrally, using processing equipment and commercial channels or at the district or community level, by either women's groups or individual food vendors.

No matter what scale, any project making weaning foods must be organized as a business and either break even or make a profit. The profit may be in the form of food left over from the day's sales that is shared among project participants. Since these projects are often supervised by nutritionists, the business aspects are not carefully considered, and invariably the goals of income generation and rehabilitating malnourished children become mixed, so that neither is done well.

In many countries, women's groups have organized and undertaken weaning food production to make money for their organization and its members. Women's groups in Tamil Nadu make the nutrition supplement for community nutrition centers and make a small profit. (In 4 days, the women produce enough of



*An improved weaning food could be sold by women vendors.  
Photo: World Bank.*

the supplement, approximately 1000 kg., to last a month.) In Thailand, women's groups are making a weaning food for the community nutrition programs. The food is sold at a subsidized rate to the families of children with second- and third-degree malnutrition. This rate is half the amount charged to other families. To assess program progress and to prevent program failure, the break-even point should be calculated—including how many families paying the full price are needed to cover subsidized families.

When planning a commercial activity, it is important to do some qualitative research among the potential buyers of the product. The following questions should be answered:

- Who can afford to buy a food product for their infants?
- How much can the majority of families afford to pay?
- Why would families buy a food rather than make it? Convenience? Improved quality? Storage? Support of a community activity?
- What kind of food would they like?

Before proceeding with the project, the group should also do some qualitative research among themselves.

Some of the questions that need to be answered include:

- How will the program be administered?
- How will the program operate on a daily basis?
- What are the economic expectations for the program?
- What are the resources available and what are the program constraints?
- What are the initial start-up costs and how much money can the group invest?

The guidance of a person experienced in business management or marketing should be sought at the beginning of any commercial project. With their help the key question can be answered: Can a food suitable and affordable for families be made at a competitive price and produce a profit for the group? To answer this, the recipe for the food must be precisely specified and processing procedure analyzed.

Nonrecurrent (one-time) expenses must be calculated to determine if initial expenses can be reimbursed quickly so that money will be available for operating costs. Then, direct, operational costs must be realistically calculated. Finally, the amount of profit expected can be estimated. At that point, it should be clear if the project is worth undertaking.

Weaning foods are often part of the health system, being distributed or sold at health centers or at community meetings. With some marketing guidance, these products could be marketed commercially, increasing the chances for financial success. If the food is marketed commercially, the group should consider a proside the health service system. The procedure used to design a promotion campaign is described in the communications section.

A review of commercial project shows three areas of continual problems.

**1. Initial and mid-term capital inputs.** Obtaining the initial capital can be problematic if machinery or large supplies of raw materials must be purchased. Government or private funding sources often supply some of the capital, but group members usually must make an investment. This outlay of money with no guarantee of return (unless at a minimal level) means that only women with the required financial resources can participate. However, many income generating programs also have to benefit those women with minimal financial resources. To encourage more participation, a sliding scale has been useful in some projects. Everyone must make a contribution, and the profits are divided according to initial investment. Women might also be able to contribute time/labor to the project rather than money.

Programs often do not set aside enough money to cover unexpected operational requirements, such as machinery repair or a sudden increase in the cost of raw materials. If money has not been saved, the activity

stops until the money can be raised. If this period is prolonged, the project loses momentum and sometimes cannot recapture its market. A contingency fund should be maintained.

**2. Raw materials.** The difficulty of obtaining sufficient quantities of raw materials is often not thoroughly researched, nor viable alternatives contemplated. This is crucial when making a food product. Are the raw ingredients available locally, and, if not, what are the transportation costs? What is the assurance that supplies will continue? Are the raw ingredients available throughout the year? Will the price fluctuate as seasons change? Are there suitable low cost substitutes for products that will not be available or will substitutes be too expensive to use? A reliable supply of raw materials must be ensured before the project begins.

**3. Management and marketing.** It is often erroneously assumed that technical assistance is needed only for formulating the food mix and for processing procedures. Since most groups undertaking these projects have little business experience, training is necessary in management, marketing and financial accounting.

## Vendors.

There is little information about using food vendors as agents to market improved weaning foods. But this option has many advantages as a way to reach peri-urban and urban communities. These families may be too poor to use the normal market channels or beyond the reach of the health care system. Unlike rural families, these families cannot depend on their own agriculture production to make up for limited purchasing power. Limited purchasing power also makes it difficult for these families to buy extra ingredients for their children's food.

Generally, women purchase prepared foods for a number of reasons:

1. They contain one or more ingredients that are either expensive or difficult to obtain on a daily basis;
2. The food takes a long time to prepare;
3. The belief that food from a vendor tastes better or has more prestige than the food cooked at home.

Many Asian and African countries have vendors who travel through communities or set up stalls to sell foods, usually porridges and breads. They are skilled at their business, managing a low overhead operation and making a small profit. They also have a loyal clientele. Instead of competing with them, programs should look at vendors as part of the plan to help improve weaning foods.

Vendors could be recruited to prepare and sell an improved infant food or they could be asked to sell a food that is centrally processed. Both plans would re-



quire the assistance of a nutritionist or food scientist and a marketing expert. Vendors would need information about how to improve the food and why it is better. In addition, they would need assistance in marketing and promoting the food. Since their profit margin is already low, some initial financial support might be required.

#### Summary:

During the weaning period, the risks of diarrheal diseases, malnutrition, and death are greatest. The challenge is to implement support activities that will have an impact on children not only today but in the future. The solution is not easy because there are so many contributing factors to limit adequate childcare and feeding during this period. However, from the experience of many programs, a few elements can be selected as essential for developing successful weaning support activities:

- *A clear understanding of the problem.*

- *Feasible, specific objectives that were designed with program participants, and address the major constraints to improving weaning foods and practices.*

- *A plan to improve weaning practices that uses existing programs to reach the family.*

- *A weaning food that is nutritious, culturally and economically appropriate and can be made at the home or community level.*

- *Capability to design and deliver information to help families improve preparation, feeding and storage practices.*

- *Specific activities to overcome economic and time constraints.*

- *Participation by project families when modifications are made in the program or new components are added. During implementation the community should be consulted as new activities are introduced.*

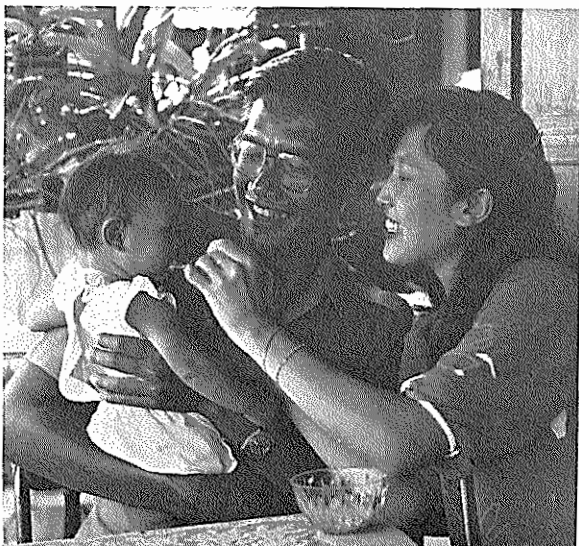
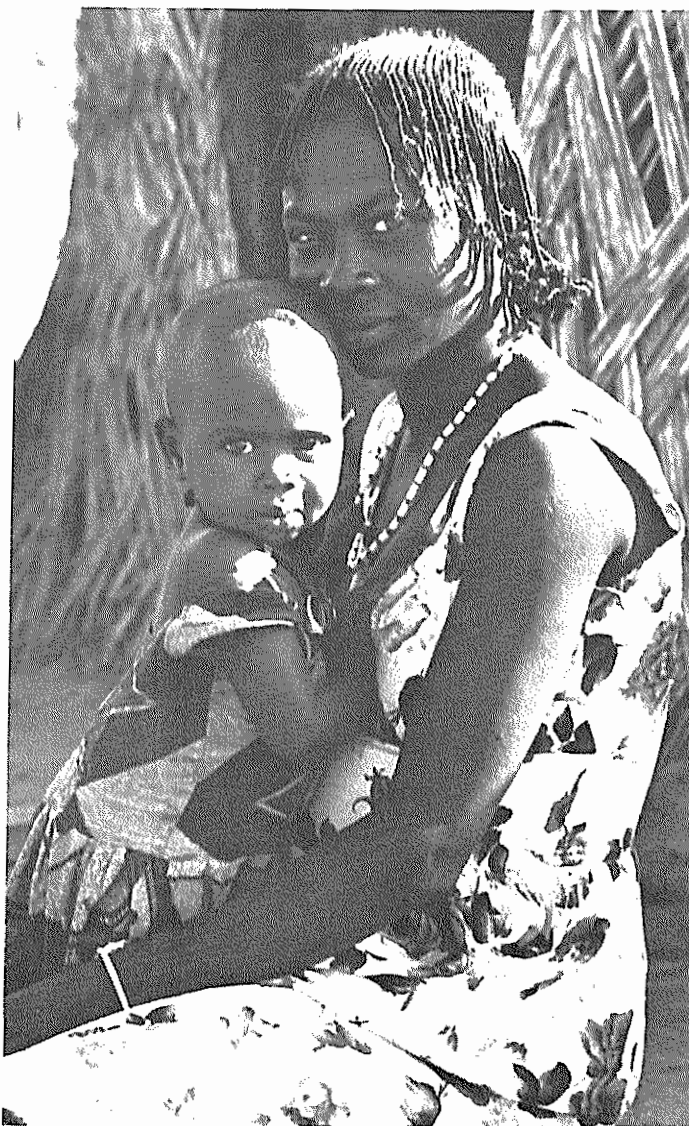
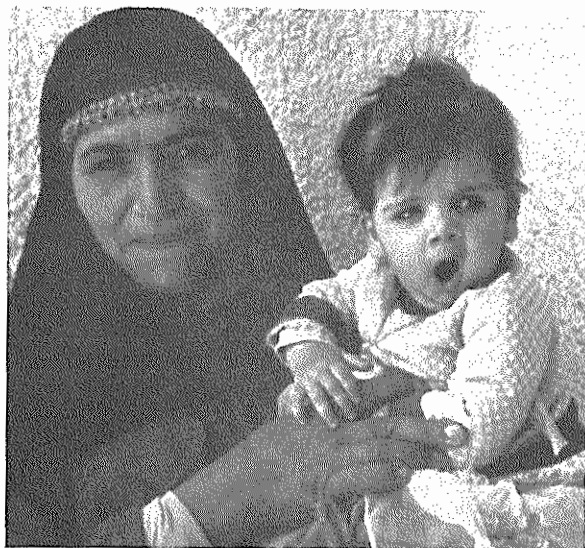


Photo: UNICEF

# Program Summaries

Programs designed specifically to improve weaning practices are difficult to identify. There are, however, numerous programs that include activities to improve weaning practices.

Such programs illustrate a range of interventions and a combination of approaches. Because of the focus in this paper, most of the programs summarized emphasize activities at the home or community level. This is not a comprehensive listing of programs. Selection of programs was hampered by difficulty in acquiring project information from the field; in many cases information was obtained from published sources only. Readers are invited to send information about other programs, particularly those in regions not covered extensively in these summaries, as well as information about programs described here.

## NEPAL: Sarbottam Pitho

The Sarbottam Pitho Weaning Foods Project is part of the community health program of the Shanta Bhawan Hospital in Nepal, where poverty and extreme geographic and agricultural problems cause serious malnutrition among young children. Only about 30 percent of children between the ages of 6 - 72 months achieve normal weight for their age, and 5 - 15 percent suffer from severe malnutrition. Some 50 percent are permanently stunted by the age of 3 years. Protein-energy malnutrition, marasmus, vitamin A deficiency and endemic goiter are all common. The mortality rates of infants and 1 - 4 year old children are very high.

The Sarbottam Pitho Project began as a supplementary feeding program for mothers and preschool children. Food was obtained from the World Food Program. The program was characterized by high costs and severe distribution problems, which weighed heavily on staff time and created confusion and anger among mothers. It also resulted in undesirable dependencies on food aid by the recipients and such indirect negative effects on feeding as termination of breastfeeding at an early age and further exacerbation of nutritional deficiencies among the children.

In 1973, a nutrition survey was conducted to identify appropriate local foods and investigate current infant feeding practices. This survey, which studied Nepalese

children between the ages of 8 - 29 months, showed that all were breastfeeding and that the frequency of feeding was appropriate for the children's ages. But since most children were not consuming enough calories malnutrition was fairly common.

During the survey, the nutrition workers observed that virtually all mothers knew how to prepare a very nutritious and popular traditional snack by roasting and combining a whole pulse, such as soybeans or lentils, with a cereal grain like corn, whole wheat, or rice. For elderly people in the community, a soft food called *sattu* was sometimes prepared by grinding the roasted ingredients into a powder and mixing it with milk or water to make a gruel. Health workers believed it would be possible to make a nutritious weaning food in the same traditional fashion. Mothers could combine home-grown foods, process them with age-old methods, and end up with a superior food at a lower cost.

Local foods were studied to identify combinations supplying optimal levels of protein, calories, vitamins and minerals, according to Indian food value tables. Samples of the most promising combinations were prepared with traditional methods and sent for analysis to the Food Research Laboratory in Kathmandu, the National Institute of Nutrition in Hyderabad, India, and the Central Institute for Nutrition and Food Research in Zeist, the Netherlands.

The laboratory results confirmed that the available cereal grains and pulses could be combined to produce a nutritious weaning food. Since soybeans were the most abundant legume in the area, the combination of two-parts roasted soybeans with one-part roasted wheat and one-part toasted corn provided the highest protein scores. One hundred grams of the food could supply a young child's daily protein need and supplement his traditional diet with 366 additional calories at a very low cost—only 32 paisa (US\$.025) per day in 1975, 37 paisa (US\$.03) in 1982.

## Program Strategies:

- Pretesting: After studying local foods to identify combinations supplying optimal levels of protein, calories, vitamins, and minerals, samples were prepared and sent for laboratory analysis.

- **Production/distribution:** To receive the free milk powder offered by the clinic, mothers initially had to take home-prepared roasted grain flour to the clinic, where the nurse mixed it into the dried milk. At this stage, mothers were given preparation and feeding instructions for making Sarbottam Pitho.

When the dried skim milk supply was exhausted, project personnel taught mothers to enrich their home-made cereal flour by adding roasted soybean flour, thus relieving staff of further food distribution responsibilities and decreasing dependence on imported food commodities.

- Mothers were taught to process and combine whatever ingredients they had on hand to produce a balanced, enriched weaning food, whose digestibility and storage capacities are heightened by roasting and grinding.

*Sarbottam Pitho* is a versatile food that can be drunk with liquids such as milk, eaten as dry flour alone, or used for baking. It is well tolerated by children or adults with mild diarrhea.

- **Education:** Training in the preparation of *Sarbottam Pitho* was integrated into an ongoing education program that included teaching mothers and workers to prepare and administer an ORT recipe adapted to locally available resources. The growth monitoring component, which used circumference tapes, also served as an education tool for mothers and nutrition workers. Color-coded plastic armbands, produced by the government and UNICEF, were used because they are reliable, lightweight, simple to read and interpret by community health workers, low in cost and effective.

Participatory demonstration—learning by doing—was held to be the key to effective behavior change. Teaching aids such as posters, flipcharts and pamphlets were used, with an emphasis on visual aids adapted for the villagers.

Because very few adult Nepalese can read, UNICEF and the National Development Services (NDS) of the Tribhuvan University undertook a study in 1976 to test various methods of pictorial communication among villagers in isolated rural areas. The UNICEF/NDS researchers explored what kind of pictures villagers find easiest to comprehend. Armed with this information, UNICEF, community health program personnel in conjunction with government workers, produced nutrition education materials for use by health workers throughout the country. These materials are now widely distributed by the Nutrition Cell of the Ministry of Health.

- In Nutrition Rehabilitation Centers, mothers of severely malnourished children took part in participatory education activities during a 1 - 2 week period of residence, followed by home visits.

Very little data has been collected to assess the impact of the integrated campaign to reduce malnutrition via *Sarbottam Pitho*, ORT, and color-coded arm circumference tapes, although evaluations do suggest that some positive changes have been associated with these interventions.

In terms of the specific appropriateness of *Sarbottam Pitho*, its ingredients are readily available to the rural mothers and adequate substitutes are also available. Local foods have replaced imported food commodities. Since ingredients can be stored, grinding and roasting preparations need not be daily. Processing a few weeks' supply does not significantly increase mothers' workloads. However, some critics feel that the *Sarbottam Pitho* recipe may be too complicated for multi-purpose village workers to teach effectively, or too difficult for busy mothers to prepare. The Sarbottam Pitho program required a comprehensive education component with workers needed to teach preparation of the formula and broader nutrition concepts. Ideally, workers should also be available for nutrition monitoring and rehabilitation. Evidence appears to show encouraging results from the Sarbottam Pitho program if the weaning foods component is linked with thorough staff training. The lack of government finances suggests that scaling up would be impossible without heavy outside assistance.

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#### GUATEMALA: Incaparina

*Incaparina* is a centrally-processed food developed for weaning age infants and young children in 1958 by the Institute of Nutrition of Central America and Panama (INCAP).

In the initial phase, acceptability tests were run with a group of mothers by a nutritionist. Personnel in the health center were assigned to pay home visits and keep daily records for 3 months on the amount of *Incaparina* eaten by every child in the home. After analyzing the data, this same test was duplicated in selected communities. Since acceptance was high, *Incaparina* was introduced on a national scale, preceded by a publicity cam-

paign. It then became available at local stores.

To reach mothers of preschool children, a broad-based publicity campaign was launched, using posters, newspapers, radio and television commercials, food demonstrations, and group discussions. Demonstrators used flipcharts to describe the properties of the product and prepared a sample of *Incaparina* in gruel form for the audience to taste. A color film illustrated the effects of malnutrition.

The numerous evaluation studies that were undertaken showed increased awareness of the product, with one 6-year study showing a drop in the overall incidence of diseases among preschool children fed *Incaparina* as a food supplement. Another study showed that only 29 percent of the families with a monthly income under US\$20 consumed *Incaparina*, with the percentage rising incrementally with higher incomes. This financial drawback has emerged as the most significant failing. Although *Incaparina* continues to be sold under expanded production, its cost places it beyond the purchasing power of the needy.

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#### PHILIPPINES: Nutri-Pak

Nutri-Pak is an indigenous supplementary feeding program initiated within the context of an extensive national nutrition program. It was established in 1974 with high-level political support. The goals of this government program were to create an organizational infrastructure through a network of nutrition committees; to increase popular awareness of malnutrition, primarily through a child-weighting program; and to articulate a coherent nutrition program for mothers and children, covering five broad areas: food assistance, health protection, food production, family planning/nutrition information, and education.

Nutri-Pak began in 1974 when the staff of a provincial nutrition program set up a production system for converting inexpensive, locally-available protein sources—small shrimp and fish—into finely-ground protein powder, sealed in plastic packets. The packets were sold at well-baby clinics, feeding centers and schools. Mothers were instructed to add the powder to traditional

weaning foods as a seasoning. The project was seen as a way to increase local food self-sufficiency and generate income and employment.

The Nutrition Center of the Philippines (NCP), one of the support bodies of the national program, modified the Nutri-Pak concept by adding rice and oil to the protein powder. Additionally, the target group of the intervention was changed from infants 3 - 6 months old to children 6 - 60 months old. This shift reflected the recognition of breastmilk as the best feeding practice for infants. Nutri-Pak supplemented breastmilk. The age shift also prompted the development of 3 sizes of Nutri-Pak—for infants, for toddlers, and for children 4 - 5. Additional protein sources such as anchovy and mung bean were added and sometimes skim milk, which was supplied by USAID and represented the only non-indigenous ingredient.

With time, a variety of products similar to Nutri-Pak were produced locally. These local initiatives received little central guidance and support, and their experiences were not utilized by the National Nutrition Center.

Because of government awareness of the local activities, a study was commissioned in 1978. The study found that 133 Nutri-Pak processing plants had been established since 1975 although not all were operational. The majority were set up by municipalities in response to earlier government promotion. Of these plants, 107 were equipped with manual grinders, 25 with electric grinders, and 1 had both.

These distribution schemes were discovered: direct distribution to households, through feeding centers, and at designated outlets such as health centers or the plant itself. Common weaknesses shared by most plants included below-capacity production, inadequate planning and management, and deficient bookkeeping. Yet, despite government neglect, a functioning system that was helping to meet local feeding needs had developed independently.

The official Nutri-Pak development differed considerably. It was characterized by ongoing improvements in its production and marketing systems, supported by the cooperative efforts of the Nutrition Center of the Philippines and the Coca-Cola Company, which had lent its expertise to a pilot project and regional plant. Here the packets were sold at government subsidized prices. On the production side, minishrimp and anchovy protein sources were replaced with donated commodities and textured vegetable protein. The three types of Nutri-Pak were reduced to one. However, these innovations were disseminated only to those few plants that had established contact with the NCP.

Three promotional approaches to marketing were tested: face-to-face communication, comic books, and



video cassettes. Equipped with video cassettes, vans called "nutri-buses" visited villages regularly to present televised lessons dramatizing the nutritional needs of infants and Nutri-Pak's role in meeting them.

In an attempt to make clear the evolution from the originally conceived decentralized, community-based approach to more centralized, individually-oriented, controlled concepts like the official Nutri-Pak, the sources suggest both technical and political explanations. On one hand, Nutri-Pak was a low priority project among many, and, on the other, by establishing these nutritional interventions, the Philippine government could preempt a potentially volatile issue—malnutrition—as their own concern, while implying that the problem requires a technical rather than a political solution.

#### Sources:

Ropes, George H., "The Nutri-Pak Experience with an Indigenous Supplementary Feeding Intervention in the Philippines." *Nutrition Policy Implementation Issues and Experience*, edited by Scrimshaw, Nevin, S., and Wallerstein, Mitchell B., Plenum Press, New York and London, 1982.

Roberts, Hugh, "Feeding the Weaning Age Child: Planning and Implementation of Community Level Processing," *Meals for Millions*, 1978.

#### SRI LANKA: Thripocha

The Thripocha Project, which promotes a high protein, fortified food, began in 1972 in collaboration with CARE and at the request of the government. *Thripocha* is a cereal-based weaning food for undernourished infants that can also be given to undernourished preschool children, undernourished children in primary grades, anemic, pregnant and lactating women, and ward patients. *Thripocha* is currently distributed throughout Sri Lanka in a CARE/Ministry of Health Feeding Program that benefits approximately 650,000 targeted recipients.

Originally, the project was involved in repacking and distributing wheat soya blend flour and then corn soya milk donated by the U.S. Government through the PL 480 program. In 1979, a factory was set up to process and package *Thripocha*. The factory is managed on behalf of the Ministry of Health and CARE by the Ceylon Tobacco Company. Local cereals have been increasingly used in the program, with a phased decline since 1981 of imported PL 480 commodities. It is expected that by 1988 a 100 percent indigenous food product will be produced.

*Thripocha* contains wheat-based products such as flour and wheat protein concentrate, defatted soy flour, refined soy oil, vitamins and minerals, a percentage of

pre-cooked local cereal-based flour and soya.

As a weaning food, *Thripocha* can be prepared in various ways: for infants 6 - 12 months old it is best given as a diluted drink by adding boiled water and flavoring if desired. Also, when mothers first introduce soft boiled rice or mashed bananas to their children, *Thripocha* may be mixed in. For children 1 year or older it may also be prepared as a drink or mixed in with other local foods.

To receive *Thripocha* via health, estate and municipal clinics, families must be referred by health personnel. *Thripocha* is distributed through such other outlets as social service and rural development departments and voluntary agencies. Additionally, it is sold at a reasonable price to low-income groups in selected districts on the basis of existing production capacity. *Thripocha* is promoted at bazaars and fairs, interviews are conducted at *Thripocha* retail outlets, and demonstrations using *Thripocha* are conducted for urban and rural development groups and women's groups.

In 1978 and 1979 CARE undertook a lengthy study on consumer acceptance of *Thripocha*. The study consisted of an in-home test and a market test. Evaluation results of the household recipients showed that *Thripocha* was well received and understood and the product characteristics found to be acceptable to consumers. In addition, households divided into 4 income groups were sampled. The concept of *Thripocha* was well accepted in all four income groups, with all but the highest income group preferring the lowest of the three prices tested.

In 1982 an evaluation was undertaken of the *Thripocha* distribution program to preschool children through maternal-child health clinics. The evaluation assessed nutrition impact and performed a cost-effectiveness analysis and found that:

- The program is reaching needy children.
- The package of services provided through the clinics improved nutrition status and "without *Thripocha* the benefit observed would not be found."
- Two important secondary effects were observed: *Thripocha* serves as a strong incentive to ongoing participation in the clinic's services; *Thripocha*, along with government price supports, has stimulated corn and soya production.
- *Thripocha* delivers more nutrient per rupee than its nearest competitor; with regard to protein, it is twice as cost effective.

Furthermore, the evaluators supported continued commercial sales efforts of *Thripocha*, as long as distribution of adequate supplies to the health system is guaranteed.

#### Sources:

Drake, William, *et al*, "Nutrition Programs in Sri Lan-



ka Using Food Aid (An Evaluation of PL 430 Title II Programs)", Community Systems Foundation/US-AID, October, 1982.

#### **THAILAND: Weaning Foods Prepared in Home, Village, and Community**

A nutrition survey undertaken in 1980 showed that 53 percent of Thai infants and preschool children exhibited protein and energy deficiencies. In addition, 37 percent were shown to be suffering from first-degree malnutrition, 14 percent were at second-degree, and 2 percent were at third-degree malnutrition. Thai women especially mothers, were also found to suffer from malnutrition.

This project is part of the government's Fifth National Development Plan (1982-1986), whose goal for nutrition is to eradicate third-degree malnutrition, reduce second- and first-degree protein-energy malnutrition, and improve the nutrition status of infants and preschool children. The four major strategies of the plan are: nutrition surveillance; breastfeeding promotion; nutrition education; and food production, processing and distribution at the community level.

During 1978-1981, a free food was provided nationally, but the food was not produced at the local level. In 1979, 7 recipes for weaning food mixes were scientifically developed and were tested by the Institute of Nutrition, Mahidol University. These foods were low cost, nutritious, and made of cereals, legumes, and oilseeds or nuts that could be easily processed at the village level.

The most recent Development Plan foresees:

- provision of free food packages, produced at the village level, to all third-degree malnourished children;
- feeding at centers for malnourished children by village health volunteers and women's groups.

A nutrition fund was established to develop weaning food recipes that promote food production at the village level to create a demand for weaning foods, and to strengthen the cooperative efforts of the villages.

In general, rural infants are breastfed until 2 or 3 years of age or until the mother becomes pregnant again. The traditional weaning diet in Thailand is very high in carbohydrates and low in fat and protein.

The new weaning foods are based on rice, a staple food, locally available protein sources such as soybeans and mung beans, and ground nuts and sesame to provide fat and protein. The major equipment required for processing is the grinder, whether manual or electric, used to process all ingredients after they are pan roasted.

The weaning foods may be distributed through com-

modity exchange among villagers, through sales, and through government subsidy. They can be distributed at the collecting point or gathering place of villagers, at health centers, schools, homes of village leaders and food processing centers.

Case studies were undertaken at home, village and community levels in Thailand. At the home level several projects showed favorable changes in infant feeding practices, although no emphasis on nutrition education was given. At the village level, food processing centers were set up where mothers would bring the raw ingredients to process the formula. At the community level, small plants were established in districts, with distribution carried out through the primary health care system by the village health communicators.

The UNICEF-assisted nutrition program of Thailand supports the goals of the government's Fifth National Development Plan. This program consists of several activities, including training, nutrition education, promotion of food production and processing, feeding of malnourished children, and nutrition surveillance. Prior to 1979, UNICEF cooperated with only the Ministry of Public Health, but since that time the Ministry of Agriculture and Cooperatives participated in the program.

Indirectly, all parts of this UNICEF program relate to weaning foods; however, several aspects are directed specifically to the weaning age child. Through the nutrition education component the government developed and standardized a nutrition package that includes information on infant food, food for preschool children, and locally-produced infant foods.

Activities to promote food production and processing encouraged farm women's groups in every main village to prepare supplementary foods, with additional preparations undertaken by some satellite villages.

The feeding component of the program supports the Nutrition Division of the Ministry of Public Health and the Institute of Nutrition, Ramathibodi Hospital, in the production of recipes for food. The basic ingredients include rice, high protein seeds, and sesame. Malnourished children are regularly fed this food in group activities in which mothers bring rice and other ingredients and prepare food themselves. Individual households can buy 50 g. bags of the prepared food from village drug banks.

Villagers in 1,523 villages participate in the food preparation and feeding. A system of revolving funds is operated, through which villagers maintain their own cooperatives and sell food packets. Some of the profits are used to purchase more supplies, with the remainder going to shareholders.

The nutrition surveillance aspect employs a simple method based on weight for age, conducted on a monthly basis and recorded on growth charts. Third-

degree malnourished children are referred to the nearest health centers; second-degree children are treated through the feeding program. UNICEF provided weighing scales and growth charts, which are completed by the village health volunteers with the help of mothers. The cover of the chart contains messages on breastfeeding, immunization and child nutrition.

In an effort to monitor child growth and development, over one million children were weighed by April 1982. A national campaign was designed to motivate and create awareness among rural mothers and health personnel, so that they would take necessary surveillance actions at all levels. UNICEF support was given in the design, development, and printing of posters used for promotion. UNICEF is also assisting in the design of an operational nutrition surveillance system.

### Sources

Scrimshaw, Nevin, "Home and Village-Based Weaning Foods in Thailand," *Home and Village Prepared Weaning Foods Project*, Harvard, MIT, Boston, 1982.

Valyasevi, Aree, "Home and Village-Prepared Weaning Foods Project," Prepared for a Workshop on Weaning Foods, MIT, Cambridge, Mass., June 21-24, 1982.

### UPPER VOLTA: Developing Weaning Foods in the Home

Upper Volta is among the poorest countries in the world, with total caloric supply estimated at 15-20 percent below requirements in non-drought years and extreme nutrition problems for preschool children. Nutrition education programs established during the past 20 years have focused on teaching mothers how to cook *bouillie*, a cereal-based weaning food, but these programs have been severely limited by the shortage of middle-level health workers, whose ratio is about 1:1,000 preschoolers.

In 1978, government nutritionists collaborated with USAID and the Harvard Institute for International Development to conduct a small preprogramming study on developing weaning foods in two areas. One of these districts, Yako, was selected because of the health center's apparent success and potential outreach, its village-based focus, the use of village level workers, the employment of a simple, yet efficient means of training and supervision, the minimization of external resources, and the active participation of the community. The 8-year old program has extended the services of a very small number of mid-level personnel by training village workers who are paid by their communities.

Foods, local supplies and buildings used by the pro-

gram are also provided by the communities. Within this program, malnourished children have regularly been identified by vaccination teams and referred to rehabilitation centers. These centers served as field laboratories for developing the low-cost local weaning foods that were used to rehabilitate the infants and whose preparation was taught to mothers in the villages. They also serve as centers for training village level workers. Group nutrition education lessons and weaning food demonstrations are provided once a month to all mothers in participating villages. The "echo" method is used: groups of monitors, who are themselves mothers of young children, meet with their public health nurse supervisor in a central market village to learn and rehearse the month's lesson, which is structured as a question-and-answer session. Each monitor then returns home and repeats the lesson and the cooking demonstration with her own neighborhood mothers. Monitors also provide nutrition education individually to the mothers of weaning age children are responsible for simple screening and referral of severe malnutrition cases, treatment of eye infections, and regular home visits to children recently discharged from a nutrition rehabilitation center.

The second area of the study consisted of a village near the town of Koupele, selected because of the quality of an ongoing Ministry of Rural Development program, the accessibility of the location, and ecological and cultural similarities to the Yako population.

The case study of the two districts examined socio-demography, diet, family meals, nutrition and health status of the sample infants, as well as differences in the design characteristics of interventions in the two districts. It also looked at mothers' knowledge of *bouillie*, practices regarding its preparation and consumption, attitudes, perceptions, and other factors affecting the use of weaning food; and finally, the factors significantly related to nutrition status.

Of the several differences in intervention design characteristics between the Yako and Koupele programs, two are especially significant. At the time of the survey, the Yako villages had participated in the intervention for the previous 4-7 years, whereas the Koupele program was less than 4 years old and had just begun to function effectively.

Another highly critical difference was in the nutrition quality of the recipes for *bouillie* taught in the two locations. Yako mothers consistently stated that they added a variety of protein-and-calorie-rich supplements to their flour porridge, whereas only about 30 percent of mothers in Koupele claimed to add such supplements. The result was that recipes prepared in Yako were on the average of higher nutrition quality; those given in Koupele generally were not adequate.

These design differences are also reflected in the effects of the programs. Project documents state that "it appears reasonable to conclude that the Yako program succeeded in preventing weaning age malnutrition in a significant percentage of infants. The impact of the Koupele home economics program is less clear. Although participation in the Koupele maternal-child health program was associated with significantly better weight/length than nonparticipation, the maternal-child health group still showed an appreciable degree of malnutrition."

A cost-effectiveness analysis done for the Yako district program concludes that monitoring feeding of *bouillie* has prevented deterioration of the nutrition status of weaning age children. The simple primary care and nutrition services in Yako are provided without additional mid-level personnel and at an external cost of only US\$0.29 per year per beneficiary. In addition, the system of employing weaning food monitors who live in the village is much more effective than a system that uses workers who visit the villages.

The greatest unsolved problem that surfaced was the need to establish weaning recipes that minimize cooking time and maternal effort and at the same time provide a nutritionally-adequate food that does not cause infection or displace breastmilk.

## Sources

Harvard Institute for International Development, *Nutrition Intervention in Developing Countries*. Volume IV, Formulated Foods; Oelgeschlager, Gunn & Hain, Cambridge, Mass., 1981.

## PHILIPPINES: Mass Media and Nutrition Education

To test the effectiveness of radio broadcasting in bringing about changes in behavior, attitude and knowledge, the Philippine National Nutrition Council and USAID funded an experimental nutrition education program. Using modern marketing techniques, the program was devised to confront a serious nutrition problem—the failure of infants between 6 and 12 months of age to continue a normal growth pattern. Growth failure occurred because mothers did not provide sufficiently rich foods to supplement breastfeeding after the sixth month. Using radio, the project promoted the enrichment of the traditional weaning food.

Initial interviews were conducted with over 100 families throughout one province to determine feeding practices, knowledge of health and nutrition concepts, family structures, sources of nutrition and health information, and radio listening habits. It was found that nearly all families in the Philippines eat fish and green

vegetables, at least in small amounts, every day, and most have cooking oil in their homes. These ingredients mixed with the staple infant food, rice porridge, could contribute significantly to improved nutrition for infants 6 - 12 months of age.

Six radio scripts were prepared in English with the following objectives:

- To increase the number of women who begin supplemental feeding by the infant's sixth month of age.
- To increase the number of women who add chopped fish, green vegetables, and cooking oil to the supplemental food (*lugaw*).

The messages were translated into Ilonggo and recorded in the studios of a radio station, using actors from a popular soap opera. Approximately 60 mothers were interviewed in their homes to pretest the spots, and modifications were made. The scripts were then recorded with these modifications. Fifteen commercial broadcast stations donated air time, and the spots were played 3 - 4 times daily. Estimated costs for the radio time, had it been purchased, would have been US\$3,000 - \$4,000 per year.

The experiment found that although less than 50 percent of the households had working radios, almost 75 percent of the target households had heard the messages at the end of 12 months. The project was most successful in teaching mothers the value of green vegetables, fish and oil for babies. Before the broadcasts, most mothers believed that babies could not digest oil and that fish would give them worms. Before the campaign, they did not know that green leafy vegetables were healthful for babies. The project evaluation showed that some mothers felt that the ingredients recommended in the messages were not available or were too expensive. The evaluation also suggests that oil manufacturers and distributors might have been encouraged to collaborate with the project by producing and distributing small spoons to measure the oil free of charge. Another study found that the messages would have been more effective if they had recommended that the enriching ingredients be added to plain rice and rice flour as well as to rice porridge.

Because the project was an experiment to test the use of radio for health and nutrition education, there was no collaboration with village workers. This also meant that visual materials for families were not prepared.

Based on project experience, it was concluded that mass media should not try to replace field workers, but be used to support ongoing programs by extending the conventional education program to areas infrequently reached by workers.

## Sources:

Harvard Institute for International Development, *Nu-*

*trition Intervention in Developing Countries*. Volume II, Nutrition Education; Oelgeschlager, Gunn & Hain, Cambridge, Mass., 1981.

Manoff, Richard; Cooke, Thomas; and Romweber, Susan, "Radio Nutrition Education—Using Advertising Techniques to Reach Rural Families: Philippines and Nicaragua," Final Report, December 1977, Manoff International, Inc.

### INDONESIA: Nutrition Communication and Behavior Change Project

Despite national socio-economic gains in the seventies, PCM afflicts more than one-third of Indonesian children under five and is a major cause of infant mortality, estimated at 110 to 150 per 1,000 live births. A nationwide study however found no significant difference in the numbers of children with PCM in households that were classified as "food adequate" and those classified as "food deficient". The study concluded that poor infant feeding practices rather than lack of food was the major cause of PCM. The study also found that about 40% of families in the higher income brackets had deficient protein and calorie intakes, although these families were able to afford sufficient food. The conclusion was that the inadequate diets of both children and adults could be changed by nutrition education.

This project (1977-82) was one component of the Indonesian Nutrition Development Program, funded by the Indonesian government with assistance from the World Bank. The objectives of the project were to alter child feeding practices, to improve nutrition status by a nutrition education intervention alone, and to develop a program that could be used nationwide.

The project developed in stages. During 1977 - 79, efforts focused on training and equipping about 2,000 volunteer village nutrition workers (kaders) and on initiating a child weighing program in each village reaching more than 52,000 children. During 1979 - 81, a communications strategy was developed. This stage began by defining the major nutrition problems for the high-risk populations—pregnant and lactating women, and children under 2 years of age. From existing sources of information, nutrition problems were identified:

- protein-calorie malnutrition in infants 0 - 4 months old (mothers' breastfeeding practices)
- protein-calorie malnutrition in infants 5 - 8 months old (introduction of solid food)
- protein-calorie malnutrition in children 9 - 24 months old (total food quantity)
- infant diarrhea
- undernourishment of pregnant women
- undernourishment of breastfeeding women

- vitamin A deficiency in young children
- goiter\*

Once the major problems were identified, an investigation was undertaken. Families in the project area participated and tried all the proposed practices. Using information from the families, the project set education objectives, designed a strategy, and produced and distributed materials.

### Weaning Food

Weaning food education focused on a home prepared food based on the traditional rice porridge and enriched with local ingredients. This weaning food, called *bubur campur*, was developed during the investigative stage through numerous trials in many homes. Concept testing, an investigative technique used in commercial product development, was used to arrive at an acceptable and nutritious recipe.

During concept testing, investigators asked mothers of weaning age infants to suggest what they could add to their infants' porridge to make it more healthful. In each household, the mother and the investigator developed a recipe for an enriched weaning food. The recipe was based on ingredients the mother had on hand and her preparation method. While the investigator was there, the mother fed the infant the new food and they discussed the baby's response. The investigator asked the mother to try the food, feeding it to the child several times every day, until the investigator returned several days later. Invariably the investigators found that the mothers had modified the recipes to suit their needs and had comments or questions.

This opportunity for "product development"—for trial, adaptation, and retreat—in the home of the mother was an important element of the project methodology.

After numerous trials in many homes, a home prepared weaning food was developed, based on the traditional rice porridge and enriched with local ingredients. Although the ingredients were remarkably similar for all of the villages, the preparation methods varied. The inclusion of a fat source to improve caloric density of the food was the important element, and in order to make this idea palatable to mothers, it had to be presented in an acceptable way. Therefore, the recipe selected for the education materials was tailored to the regional preferences uncovered by the investigation. For example, oil was added to the porridge in one area by frying the *tahu* or *tempe* before it was mashed in the porridge; in another area, a few drops of coconut oil were added to the

\* This topic was dropped because iodized salt was not available in all project areas.

cooked rice; and in another, the mixture of ingredients was cooked in coconut milk.

After this investigation, education objectives were developed for mothers of weaning age children:

- Breastfeed, using both breasts.
- Feed your infant enriched rice porridge 4 times per day. The porridge, *bubur campur*, is made in the following way:

*Java:* 4 tablespoons broken rice, a handful of finely chopped green leaves, and one piece of soybean curd. Cook all these ingredients in a half cup of coconut milk and a half-cup of water.

*South Sumatra:* Take 5 tablespoons of rice from the family pot and mash with fried fish and well-cooked, finely chopped green vegetables.

- Introduce this food to your baby patiently.

These objectives and the information collected during the concept testing phase, helped determine the materials that were developed. Because the network of volunteer nutrition workers was extensive, the media plan involved them. Radio was used to support the volunteers' work. Radio scripts were written in dialogue form with messages that emphasized the correct feeding of children of particular ages. The radio spots on the weaning food stressed the recipe, the food's easy digestibility, and techniques to introduce it to babies. Additionally, special posters, called "Action Posters," were designed for distribution to mothers at weighing sessions. The nutrition workers explained the poster and how to use it. The poster for children 5 - 8 months reminded mothers to continue to breastfeed and to offer them *bubur campur* 4 times per day. Space was provided on the poster for the mother to mark each time she breastfed and fed the porridge to her baby.

Implementation of the communications strategy began in August 1980. First, government officials in the project areas were introduced to the messages and ma-

terials. Then kaders were trained in the specifics of the desired behavior changes and in the use of the Action Posters. The kaders were encouraged to make as many home visits as possible. Radio spots were distributed to stations broadcasting in the project areas. Radio was used to reinforce the Kaders' education activities.

### Evaluation:

The project evaluation was conducted in 1981. A team interviewed 1,000 households (600 households in project areas and 400 in comparison areas).

The positive results supported this nutrition education approach. Women who participated in the program knew significantly more about appropriate feeding practices for young children than did non-program mothers. Additionally, program families were serving more of the recommended foods of high nutrient density than non-program families. These differences in knowledge and practice seem to have positively influenced children's nutrition status. After the age of 5 months, program children grew significantly better on the average than non-program children. By the age of 24 months there was one kilogram of difference between the weights of the two groups. The weaning food element appears to have been the strongest of the campaign. Use of the program's weaning food was highly correlated with good nutrition status.

### Sources:

Manoff International, Inc., Progress Report and Proposed Plan of Work for the Development of Nutrition Education and Training Materials, Nutrition Communication and Behavior Change Component, Indonesian Nutrition Development Project, 1979.

\_\_\_\_\_, Project Description: Nutrition Education and Behavior Change Component, Indonesian Nutrition Development Program, 1982.



# Annotated Bibliography

The following books and materials provide additional information on all aspects of weaning. These particular documents were selected because they:

- discuss technical weaning issues not covered in this paper;
- elaborate and expand on weaning issues already discussed in the paper;
- represent the state-of-the-art on a particular aspect of weaning.

Some of the documents are basic reading for understanding the feeding problems of the weaning-age child. These key documents are indicated with an asterisk (\*). While many other documents could have been included in this list, selectivity was essential. Readers interested in obtaining documents or learning about additional sources of information should write to one of the information centers listed later in this section.

**Beaton, G.H. and H. Ghassemi** "Supplementary Feeding Programs for Young Children in Developing Countries." *American Journal of Clinical Nutrition*, 1982 (Supplement), 35(4), 864-916.

This review of 200 supplementary feeding programs was prepared for UNICEF. Each program was examined for costs, measured benefits, such as weight gain, and secondary effects, such as increased physical activity. Findings showed that food distribution programs for children are expensive for the measured benefit. Programs with a large number of undernourished children were the most cost-effective. Feeding programs had little effect on breastfeeding and weaning practices because programs were unsuccessful in reaching children under one year of age.

**Berggren, Gretchen, G.** "Questions and Answers About Weaning"\* *Food and Nutrition Bulletin*, 1982, 4(1).

A group of nutrition scientists respond to the most frequently asked questions from field staff and planning officers about weaning. The following subject areas are briefly and clearly explained:

- definition and timing of weaning;
- frequency of child feedings;
- general principles about nutrient qualities of weaning foods;
- evaluation of a child's nutrition status;
- distribution of "road to health" (weight for age) cards;
- assessment of nutrition status when the child's age is not accurately known;
- relationship of weaning practice to diarrheal disease and oral rehydration therapy;
- importance of water purity in weaning-food preparation and in reduction of the incidence of diarrhea and malnutrition;
- food storage practices and weaning;

—community adoption and utilization of new weaning foods;

—home/village-processed weaning foods; centrally processed or imported foods;

—income and other socioeconomic factors in malnutrition;

—traditional beliefs and customs that contribute to poor nutrition.

**Black, Robert E et al.** "Longitudinal Studies of Infectious Diseases and Physical Growth of Children in Rural Bangladesh-Weaning Food-Its Role in Transmission of Diarrhoea"\* *Glimpse*, 1982, 4(11-12), 5-7.

Studies in several areas of the world have demonstrated that impaired growth rates of children can be partially explained by the high prevalence of diarrheal diseases. This study shows that contamination of traditional weaning foods by pathogenic micro-organisms is an important source of infectious diarrhea. Two villages in Bangladesh were studied. Breastfeeding is almost universally practiced up to and beyond 24 months of age, and weaning foods are introduced relatively late in scanty amounts. Most weaning foods are selected from items in the adult diet. The study showed that 41 percent of the food fed to weaning-age children contained excessive *E. coli*. Foods prepared for infants were frequently more contaminated than boiled rice. The *E. coli* levels were related to the storage of cooked foods at high temperatures. In specimens containing *E. coli*, the average colony counts of *E. coli* in each type of food were 100 fold greater in foods collected on hot days than in those obtained on relatively cool days. Fifty percent of drinking water specimens also contained *E. coli*, but colony counts were approximately ten fold lower than in food specimens. The proportion of a child's food samples that were contaminated was significantly related to the child's incidence of diarrhea associated with enterotoxigenic *E. coli*. The authors suggest that duration and conditions of storage of weaning foods are the most crucial casual factors.

**Cameron, Margaret and Yngve Hofvander** *Manual of Feeding Infants and Young Children*\* Oxford University, Press, Third Edition, 1983.

This updated manual is intended primarily for health and nutrition professionals in developing countries who have some basic knowledge of nutrition and child health.

The book's main purpose is to provide comprehensive information on home-made weaning foods, using locally available and nutritious staples. Weaning foods are given at a very crucial and precarious period in the development of the child. Information is given on the normal growth of the child, child nutrition needs, and the importance of breastfeeding during early life. A large part of the manual deals with nutrition requirements and foods and their nutritive value.

The manual includes practical recipes for mixes and meals, using local and donated foods; an outline plan for a local edition of the manual; and nutrition education guidelines. It describes simple methods for monitoring growth and screening for malnourished children. Diagnosis, treatment, and prevention of such common diseases in young children as protein-energy malnutrition, anemia, vitamin A deficiency and diarrhea are discussed.

**Caribbean Food and Nutrition Institute "Feeding the Weaning Age Group: Guidelines for the Caribbean."\*** Pan American Health Organization, 1979.

These guidelines resulted from a 1977 Conference of Health Ministers, which was convened to discuss the nutrition problems of weaning-age children in the Caribbean. The document differs from previous approaches to the feeding problems of this age group in its emphasis on family pot feeding and on integrating the 'family pot' approach with different scales of production of manufactured weaning foods such as low-cost extrusion cooking, manual extrusion/frying and manual texturizing. Necessary education and training procedures for improving foods in the family pot are outlined. Planning factors for large-scale manufacture of weaning foods are also given. Evaluation considerations for programs are identified.

This document is useful primarily as a general guide for national-level planners.

**Caribbean Food and Nutrition Institute "A Guide to Feeding the Weaning Age Group in the Caribbean"** Pan American Health Organization, 1982.

This guide is intended for nutritionists, dietitians, physicians, nurses, and other health and education professionals. Its focus is on improving family pot feeding rather than on manufactured weaning foods.

The first section deals with basic nutrition facts and explains the multi-mix principle of meal planning. It outlines in detail how to feed children from approximately 4 months of age until they are eating the regular family diet. The second part presents a number of recipes, all based on foods from the family pot, though some require special preparation. Each recipe has been kitchen tested and its nutritional value calculated. Energy, protein, iron, vitamin A and calcium value is given for each dish, as is the energy concentration.

**Ghosh, Shanti** *The Feeding and Care of Infants and Young Children* Voluntary Health Association of India, (VHAI), 1980.

The purpose of this book is to emphasize that children can be adequately nourished with the common household foods available, provided they are given adequate quantities. The manual was adapted for India, based on the guidelines suggested by Cameron and Hofvander in their *Manual on Feeding Infants and Young Children*. The manual refers to culturally-specific attitudes and behaviors, local technologies, and other India-specific terms as examples to support the main text. While the text concentrates on the nutrition needs of mothers and children and how to meet them, chapters are also included on health and nutrition education, deficiency diseases, infections, and immunizations. The weaning-foods chapter includes discussion of the Indian beliefs in "hot" and "cold" foods and gives specific examples of locally-available foods to give to the growing child.

**Griffiths, Marcia** *Growth Monitoring,\* Primary Health Care Issues Paper*, American Public Health Association, International Health Programs, 1981.

Experience with growth-monitoring projects has shown that they are cost effective, can be implemented by minimally-trained urban and rural health workers, and can significantly improve preventive health care. This paper is an examination of the state-of-the-art of growth monitoring at the community/clinic level in health and nutrition programs. Anthropometric indicators, nutrition status classification systems, measurement tools and record-keeping systems are explained. Practical guidelines for primary health care program planners are presented for program organization, worker training, collection and use of aggregate growth monitoring data, and nutrition education during monitoring sessions. Illustrations and tables support the text.

**Harvard Institute for International Development Nutrition Intervention in Developing Countries (5 Volumes):** 1) Supplementary Feeding; 2) Nutrition Education; 3) Fortification/Formulated Foods; 4) Consumer and Price Subsidies, Agricultural Production, Technical Change, and Nutritional Goals; 5) Integrated Nutrition and Primary Health Care Programs. Oelgeschlager, Gunn, and Hain, 1981.

To help with the complex decision-making process involved in the selection of nutrition interventions, USAID commissioned Harvard University to prepare a series of special studies. These 5 volumes comprise a manual for planners that examines the major types of nutrition programs to confront malnutrition in the preschool child.

The authors have undertaken an assessment of the "state-of-the-art" of nutrition interventions through a review of published and unpublished literature, a survey of nutrition projects in 64 developing countries, interviews with professionals from many disciplines and institutions involved in nutrition programming, and direct field analyses of selected nutrition programs. To facilitate rapid understanding of main points, they begin each subsection of the text with a set of key questions and end with a summary of major points. Due to the limited evaluative data on the programs, the authors view their analyses and suggestions as tentative.

**Jansen, R. and J. M. Harper** "Application of Low-Cost Extrusion Cooking to Weaning Foods in Feeding Programs" *Food and Nutrition*, 1980, 6(1), 2-9 and 6(2), 15-23.

Intermediate technology makes it possible to process low-cost locally-grown food crops into pre-cooked, highly digestible, fortified food supplements. Particular discussion is devoted to the corn-soy blends and corn-soy-non-fat dry milk blends. The article describes the Colorado State University program to introduce low-cost extrusion cookers (LECs) into developing countries for local production of weaning foods. It discusses the various foods, their nutrient contents, and the costs of processing. LEC projects are described in Sri Lanka, Costa Rica, Tanzania, and Guyana, as well as experimental work in Guatemala, Honduras, Korea, India, Indonesia, Philippines, and Thailand. Several commercial applications of LEC technology around the world are also described.

LEC food-blend supplements have high calorie and protein densities, (the best combination seems to be corn-soy in a 70:30 ratio) are low in fiber, and can be fortified to correct any deficiencies in local diet. Colorado State University has set up a center for technology transfer that will help anyone interested. The need for a supply of raw materials, vitamin and

mineral fortifiers, quality control, packaging, storage, marketing, and evaluation are all considered in an LEC project.

**Jelliffe, Derrick B. and E. F. Patrice Jelliffe** *Human Milk in the Modern World* Oxford University Press, 1978.

In the decade preceding the publication of this book, considerable new research emerged about the unique properties of human milk, and the psychophysiology and significance of breastfeeding. This book draws the research together in a comprehensive context. It was written particularly for health professionals and for nutritionists who were taught little about human milk and breastfeeding and for community workers and national planners.

Breastfeeding is examined as a biological and ecological system, principally involving the mother-infant dyad, but also including the rest of the family and the community. In addition to the evolutionary and historical perspectives on human milk, the nutritional biochemistry, the physiology and the immunology, the authors present the results of studies of the social aspects of breastfeeding and comparisons of the role of human milk in traditional societies and in technological urban societies. Chapters are devoted to the world consequences of early weaning and practical programs designed to reverse or at least decelerate this trend.

**Manoff, Richard K.** "Nutrition Education: Lessons Learned"\* *Mothers and Children*, 1982, 2(3).

This article describes some of the key lessons for planning and implementing nutrition education, particularly programs with a communications component.

The author's pragmatic approach to nutrition education clearly reflects his experience. Priorities must be set before action. Planners must determine:

- what must be done, i.e., what most needs to be learned;
- how, given the real and very demanding constraints that accompany attempts to change behavior; and
- who are the most important decision-making authorities, those most likely to affect policies and programs.

A management strategy of prudence over exactness, that is, a prudent appraisal of technical information available, will allow more resources to go to programs rather than to research. Because budgets are always limited, programs should be scaled to available resources. Pilot projects should be planned to include the cost of the national scaling up.

Particular importance is given to messages that are well designed and executed in nutrition education projects and to careful selection of the media to be used. The author emphasizes using both face-to-face communication and mass media.

**Morley, David and Margaret Woodland** *See How They Grow: Monitoring Child Growth for Appropriate Health Care in Developing Countries* MacMillan Tropical Community Health Manual, 1979.

This manual discusses the importance of regular child weighing and the growth chart to improve and promote child health. It is written for doctors, nurses and health workers.

The growth chart is advocated as a simple and inexpensive tool for both preventive and curative care. The practical details of completing and understanding the chart are explained and illustrated. Areas related to understanding malnutrition—breastfeeding and birth interval, weaning foods, and the at-risk child—are discussed.

**Underwood, B. A. and Y. Hofvander** "Appropriate Timing for Complementary Feeding of the Breastfed Infant. A Review."\* *ACTA Paediatrica Scandinavica* (Supplement), 1982, 294.

This report reviews evidence assessing the duration of breastfeeding adequacy, and the advantages and disadvantages of early versus later introduction of solid foods. The initiative for the review came from the Consultative Group on Maternal and Young Child Nutrition, an expert supportive group to the UN/ACC Sub-Committee on Nutrition. The report evaluates the various criteria employed to assess breastfeeding adequacy, reviews current practices and perceptions, and discusses the multiple factors involved when infant growth falters in relation to lactation performance, as well as the hazards of feeding too early or too late, and international data regarding appropriate timing. Energy and protein requirements for infants are presented.

Most of the data reviewed indicate that at 6 months nearly all infants need food in addition to breastmilk in order to maintain normal growth. The review concludes that in general there are no short or long-term advantages in introducing first foods before 4 months. The authors recommend that every effort should focus on the maintenance of breastfeeding and on the timely introduction of nutritionally, economically, and hygienically-appropriate complementary food.

**UNICEF** *The UNICEF Home Gardens Handbook* 1982.

Local food production is frequently voiced as a development objective; this handbook provides the practical information needed to carry it out. Its purpose is to introduce the reader to time-tested systems of family food production and to help program officers and community workers develop appropriate programs for home gardens.

The handbook begins with a general explanation of the home garden, its importance, structure and uses; this is followed by a more detailed set of guidelines for establishing a home garden program, together with practical suggestions for putting it into effect at the village level. Technical information is presented clearly. The handbook is not written as a comprehensive textbook, but as a succinct and readily understandable aid in program design.

**Shack, Kathryn, editor** *Teaching Nutrition in Developing Countries or the Joys of Eating Dark Green Leaves Meals for Millions*, Santa Monica, California, 1977.

Meals for Millions organized a nutrition education workshop in 1977 to bring together people from different disciplines and countries who teach nutrition to villagers. This manual is the outgrowth of that workshop. It was compiled for individuals interested in how to program, communicate, teach, evaluate, and integrate nutrition concepts into existing programs. Program examples are used extensively throughout the text. These topics are discussed:

- A philosophy of education. Paulo Freire's philosophy is recommended and sets the tone.
- An integrated approach to nutrition education.
- Ideas for strengthening nutrition education programs, including nutrition rehabilitation centers and training of auxiliaries.
- Mass media and other tools for nutrition education.
- Evaluation of nutrition education programs and a summary of evaluation techniques.

**World Health Organization Guidelines for Training Community Health Workers in Nutrition WHO Offset Publication No. 59, Geneva, 1981.**

This manual was designed primarily for trainers of community health workers. It is also intended to support supervisors in their on-the-job training of community health workers, to aid these trained workers afterwards as a reference guide, and to give technical information to workers in nutrition-related areas of community work. Adopting a task-oriented approach, each chapter is organized according to learning objectives of that particular subject area, training content, and exercises for trainees, such as role-playing, community studies, interviewing, and visits to nutrition units. Charts, illustrations, tables and other visuals support the text.

The section on diets for young children is designed to enable the trainee to learn:

- how mothers feed their children and what their beliefs are about the various foods;
- what foods available locally are suitable to feed to children;
- how the availability and prices of foods vary with the different seasons;
- how to prepare and mix local foods so they can be a suitable diet for young children;
- how to feed young children with an appropriate diet and know when, how often, and how much they should eat;
- how to give feeding advice convincingly to parents.

Examples of the training tasks are: preparing and mixing local foods for children of various age groups; how, when and how often to feed; and teaching and convincing mothers about correct feeding. Among the exercises suggested are observation of mothers feeding their young children; a group exercise in

which health workers and mothers together prepare a meal for about 10 children of weaning age; and discussions with mothers to discover problems in feeding and food storage.

Three tables provide summary information on common teaching aids, common teaching methods, and common methods for collecting information.

**World Health Organization *Studying Weaning: A Guide for Workers in Health, Welfare, and Development Programmes.* \* First Draft, World Health Organization, 1983.**

In 1980 the Nutrition Unit of WHO asked the Department of Human Nutrition at the London School of Hygiene and Tropical Medicine to develop a manual to help workers in developing countries study the weaning process. This first draft is a thorough, lengthy but useful description of the complex nutrition topic of how to study weaning practices. The report is not designed to explain the programmatic application of the information gathered. Its academic-like length and comprehensiveness are offset in the reading by a jargon-free writing style and information that recognizes the reality of its readers in the field. The guide has been field-tested.

The authors prepare readers for activities in data gathering by describing the weaning process as it occurs in varying environments. They describe a method for selecting the information needed to analyze weaning practices. The remainder of the guide focuses on the undertaking of careful descriptive rather than in-depth studies. The questions to be asked in gathering the needed information are laid out. Some examples are: When is weaning started? When does weaning end? What types of food are given to the weaning age child? How often? How are weaning foods prepared?

The final sections explain how to process the data collected and how to organize and plan a study.

# Resources for Additional Information

This section highlights organizations that can provide additional information and materials on weaning and weaning foods. In addition, a number of periodicals and journals are listed that regularly feature weaning issues. Also included are some periodicals that are specific to a region or country.

The resources listed are primarily international in scope and are set up to respond promptly to information requests. However, it is important not to overlook sources of information in-country. While it is not possible to list all of these sources here, it is recommended that readers communicate with local institutions and organizations such as: medical and nursing schools, nutrition institutes, the local offices of multilateral and bilateral organizations, and non-governmental organizations working with nutrition or child feeding projects.

## 1. Information Centers

### **Caribbean Food and Nutrition Institute (CFNI)**

P.O. Box 140, Mona, Kingston 7, Jamaica.

CFNI is a Pan American Health Organization/World Health Organization Center. Its purpose is to improve the food and nutrition situation in the 17 member countries in the Caribbean. CFNI publishes *Cajanus*, a quarterly bulletin, maintains a library, and produces and distributes education materials on infant feeding issues. In recent years, CFNI has focused particular attention on the weaning age child and has published guidelines on this subject.

### **Clearinghouse on Infant Feeding and Maternal Nutrition**

American Public Health Association, 1015 15th Street, N.W., Washington, D.C. 20005, U.S.A.

This is an international center for information and materials on all aspects of infant feeding and maternal nutrition. The collection includes information on programs and policies as well as on current research. In response to information requests, the clearinghouse can provide bibliographies, documents and referrals. A regional center on infant feeding and maternal nutrition has been established at INCAP (The Institute of Nutrition of Central America and Panama). Their collection emphasizes Spanish-language materials specific to the region. The clearinghouse publishes *Mothers and Children*, a bulletin available in English, French, and Spanish language editions.

### **International Children's Center**

Chateau de Longchamp, Bois De Boulogne, F-75016 Paris, France.

The purpose of this center is to encourage the study of all problems concerning childhood and the training and education of personnel involved in work with children, with emphasis on those in developing countries. The center publishes the peri-

odical *Children in the Tropics*, in English, French, and Spanish, as well as occasional annotated bibliographies. It maintains a library and responds to information requests, and where possible will provide copies of the documents cited in their bibliographies. The Center recently has published a series of technical reviews, some of which focus on infant feeding. Each technical review covers the topic for different target audiences—health professionals, policymakers, media, and families.

### **League for International Food Education (LIFE)**

915 15th Street, N.W., Washington, DC 20005, U.S.A.

LIFE represents a consortium of professional societies in nutrition, food science, chemistry, agricultural engineering, and agronomy. Its purpose is to disseminate information on nutrition, food science, and food technology information through a newsletter, technical inquiry service, short-term consultants, and workshops.

*The following multilateral organizations maintain information centers, publish journals and newsletters, and distribute materials. All of them have materials on the weaning-age child.*

### **UNICEF**

866 United Nations Plaza, New York, N.Y. 10017, U.S.A.

### **WORLD HEALTH ORGANIZATION (WHO)**

Nutrition Unit, 1211 Geneva 27, Switzerland.

### **Food and Agriculture Organization (FAO)**

Via delle Terme de Caracalla, Room 00100, Italy.

### **UNESCO**

Division of Science, Technical and Vocational Education, 7 Place de Fontenoy, 75700 Paris, France.

## 2. Sources of Materials

### **Caribbean Food and Nutrition Institute (CFNI)**

P.O. Box 140, Mona, Kingston, 7, Jamaica

CFNI has developed for distribution a number of materials specifically on infant feeding and weaning. Among these are flipcharts, posters, and slide sets. A catalog is available.

### **Appropriate Health Resources and Technologies Action Group (AHRTAG)**

85 Marylebone High Street, London W1M 3DE England, U.K.

AHRTAG publishes the newsletter *Diarrhea Dialogue*, available in English, French, Spanish, and Arabic and has also published a number of manuals.



**Hesperian Foundation**

P.O. Box 1692, Palo Alto, California 94302, U.S.A.

The Hesperian Foundation publishes and distributes *Where There is No Doctor* and *Helping Health Workers Learn*. Recently, they have begun preparing and distributing slide sets. A number of them are relevant to weaning issues. A catalog is available.

**Teaching Aids at Low Cost (TALC)**

Institute of Child Health, 30 Guilford Street, London WC1N 1EH, U.K.

TALC is an important source of slide sets, flannelgraphs and books on nutrition and child health. The materials are designed for use in developing countries and are available at cost. The distribution of slide sets is a major activity. Each slide set comes with a script as well as a question guide to be used for discussion. A catalog is available.

**Voluntary Health Association of India (VHAI)**

C-14 Community Center, Sardarjung Development Area, New Delhi 11016, India.

VHAI publishes a newsletter called *Health for the Millions* and distributes pamphlets, books, and slide sets at cost. A number of their publications are specially adapted for India and are available in local languages as well as English. A catalog is available.

**World Neighbors**

5115 North Portland Avenue, Oklahoma City, Oklahoma 73112, U.S.A.

World Neighbors has prepared a number of overseas development materials including filmstrips, flipcharts, and booklets. Many of the filmstrips have been adapted for different regions of the world and are available in other languages. A catalog is available.

**Bureau of Study and Research for the Promotion of Health**

B.P. 1977, Kangu, Mayombe, Zaire

The Bureau has prepared a number of posters, flipcharts brochures, and manuals on nutrition topics. Materials are available in French, Portuguese, and English.

**3. Periodicals and Newsletters****Cajanus**

*Available from:* Caribbean Food and Nutrition Institute, P.O. Box 140, Kingston 7, Jamaica, English; quarterly; free to developing countries. Others US\$12.00 per year.

This publication frequently covers issues relevant to the weaning-age child. The emphasis is on practical applications with particular focus on the Caribbean region. Recent issues highlighted the weaning diet, weaning problems in the Caribbean, and preparation of weaning foods.

**Mothers and Children**

Bulletin on Infant Feeding and Maternal Nutrition.

*Available from:* American Public Health Association, 1015 15th Street, N.W., Washington, D.C. 20005, U.S.A., English, French, Spanish; 3 issues a year; free to developing countries. Others US\$5.00 per volume of 3 issues.

This bulletin regularly features articles on weaning and covers both program and technical issues. Recent issues have featured articles on weaning programs in Nepal and Pakistan, reviews of new infant feeding publications, and a series of technical questions and answers about weaning.

**Journal of Tropical Pediatrics**

*Available from:* Journal Subscription Department, Oxford University Press, Walton Street, Oxford DX2 6DP, U.S., English; bimonthly; US\$76.00 per year.

This journal covers all aspects of child health and nutrition. Most of the articles report the results of clinical and community research, as well as programs.

**Food and Nutrition Bulletin**

*Available from:* United Nations University, Torii Seimei Building, 15-1, Shibuya 2-chome, Shibuya-ku, Tokyo 150, Japan, English; quarterly; US\$12.00 per year.

This journal is published quarterly by the United Nations University in collaboration with the United Nations ACC Subcommittee on Nutrition. The journal covers primarily research and technical issues and regularly contains articles on weaning. Recent issues contained articles on formulating weaning foods, weaning practices in Egypt, and diarrhea and the weaning-age child.

**Regional Periodicals and Newsletters****ASIA****Future**

(Development Perspectives on Children)

*Available from:* Future, UNICEF House, 73 Lodi Estate, New Delhi 110003, India (English; quarterly; Asia/Africa \$9.00 per year, Europe \$11.00 per year, US\$13.00 per year.)

**Children: Development Trends in Pakistan**

*Available from:* UNICEF, P.O. Box 1053, Islamabad, Pakistan (English; quarterly \$6.00 per year.)

**WEST AFRICA****Famille et Developpement**

66 Boulevard de la Republique, B.P. 11007, C.D. Annexe, Dakar, Senegal (French; quarterly, \$15.00 per year.)

**CENTRAL AMERICA****Suplemento Sobre Nutricion**

*Materno-Infantil, Lactancia y Destete*

*Available from:* INCAP, Apartado Postal 1188, Guatemala, Guatemala, C.A. (Spanish, 3 issues a year.)

# Appendix A

## INDONESIAN QUESTION GUIDE AND DIETARY RECALL.\*

The question guide should be tailored to the needs of each program and the special characteristics of the population. The advantage of a question guide over a precoded questionnaire is that it gives the respondents an opportunity to discuss their experiences and the interviewer the flexibility to pursue responses. Fresh insights are obtained from this format, and current patterns are defined more precisely. Resistances to adopting new practices are highlighted, and the ways to overcome them enumerated; both findings are critical for effective program development.

This appendix contains the question guide used by the Indonesia team for the interviews described in Chapter 3. Five types of information must be collected to make meaningful suggestions about dietary changes:

1. **Basic socioeconomic indicators**, such as degree of urbanization, occupation of the mother and/or father, the family's capacity to cultivate its own food, approximate food expenditure, and the literacy level or years of formal schooling of the mother. Most of the above indicators have been associated with the nutrition status of children. To ensure that program recommendations are feasible for those who need them most, it is critical to know the characteristics of the population to know, for example, what women with a few years of schooling are doing and how they might modify current practices.

2. **The child's nutrition status**. In Indonesia only malnourished children were sampled, but if both well and malnourished children are targeted, their needs can be contrasted. Some suggestions for appropriate dietary changes could come from the homes of well-nourished children. In a small sample, however, preference should be given to those with the problem the program is trying to correct.

3. **The child's diet**, both the foods consumed and the general adequacy when compared to protein and calorie requirements. The easiest kind of dietary recall is one that records foods and the amounts eaten by the child in the past 24 hours. In addition to foods eaten, breastmilk consumption, whether on demand or on a schedule, should be noted. After recording all the foods eaten, the person who feeds the child should be asked if the day was typical for the child, and if not, why. The diets of children who did not eat normally should be examined separately to determine feeding patterns during illness or unusual situations.

If dietary data are translated into nutrient intake, it is easier to make specific recommendations about how the diet can be improved because the gap between nutrient intake and the requirement helps target recommendations to the problem areas. A precoded recall form where the nutrient content of a serving size of food has been calculated and coded can be used. This form made by the Indonesia team was used for recording dietary information on both women and children. If

only children's diets are recorded, the task of precoding a form is not time consuming because young children's diets are restricted to a few foods and preparation practices are uncomplicated. The task of precoding is further simplified if only a few nutrients are calculated. For example, in Indonesia the recall form only facilitated the analysis of the diet for protein, calories, and vitamin A.

4. **Feeding practices that are beneficial and detrimental to child nutrition**. This is where emphasis should be placed in the interview. The basic questions about weaning practices that are included in Section II (for children 4-8 months) offer an idea of what can be asked, but local ethnographic or breastfeeding studies may provide some ideas for particularly crucial lines of questioning or irrelevant questions that should be avoided. Questions about breastfeeding or the use of breast milk substitutes should not be forgotten, since they influence the weaning diet.

Reasons for answers to the above questions should be sought because many people have been exposed to some kind of nutrition information and often respond with ideas they believe the investigators want to hear rather than their own.

5. **Changes in current practices**. Some recommended changes can actually be tried. But often just by asking if a woman would be willing to try something, or by asking her what she would think of another woman who followed a particular practice, one can determine the acceptability and the conditions under which a practice might be changed. If trials of a new practice can be carried out, women will have a chance to adapt the recommendation to their own patterns, helping shape the advice rather than simply accepting or rejecting it.

The interview in Indonesia allowed for a one week period during which women tried one or two new modified practices.

### QUESTION GUIDE: EXAMPLES FOR WEANING AGE CHILDREN

#### Section I: General Household Information

- A. Name of Parent: \_\_\_\_\_  
People Present during Interview: \_\_\_\_\_  
(People responding to questions)
- B. Mother's Age: \_\_\_\_\_  
Pregnant \_\_\_\_\_ Months  
Lactating \_\_\_\_\_

\*This question guide was developed by the staff of the Nutrition Communication and Behavior Change Project from the Health Department of Indonesia and a team from Manoff International Inc., communications advisors to the project. The dietary recall form which was part of the question guide was designed by Marcia Griffiths, Manoff International Inc. and Dunanty Doloksaribu, Health Department of Indonesia, with assistance from Marian Zeitlin, consultant to Manoff International Inc.

- C. Child's Age: \_\_\_\_\_ Months  
 Is the child weighed every month: ☐ Yes ☐ No  
 If not, why?  
 Weight of the child \_\_\_\_\_ kg.  
 Nutritional status:  
☐ Normal  
☐ Mild malnutrition  
☐ Moderate malnutrition  
☐ Severe malnutrition  
 Is the weight chart correct? ☐ Yes ☐ No  
 If it is not correct, why?
- D. What is the occupation of adults in the house:  
 Father:  
 Mother:  
 What is the approximate income of the family per day?  
☐ 200 Rupiah  
☐ 200-300  
☐ 400-600  
☐ 700-900  
☐ 1,000  
 Who takes care of the child during the day?  
 If the mother has to go out, who cares for the child?
- E. Does the family own a radio? ☐ Yes ☐ No  
 Does the radio work? ☐ Yes ☐ No  
 (If they don't own a radio, do they listen to a neighbor's or other radio? ☐ Yes ☐ No  
 How many times a week do they listen? \_\_\_\_\_ Which days?  
 Which are their favorite programs?  
 Have they ever heard anything about how to care for children  
 from the radio?  
 What, specifically?  
 Which program?
- F. Who can read in the family? Which languages?  
☐ Grandfather ☐ Indonesian ☐ Javanese  
☐ Grandmother ☐ ☐  
☐ Mother ☐ ☐  
☐ Father ☐ ☐  
☐ Other Children ☐ ☐  
☐ Other ☐ ☐  
 Is there any reading material in the house? What?

## Section II: For Children 4-8 Months

- A. How does the child look to you?  
 Does the mother think the child is healthy? If no, why?  
 If yes, why?
- B. Is the mother breastfeeding the child?  
 If yes, how frequently?  
 Does she use both breasts or only the left breast?  
 Are there any problems?  
 Is she also giving the child a milk supplement? (Powdered, canned)  
 If yes, why? Who recommended this?  
 (The following questions are optional)  
 Where does she get the milk? Kind? Cost?  
 How does she mix the milk? Will she show you?  
 Are the amounts correct? How often does she feed it to her baby?  
 How long does one package last?

Can the mother understand the instructions that come with the milk?

How does she feed the child the milk? In a bottle, cup, mixed with food?

What special practices does she have for keeping the bottle or other utensils clean?

Does she use boiled water? Can you see the boiled water?

If the mother is not breastfeeding the child, why not?

What does she give the child?

If she gives powdered milk, ask her the questions from above about powdered milk.

What else does she give? How does she prepare it?

Is it well tolerated by the baby?

- C. Has any food been given to the child?

Take the food recall. Was this a normal day for the child?

Are there other foods frequently given to the child? Which ones? How frequently?

If the child has not received food:

When will the mother begin to feed the child? Why does she wait? Why does she feel she cannot feed her child now?

Does she feel there are some special foods for very young children?

Does she feel there are some foods that should not be fed to children the same age as her child?

Does the mother think that any food which is mashed would be good for the child? (Mashed banana, mashed tahu, mashed rice, mashed sweet potato, mashed papaya, cooked mashed spinach . . . )  
 If not, why?

Does the mother have any ideas about what foods are "smooth", "soft", and "hard"?

If the mother does give foods:

At what age did she begin? Why does she think it is important to give the child food?

What foods are suitable for her child?

What foods are not suitable for her child?

Do the foods she feeds him/her contain anything special for young children? What properties do these foods have? (Are they soft, smooth, nutritious, thick, thin, do they make the child smart, etc. . . . )

Are the foods well tolerated by her child? Is there any vomiting or diarrhea? Is vomiting confused with spitting food out?

Does the mother feed the child before or after breastfeeding?

How many times a day is the child fed?

How are the foods prepared? (Boiled, with coconut milk, fried, etc.)

Are the foods bought or does the mother cook?

Are the foods cooked one time/day or each time the child wants to eat? Are the foods the same family foods or cooked specially for the child? What is the family meal pattern: number of times food is prepared, number of times food is eaten, snacking? Does the mother think that any food which is mashed would be good for the child? (Mashed: banana, tahu, rice, sweet potato, papaya, cooked bayam) If not, why?

Does the mother have any idea about what foods are "smooth", "soft" and "hard"?

- D. Based on the food recall, select one or two recommendations from the list of advice for mothers.

One recommendation may be for the mother to make an enriched, mixed food for her child. In this case prepare the food the first time with her. When making the food, let the mother do the cooking. Watch how she does things, how she interprets your words. If you say 'small piece', what does that mean to her?

Does the mother have the ingredients in her house? If no, can she obtain them without difficulty?

How much will the recipe cost the mother to make?

What is in the mother's kitchen? Does she have all the utensils to make the recipe? If not, what is missing? Can something else be substituted?

Make the food: How much time does it take?

What are the mother's reactions at each step?

Does she understand your instructions?

Does she think it is easy or difficult?

If the mother cooks the food in the morning, how long does she think it can be kept before spoiling?

If a grandmother or older child usually cares for the child can they make this? Ask the mother to explain the recipe to them. Do they understand?

Does the mother explain well? What does she leave out?

Or what does she alter?

What are the reactions to the food? Does the mother like it?

Does the child like it?

Will the mother make the food again? Everyday?

If no, why?

### Section III: Follow-Up for Children 4-8 Months

- A. How many days later?

Advice to be checked:

- B. Has the mother tried any of the recommendations?

Which ones: If she has made a food which you recommended, is there any for you to see?

What does she like about the advice?

Has she altered the advice in any way?

Is the child eating better? Do another recall for the child.

Does the mother notice any differences in the appearance or behavior of her child? What?

Would she tell her neighbors about the advice? What would she say?

### Advice for Mothers With Children 4-8 Months

Depending on the outcome of the food recall discuss these practices with the mother to see if she will try one or more for a week.

#### 1) If the child is not receiving food

- a) Food should slowly be introduced because breast milk is not enough for the child of this age. (Have the mother try two tablespoons (6 teaspoons) two-three times/day.) The mother needs patience while her child learns to swallow. The normal reaction will be for the child to push the food back out, but if the food is

placed into the child's mouth, some will be swallowed and the child will learn this motion with the tongue.

#### b) Good first food

Begin with a porridge but one which is mixed—the staple food, protein food and green, leafy vegetables.

*This can be made in several ways:*

- (1) 3 heaping tbs white rice flour  
1½ tbs finely chopped spinach (approximately 5 leaves)  
½ piece mashed tahu  
½ cup coconut milk + water  
Put ingredients into boiling water or coconut milk. Stir constantly until mixture is thick and rice is cooked, or for about 15 minutes.
- (2) 3 tbs finely broken white rice  
3 tbs finely chopped spinach (approximately 10 leaves)  
1 medium size piece of tempe or tahu, finely chopped (in South Sumatra: flaked fish)  
½ cup coconut milk  
or ½ cup water + 2-3 drops oil  
Into boiling water or coconut milk, add rice and tempe and cook for 12 minutes or until done then add spinach and tahu (if using tahu). Cook until rice is soft or for 25 minutes.
- (3) If the mother seems unable to cook a special food for the baby, have her give mashed rice and tahu to the baby. She should take some rice while it is hot from the family rice pot and mash it with a spoon with some tahu which has been boiled for the family. This works well if done while the rice is hot.

#### 2) The child is receiving food but lacks calories:

- a) The food the child receives should be fed to him/her 4-5 times/day.
- b) If the child's diet is very low in calories, feed more at each feeding and feed more frequently.
- c) Try new foods which have a lot of calories. Example: avocados, mashed hot rice with red sugar, mashed rice with yellow banana. Add oil to the porridge, or cook the porridge in coconut milk.

#### 3) The child is receiving food but lacks protein

- a) The child should receive a protein food mixed with the main food (a rice based porridge) or on the side. Tahu is good because it is soft and easy to mash. The tahu can be slightly boiled, separately or with the adults' food, and then prepared for the child. It can be cooked separately with the porridge, or mashed directly into hot rice taken from the family pot.
- b) If tahu is not available, tempe can be used but it should be chopped finely and cooked thoroughly until the beans are soft.
- c) If mung bean flour is available this is an excellent addition to the porridge because it helps to balance the protein and keeps a soft consistency.

4) **The child is receiving food but lacks vitamin A**

- a) Green vegetables can be chopped extremely fine (Spinach is particularly good because it has less fiber than other leaves), and added to the *jenang* or *bubur*. (Spinach will color it green, so ask the mother about her reaction to this.)
- b) Mashed ripe papaya and dark yellow bananas can also be added to the diet.

5) **The child is receiving food but is low in all nutrients**

- a) Recommend that the mother make a mixed porridge at least 2 times/day for her child feeding it about 4 times/day in addition to the food the child already receives. For the recipes see suggestion 1(b).

**RAPID ASSESSMENT TOOL FOR DIETARY ADEQUACY: THE INDONESIA PRECODED 24-HOUR FOOD RECALL \***

To develop feasible dietary recommendations for this education program, it was critical to ensure that the recommendations addressed the most urgent nutrition problems of pregnant and nursing women and young children in rural Indonesia. To do this, it was necessary to explore dietary patterns—what foods were eaten and with what frequency—and translate them to nutrient values so the diet could be measured against requirements. The challenge for this project was to adapt the traditional 24-hour food recall instrument to one that could be used by non-nutritionists in the home, not only to record the foods eaten but to analyze the diet for nutrient adequacy.

The result was a form listing all possible food selections, the smallest serving size commonly used, and the quantity of calories, protein, and vitamin A in one ready-to-eat serving size. At the end of the form is a table where the nutrient requirements are listed for different ages and physiological states, allowing the investigator to compare the totals from the diet just recorded with the person's requirements. (Portions of the precoded recall form are reproduced on page .)

Nutrition expertise is not needed to complete the form. The nutrient calculations were made ahead. The quantity of nutrients in a serving size were represented by symbols.

For example:

- The length of a box following the food represents the amount of Kcal. in one serving size (1 inch = 100 Kcal.).
- An asterisk represents the amount of protein (1\* = 1.15 g. protein).
- "A" represents the amount of vitamin A (1A = 150 IU vitamin A).

The instructions for completing the recall using these symbols follow.

\*For a sample copy of a precoded food recall form write: Manoff International, Inc., 1787 Columbia Road, N.W., Washington, D.C. 20009 U.S.A.

The instrument was rigorously pretested. The one major change made after pretesting was the introduction of a ruler to total the calories. Since the total cannot be obtained by simply adding boxes but by adding the lengths of the boxes, it was difficult to estimate total length without a ruler that could be marked in a cumulative fashion for each food. The number of inches on the ruler when all foods had been marked, translated directly into calories.

The form proved satisfactory. Totals from this method were highly correlated with hand calculations; a child's nutritional status was correlated with nutrient intake measured by this method; and the form could be completed and analyzed in approximately 15 minutes—less if the recall was for a young child.

**DIETARY RECALL INSTRUMENT \***

**Food Recall Instructions**

- 1) Note on the form the personal information about the child or woman for whom the recall is being recorded.
- 2) Proceed with the respondent, recalling each food which was consumed by the woman or child during the previous day. Ask hour by hour what was eaten. As each food is mentioned find out:

A) the ingredients

Example: Rice porridge—was it cooked in coconut milk?  
was sugar added?

B) the method of preparation

Example: Tempe—was it fried or boiled?

Note: Food items in the form which indicate that they are fried, already have the fat calculated. If fried does not follow the name of the food, the fat must be noted separately by teaspoon and recorded in the appropriate space on the form.

C) the approximate amount consumed, not the amount which was served.

- 3) In addition to the main foods consumed during the day ask about drink and snack food (anything eaten between meals). Note that the amount of fluid consumed is particularly important for lactating women and should be noted even if it is just water.

- 4) For each food mentioned, mark off one box for each serving of the indicated size that was consumed in the space to the right of the name of the food.

Example If the child ate ½ glass of white rice, one box would be marked since ½ glass is the indicated serving size.

If the mother ate 1 yellow banana, two boxes would be marked since the indicated serving size is ½ a banana.

- 5) If the name and serving size of the food is *not* followed by an \* or A then cross off the boxes carefully if they are large, or black them in if they are small. If the food has an \* or A to the right of the serving size, mark the individual boxes with the appropriate number of \*s or A's.

Example: If the child ate ½ glass of rice, one box would be marked in the following way:

*		
---	--	--



If the mother ate 1 yellow banana, two boxes would be marked as follows:

A	A			
---	---	--	--	--

Where the space to the right of rice flour porridge indicates 25 and the space for green leaves indicates 40, that means it will take 25 tablespoons of rice flour porridge or 40 tablespoons of cooked leaves to fill the space indicated. Mark the number of tablespoons consumed in the following way.

Porridge:	25	25	25
Leaves:	40	40	40

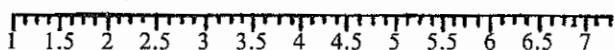
- 6) If the child is being breast fed ask if the child receives milk day and night, on demand. If this is the case, fill in the boxes opposite the appropriate age for the child. Note: On the first space for breastfeeding on demand, the box is large and includes one complete row plus some space on the next line. This counts as all one box and should receive only 7\*s and 2As.

If the child is only breast fed a few times each day (2-3 times) then the space to the right of the designation for 13-24 months should be used.

- 7) If the food mentioned by the respondent cannot be found in the list, consult the Dietary Recall Supplemental Guide to find in which food group the food belongs. Note the food in the additional space provided on the form and then mark off the appropriate number of boxes as indicated for the food most similar.

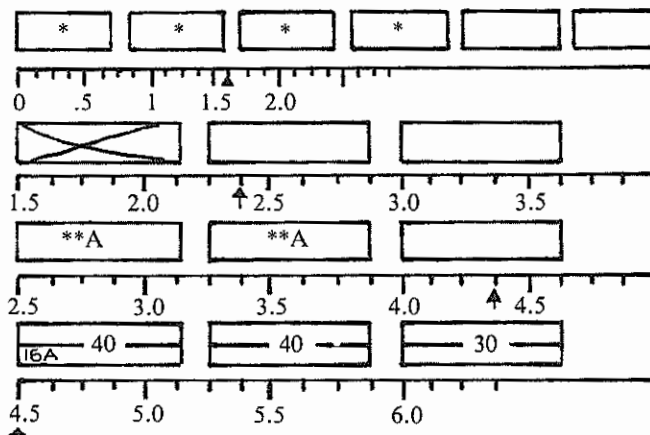
- 8) After all of the foods consumed have been marked, the dietary total can be calculated.

A) The calories are counted by use of the ruler to mark off the length of all of the filled boxes in succession. Example of the ruler.



- B) The protein is counted by adding up the total number of stars marked in each of the individual boxes.  
C) The vitamin A is counted by adding up the total number of As marked in each of the individual boxes.

Following is an example of how to total the nutrients.



If nutrient totals were made from the four food examples above, the totals would be:

DIET TOTAL

	4.5
*	8
A	18

- 9) To determine the adequacy of the diet compare the totals from the diet to the totals given in the chart according to the age and physiological status (pregnant or lactating) of the person interviewed.

Example: If the woman is pregnant and 18 years old her requirement according to the chart would be:

Calories: 24  
Protein: 59  
Vitamin A: 30

- 10) Compare the dietary totals to the requirement. Use these results to determine the problem areas and to make specific recommendations to the mother.

Example: Is an extra meal necessary or only snack food to make up the deficiency in calories?

How many pieces of tahu or tempe are necessary to make up the deficiency in protein?

How many tablespoons of green vegetables are necessary to increase the vitamin A intake?



