Nutrition in Agriculture No. 3

Selecting Interventions for Nutritional Improvement

A Manual

FOOD AND AGRICULTURE ORGANIZATION
OF THE UNITED NATIONS

NUTRITION IN AGRICULTURE No. 3

SELECTING INTERVENTIONS FOR NUTRITIONAL IMPROVEMENT

A Manual

Nutrition Programmes Service

Food Policy and Nutrition Division

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
Rome
1983

PREFACE

Over the last 30 years vast efforts have been made by governments, bilateral and international organizations, and non-governmental and voluntary groups to fight hunger and malnutrition. The dedication and energy of doctors, agriculturists, teachers, community leaders and volunteers trying to improve the living conditions of their people or assist them in their own efforts are impressive. In spite of this, malnutrition remains one of the world's most important problems.

The FAO Food Policy and Nutrition Division has found that an efficient way to combat malnutrition is to introduce nutritional considerations into agricultural and rural development planning. We have recently published a manual which proposes and describes the appropriate methodology, Nutrition in Agriculture Series No. 1, "Integrating nutrition into agricultrual and rural development projects". It offers to nutritionists, food economists and agricultual planners a logical, step-by-step approach to the inclusion of nutritional objectives in the overall economic development purposes of agricultural and rural development projects. But while the nutritional status of the projects' beneficiaries may be expected to improve progressively, serious nutritional deficiencies cannot remain unattended or wait until the positive effects of the projects begin to be felt by the most deprived people. Therefore, it is necessary to select and implement interventions which will bring fast relief to the malnourished in rural areas, as well as to build nutrition into the development planning process.

The present manual proposes a method by which effective interventions are selected on the basis of defined criteria. Such a systematic approach is aimed at overcoming some of the fundamental weaknesses previously found in the formulation of nutrition interventions which, as a result, did not always achieve a significant reduction of malnutrition.

The causes of malnutrition are closely linked with those of poverty, dependency and inequality, and any lasting solution of the nutrition problem will depend on the degree of genuine development achieved by the population. Therefore, nutrition interventions should as far as possible be implemented, not in isolation, but as an integral part of development strategies and closely related to other measures aimed at attacking the causes of malnutrition at their roots. Furthermore, the scarce human and financial resources available demand that the suitability of proposed interventions should be carefully assessed so that those which would best help people to improve their lives may be chosen.

A large number of individuals have contributed to the development of this document. Ivan Beghin, Xavier de Bethune and Veronique Saverys were responsible for preparing the original draft with the contribution of the FAO Nutrition Prorgrammes Service staff and others in the Food Policy and Nutrition Division. Marian Zeitlin was responsible, especially in chapter 3, for coordinating and editing individual contributions by several authors, with the assistance of Franz Simmersbach of the Nutrition Programmes Service of FAO.

The FAO Food Policy and Nutrition Division would welcome comments from users who are or have been involved in the formulation and implementation of nutritional interventions, and would urge nutritionists who are presently engaged in such work to test this approach in their projects. FAO is planning to revise this document, if required, on the basis of comments received and experience gained, tentatively within two years.

P. Lunven
Officer-in-Charge

Food Policy and Nutrition Division

CONTENTS

ANNEX

LIST OF FIGURES

LIST OF TABLES

INTRODUCTION

This document, a companion to Nutrition in Agriculture No. 1 entitled "Integrating nutrition into agricultural and rural development projects", has been designed to help food and nutrition planners select specific interventions to improve nutrition.

The earlier publication covers such steps in the process of planning agricultural and rural development projects as assessment of food and nutrition problems (including the identification of serious nutritional deficiencies), identification of disadvantaged groups, evaluation of food supplies and dietary patterns, and formulation of nutritional objectives integrated into the overall design of the project.

The present document proposes a set of criteria to be followed in the process of selecting interventions and describes the application of the criteria to 16 different types of intervention. the approach is intended for general use but is particularly useful in strengthening the nutritional impact of agricultural and rural development projects.

Since the variety of projects, background circumstances and causes of malnutrition are almost infinite, the approach described here should be used with flexibility. Judgement must be brought to bear. The general principle is that the users will establish their own criteria for selecting interventions prior to deciding on any intervention at all.

Since problem situations reflect local factors and characteristics, the selection of interventions cannot always proceed exactly as described. Information will often be inadequate and incomplete. The project team will therefore almost invariably make their decisions with some uncertainty. This guide attempts to minimize the degree of arbitrariness and uncertainty in arriving at these decisions. Also, it is constantly assumed that both the project population and the planning and/or project staff will be actively involved in most of the discussions and in all major decisions. In such circumstances dogma has no place.

The approach was partially tested in its preliminary form with the communities and professionals participating in a large-scale rural development project which had served as the testing site for the methodology described in Nutrition in Agriculture No. 1. Application of the approach depends on the availability of the kind and amount of data collected and analysed, as described in the series No. 1.

The core of this document is chapter 1, which outlines in logical sequence the steps to be taken by the nutritionist, working with the other members of the project team and community representatives, to select one or more appropriate interventions for improving nutrition. Practical application of the approach in a real situation will undoubtedly face technical, political and social constraints for which no standard solutions can be offered in advance. In chapter 1, potential difficulties are discussed and some suggestions for their solution are made.

Chapters 2 and 3 describe the main criteria proposed for selection and their application to a number of interventions.

Chapter 1

SELECTING INTERVENTIONS FOR NUTRITIONAL IMPROVEMENT: THE APPROACH

Interventions to improve nutrition are called for when the orientation of a development project toward nutrition would not yield results rapidly enough. The planning team would give the nutritionist responsibility for providing the technical, operational and financial data on such interventions.

There exists a number of interventions which directly or indirectly improve nutrition. Among them only those which are suitable for implementation at area level, especially in rural development programmes, have been considered here. This does not mean that macro-economic interventions and measures implemented at national level cannot play an important role in the improvement of the food and nutrition situation of communities, but they are beyond the scope of this manual. Finally, this approach does not apply to emergency situations.

Most of the basic data required for the selection of nutritional interventions are common to those mentioned in the initial assessment stage described in Nutrition in Agriculture No. 1. The data are required in identifying the food and nutrition problems in the project area, the population groups most in need of nutritional improvement and the causes of their problems, and for the incorporation of specific nutritional objectives into the project.

To these quantitative data the nutritionist will seek additional information about the project area and its population which has bearing on the implementation of interventions. This might be, for example, the community's past response to project inputs, the experience of extension workers in the area and above all detailed information on the prevalent nutritional deficiences and on the food sources - available or potential - in this area. It will enable the nutritionist to ascertain that the nutritional problem(s) can be alleviated directly and immediately through intervention until the benefits accruing from the area development strategy make this no longer necessary.

The next step is to prepare for the process of selecting the most appropriate interventions.

1.1 APPROACH TO SELECTING INTERVENTIONS

The approach proposed here for selecting interventions emphasizes setting criteria for selection and ranking them in order of priority.

Focus on the establishment of criteria is crucial as it allows for the systematic choice of the most appropriate intervention. Setting the right criteria will guarantee optimum cost-effectiveness and enhance objectivity in the choice of interventions, by providing structured guidance for the nutritionist and others responsible for making a final decision on what to do. If other interventions are to be considered, such as, for example, income-generating activities for women, the nutritionist will need to describe their characteristics as in chapter 3.

In order to facilitate the process of comparing interventions by criteria, it is suggested that a frame be drawn as shown in worksheet 1 (see figure 1). The

relevant interventions may thus be compared with one another in respect of one criterion only, and preference be noted according to some hierarchical grading system such as low, medium or high, or from one to three plus marks. It should be stated at this stage that the final judgement on each intervention still contains an element of subjectivity and therefore strict quantification of results is not recommended.

Figure 1. Worksheet 1: framework for comparing interventions

decreasing degree of relevance →

decreasing order of importance ↓

Interventions / Criteria	Intervention 1	Intervention 2	Intervention 3	
Criterion 1				
Criterion 2				
Criterion 3				

This frame when completed with a fair degree of consistency allows the most effective interventions in a given environment to be selected. The nutritionist will afterwards need to analyse in more depth the expected effectiveness and cost of the chosen interventions, examine feasibility and operational aspects in detail and evaluate the total inputs needed for their implementation. The bibliography attached refers to publications containing valuable detailed information for this analysis.

The results obtained from this exercise are submitted to the planning team for final discussion on how any proposed intervention is to be included in the overall development strategy.

Representatives of the communities concerned should be involved in the selecting of interventions in order to add to the technical considerations of this approach the necessary social perspective. Both are necessary aspects of the planning and the implementation phases of interventions. Moreover, the participation of the people in the formulation of projects has been found to be very important.

The eight criteria listed below (which are described in detail in chapter 2) are those discussed in this document:

1. Relevance to the defined nutritional problem
2. Feasibility
3. Integration with similar existing programmes
4. Effectiveness
   (a) Nutritional impact
   (b) Reduction of inequalities
   (c) Stimulation of participation and increased self-reliance
   (d) Strengthening of other project components
   (e) Other development effects

5. Ease in targeting
6. Cost-effectiveness
7. Ease in evaluation
8. Likelihood of becoming a long-term, ongoing programme.

1.2 CHOOSING AND RANKING CRITERIA FOR SELECTING INTERVENTIONS

The list above is not necessarily complete, nor are the criteria listed in order of priority.

The first task of the nutritionist when obtaining a list of criteria is to bring together project staff, professionals, local government decision-makers and their technical staff, and community representatives. They should then be invited to list randomly any criteria which in their opinion should be taken into account for the selection of interventions. The next task would be to achieve agreement on the ranking of the criteria. Care must be taken that the criteria are well defined and the meaning is fully understood by everyone. This is particularly important in view of possible different definitions existing in technical departments, and unfamiliarity with technical terms or even jargon.

The following was the approach pre-tested in the Palawan Integrated Rural Development Project in the Philippines, using data collected in one of the six case studies used for testing the method described in the series No. 1:

(a) Municipal officers responsible for the implementation of sectoral development activities in communities, together with municipal planners, nutritionists and the mayor, were informed about the purpose of the overall exercise. (No representative of the communities participated because this was only a test.) They were then given quantitative information about the nutritional problems, already analysed and interpreted, of the communities in their municipality, and were asked to add others as they thought necessary. General objectives for the programme were given;

(b) All were invited to list randomly criteria which they thought should be taken into account when interventions to correct the problems were selected. These were written on a blackboard;

(c) They were given the list of criteria presented above in this chapter and were asked to write down on a piece of paper the criteria from the blackboard and from the list, deleting one of any items that appeared twice;

(d) The criteria were then listed in order of importance by taking the means of the sum of their positions in the individual ranking;

(e) The resulting list was discussed criterion by criterion. Agreement was reached on their ranking.

This approach, used in real situations and involving specific communities, has the advantage of drawing together all potential participants for the implementation of interventions in a valuable and dynamic group process. A favourable atmosphere is created for the next steps in selection and ultimately the implementation of the interventions.

Once a list of criteria is established in whatever way, relevant interventions which address the previously identified and quantitavely determined problems or their causes in the project area will be compared with each other in the light of the project objectives and the established criteria. During this process the aim will be to choose from several possible interventions the one best fitting all the criteria. As background material for this comparison the nutritionist may consult chapter 3 in which the characteristics of 16 types of intervention are summarized according to the eight criteria mentioned above.

1.3 LIMITS AND CONSTRAINTS

The approach described here provides only a framework for guiding the user in selecting the most appropriate intervention. The realities demand flexibility and imagination in dealing with the constraints and limits of each individual case. The following paragraphs describe some of these constraints.

During the application of the criteria to the intervention, strong convictions about the importance of a particular criterion such as cost may override others. Cost/benefit tends to be a major concern for planners and the nutritionists must be prepared to make compromises on this point. While information on cost as well as on other necessary inputs is not always easy to evaluate, it is even more difficult to put a quantified value on the expected benefits, especially in terms of project output. Hence the necessity to obtain beforehand the political support of the local or national authorities to make sure that economic consideration alone does not prevail when the lowest income groups, nutritionally the most deprived, are involved.

The involvement of professionals from various sectors in the whole process inevitably means that each sector will argue strongly in favour of its 'own' intervention (the schoolteacher for the school feeding programme, the agronomist for the food storage programme, and so on). Naturally this would reduce objectivity from the level aimed at in this approach.

The participation of community representatives - vital to the success of implementation later on - calls for a realistic and pragmatic attitude on the part of the nutritionist. Inherent in their involvement is an unavoidable increase in the political power of formerly quiescent groups. Conservative forces in the community will resist and this may be detrimental to the implementation of interventions at a later stage.

In certain circumstances the nutritionist may be faced with the dilemma of deciding whether to accept a compromise or not, and propose less than optimal interventions which do not solve problems at their roots. In making such a decision, the nutritionist should be aware of the risk that concentration on interventions, where in fact structural changes are needed, may distract from more fundamental issues and prevent real development.

Chapter 2

CRITERIA FOR SELECTING INTERVENTIONS FOR NUTRITIONAL IMPROVEMENT

The eight criteria discussed here are intended mainly for selecting interventions to improve nutrition, to be introduced into relatively broad strategies, especially those for rural development, but they are also valid in situations where isolated interventions are necessary.

The list is not comprehensive; some criteria may be dropped and others added. However, some of them, such as relevance, feasibility and effect on nutrition and food situation, are essential.

A brief description is given below of each criterion. Their application to 16 different interventions is described in detail in chapter 3.

2.1 RELEVANCE

Relevance is the first criterion and must always be considered in selecting interventions. An intervention is relevant when it is potentially able to correct nutritional problems in the area. One or more interventions may be relevant to the nutritional situation of the area, and initially all should be taken into consideration even though only a few, or only one, may be feasible.

Next, it should be determined which of the interventions is or are more relevant and should therefore receive priority in implementation. This decision is based on a detailed analysis of the nutrition problems. For example, an intervention that attacked the most severe problem would be more relevant than an intervention that corrected a minor one. Also, an intervention that attacked a problem at its roots would be more relevant than one that would only temporarily alleviate it.

2.2 FEASIBILITY

Feasibility indicates the extent to which an intervention may be implemented with success. It is determined on the basis of presence or absence of those requirements essential for implementation, and on the analysis of constraints capable of impeding or preventing it. Requirements and constraints may differ for each intervention and their nature may be, for example, technical, financial, cultural or political.

2.3 INTEGRATION WITH SIMILAR EXISTING PROGRAMMES

As far as possible an intervention should be able to be integrated successfully with existing infrastructure and sectoral programmes in a manner that strengthens the project and does not require setting up of new structures.

The project area will rarely be a blank slate with respect to the interventions that are under consideration. More frequently some form of activity resembling the proposed new intervention and possibly providing an infrastructure for it will already be operating. Success of the new effort often depends on its ability to either integrate or coexist with this activity in a way that is non-competitive and politically acceptable to the various power

structures involved.

2.4 EFFECTIVENESS

The extent to which results correspond to objectives indicates the effectiveness of an activity. Its assessment depends on both a clear definition of objectives and the availability of good indicators. Effectiveness will then be measured in comparison with a baseline or a reference population.

Effectiveness, as it is meant in this guide, while giving emphasis to the food and nutrition situation, is not confined to this parameter, but extends to others, even though these others might have less importance. In fact, when an intervention to improve nutrition is planned in the context of a rural development project, it is advisable to consider its effectiveness also vis-a-vis the major objectives of the project, particularly the effects on reduction of inequalities, on people's participation and on self-reliance.

Nutritional impact

The impact of a nutritional intervention can be expressed in terms of biological impact (increased growth rates, lower prevalence of malnutrition, decreased morbidity or mortality, better mental performance) or of impact on food consumption and food habits (increased consumption of foods and nutrients). An improvement in dietary practices such as not witholding food during illness would indicate impact of the intervention on behaviour which in turn indicates likely nutritional impact.

A number of aspects ought to be kept in mind and taken into consideration when relevant. They are as follows:

(a) The duration of the effect and the distinction between short-term and long-term impact;

(b) The role of intensive supervision in achieving impact. An activity may be effective on a closely monitored experimental basis but not at the project level;

(c) Whether the impact may be measured on the target group only or the effect is observed on the total population.

Reduction of inequalities

Inequalities exist or are created between socioeconomic groups, age categories, sexes or geographical zones. Great inequalities between the kind of services offered or the choice of problems attacked can also appear. Equity being part of the concept and explicit purpose of rural development, the reduction of inequalities is a criterion which may have a considerable weight in the choice of the most appropriate nutritional component. It is closely linked to targeting. Inasmuch as interventions are focused on the people most in need, so they are likely to contribute to reduction of inequalities.

A particularly important form of inequality is the discrimination against women which exists in some cultures and is reflected in comparatively worse biological indicators among women. In many situations women play a secondary

role in community life and particularly in decision-making. Targeting may reduce such inequalities.

Stimulation of participation and increased self-reliance

Like equity, participation and self-reliance are embedded in the concept of rural development. The question is whether the proposed component offers opportunities for, or stimulates or encourages awareness of, real participation in activities and in decision-making, and whether it increases self-reliance and decreases dependency. If the answer is positive, in what ways?

Most (but not all) interventions considered in chapter 3 do offer opportunities for increased involvement of the people, and quite a number of them can be designed so as to enhance self-reliance. A few of them - particularly the free distribution of food supplements - may create or aggravate dependency if the necessary precautions are not taken.

Whether the proposed component provides opportunities for increased involvement of women will often be relevant, since nutrition and health are matters generally dealt with by the women in the familly.

Strengthening other project components

Most interventions have less impact by themselves than in combination with others. The question should be asked: to what extent does the proposed intervention, besides meeting its own objectives, contribute to achieving other specific project goals or to strengthening the whole development infrastructure in the area?

Other development effects

Usually these are not remarkable but they should always be considered. Is the project or the intervention likely to increase migration into the project area, for example, or increase emigration to the capital city? Will it increase expectations and demand for services in a way that increased the tempo of development?

2.5 EASE IN TARGETING

Targeting means focusing the impact of the intervention on a selected group instead of attempting to reach every individual in the population. Three aspects should be considered:

(a) Ease in defining the target group. Which among the vulnerable groups are affected or at higher risk? What are their common features? How is it known that they are more affected or exposed? Examples: malnourished young children, pregnant women at risk of producing babies with low birthweight;

(b) Ease in identifying them in practical terms; that is, the characteristics that make it possible to recognize them among the others. Example: children with severe malnutrition, who are very easy to identify;

(c) Ease in actually reaching the target groups by means of intervention.

This depends on both identification and operational feasibility, a factor closely linked to the feasibility of implementing the component (see section 2.2).

The two last points raise the issue of the sensitivity and specificity of targeting. If too many people whom the intervention should not cover are de facto beneficiaries (i.e. leakage), then the effect is diluted and the cost is raised. If too many of those who should be covered are not reached, effectiveness drops and again cost-effectiveness may be negatively affected.

Leakage is a major problem, particularly in carry-home supplementary feeding. Dropout rates are sometimes high among beneficiaries of interventions involving distribution of supplementary food.

Targeting may not be possible, or may be inadvisable under certain conditions, for example where local political forces are strongly against it. Since support from local leaders is often essential for the success of interventions at village level, less strict targeting may be more productive under such conditions.

2.6 COST-EFFECTIVENESS

Some interventions may yield an economic output (e.g. production of food, payment for health services, reduction of losses through storage, savings due to improved organization or increased worker productivity). Generally speaking, however, the kind of interventions considered here do not necessarily yield a direct economic profit but mean a cost -though modest - to the project. Cost is always expressed in money value either directly or indirectly, in the latter case as an estimate of the cost of personnel time, use of facilities and of commodities and so on.

Information on cost is thus important in order to (a) assess the cost-effectiveness of alternative components and (b) allow the planner to calculate inputs.

The planner will need data on the following factors (in approximately decreasing importance).

(a) Total cost of the intervention including personnel, equipment and material. It will be necessary to assess the value of services to be delivered, taking into account their type, the time of personnel required, and operational expenses. In most cases it will be possible to put a price-tag on individual service components, though it may sometimes be difficult to isolate the real cost of a given component from others; for example, the cost of the time of personnel spent on the interventions, or the use of existing facilities.

Expressed in very approximate terms, the cost of a nutritional intervention in poor countries can be said to be low if the cost per person is less than 1 per cent of GNP per capita/per year; medium between 1 and 2 to 2.5 per cent; and high if it is above 2.5 per cent;

(b) Cost per beneficiary. When the intervention is targeted, leakage and dropout rates become important factors. The administrative cost of improving targeting must be taken into account. Such a cost will be expressed per person actually reached. Clearly it depends on the definition of the target group as well as on the intended coverage;

(c) Cost per person cured or protected. This is a considerably more difficult matter, in which, in addition, the time needed to achieve a result must

be specified. Cost-benefit cannot be assessed in the present context because it is difficult to measure health "benefits" in quantifiable terms. Cost-effectiveness, on the other hand, can be assessed, when effectiveness is expressed through clearly identified and measurable indicators, if a precise definition of targets is given.

2.7 EASE IN EVALUATION

The question that must be asked is, will it be possible to evaluate the impact of the intervention so as to meet the decision requirements for further planning? If a baseline investigation that includes nutritional indicators has in fact been conducted during the planning phase of the project, and if the monitoring and evaluation unit of the programme can be required to resurvey as appropriate, evaluation of impact will probably not pose problems in any of the types of intervention under consideration here. This is, however, an ideal situation. In practice, lack of resources (human and financial) may prevent an evaluation in measurable objective terms. The project would then have to rely on less objective indicators, such as, for example, in school feeding, the opinion of teachers on the reactions of their children under their daily observation (increased attentiveness, increased activity and interest, fewer children falling asleep or getting restless). Difficulty of measurable evaluation should not prevent implementation of a project which is by other criteria considered suitable and desirable.

2.8 LIKELIHOOD OF BECOMING A LONG-TERM, ONGOING PROGRAMME

Rural development projects are limited in time. However, interventions to improve nutrition may not achieve their goals within the given time frame, or may be required to become continuous institutionalized services. With the exception of supplementary feeding, most interventions (for example, nutritional communication, nutrition in primary health care) should become continuous. they may start as interventions in a rural development programme, but need to become continuous services to the communities since only then can the new rise or growth of a given problem be avoided.

The likelihood of becoming a long-term ongoing service within the existing government structure will differ between the interventions, depending upon the type of food and nutrition problem and the human and financial resources required to solve it. An unfortunately common pattern is for some interventions to last only as long as non-recurrent inputs (government, community or external) are available to support them. A desirable intervention which can become an ongoing budgeted activity should be given preference.

Chapter 3

APPLICATION OF CRITERIA TO INTERVENTIONS

This chapter describes 16 interventions and the application of criteria to each of them. Each description of an intervention serves as technical background information in the process of selection, particularly in the filling-in of the worksheet in chapter 1. If further in-depth information is needed, the nutritionist is referred to the annexed bibliography.

When applying the methods described, the nutritionist should constantly keep in mind that valuable knowledge and experience are to be found within communities, from which both the nutritionist and other planners can learn and which they should endeavour to share so as to allow true participation of the communities in selecting the interventions. Such sharing of knowledge may particularly enlarge and strengthen information about the target group of an intervention and help to ensure that the expected benefits reach those most in need.

Often a preliminary assessment may reveal that the introduction of an intervention is not called for, since communities themselves have already taken action to improve their conditions and government services are in operation. What may be required here is the strengthening of such efforts and additional support for them. The nutrition planner should therefore pay special attention to ongoing activities and discuss with the community representative how in their view such activities could be improved.

It is reiterated that all programme activities must have inbuilt monitoring and evaluation. Area development projects generally have a system set up for this and the nutritionist will need only to inject into it the necessary indicators required for monitoring and evaluation of the selected interventions. This should be done in such a way as to allow the greatest possible degree of participation in the process by the communities, and also allow for a reasonably quick return of data and their interpretation in order to keep the communities and the project operation in close contact.

A full and complete monitoring and evaluation of the project is achieved through a surveillance system based on agricultural, economic and social parameters including health and nutrition. However, if a desirable system of this kind does not yet exist, records should be kept and the progress and results of the project should be discussed with the beneficiaries, in respect of each intervention.

3.1 FACE-TO-FACE NUTRITIONAL COMMUNICATIONS

Definition

Nutritional communications are defined as the public information and educational component of any project that enables the participants to use the project and their household resources in a manner beneficial to their nutritional status. Face-to-face nutritional communications may include lectures, group discussions, demonstrations, practice sessions and one-to-one counselling during home visits or at a central location.

The common themes of nutritional communications can be divided into those related to agriculture and those related to health and child development. The agricultural themes concern the following:

(a) Household food cropping and purchasing patterns, with special regard to the adoption of new varieties and to the nutritional consequences of cash cropping;

(b) Consumption of nutritious foods produced with the assistance of the project;

(c) Home production and consumption of vegetables and other protective foods that are not the primary focus of the agricultural project;

(d) Food storage and preparation, using appropriate local construction materials, fuel, etc.

Themes relating to health and child development concern the following:

(a) Special nutritional needs of vulnerable groups, including pregnant and lactating women, infants and growing children, and especially on breastfeeding and weaning practices;

(b) Adequate diet and how to achieve it with available foods;

(c) Feeding during illness, especially the need to rehydrate and nourish young children who have diarrhoea.

Selection criteria

(a) Relevance

Nutritional communications are a relevant component of any project that will increase the food resources or income available to a population with members suffering from malnutrition. They are a necessary part of pre- and post-natal health care of the infant up to four years old. They are more relevant where malnutrition is caused by lack of nutritional knowledge or incorrect attitudes and behaviour, and less relevant when the nutrition problems are caused by unfavourable economic factors.

Nutritional communications play a key role in development since improved nutrition is not an automatic consequence of increased food availability. Food marketers know that it is cost-effective to invest in consumer education and promotion. Without nutritional communications, development-project outputs such as seeds or food supplements tend to have little or no effect on the food

practices of the groups for whom they are intended.

(b) Feasibility

This intervention requires the following:

(i) an effective extension system, best achieved by using village-level workers such as 'contact farmers' or primary health care workers, family planning workers, midwives or nutrition workers. Village workers must be supervised by middle-level extension agents;

(ii) concept testing of messages - a process in which the project staff enlist the help of village families in formulating nutritional advice. this is tested in practical trials and is adapted by the project staff and villagers working together until the final messages are practical and effective. This usually leads to a few simple messages that incorporate underlying perceptions;

(iii) development of training materials and visual teaching aids. These can be very simple with drawings by local artists;

(iv) training, in-service training and supervision. Initial training in nutritional messsages and communications should last one week.

A drawback of many nutrition education programmes in the past has been the lack of concept testing. Nutritional messages made up in offices have been introduced in the field without pre-testing of their practicality and acceptability. such messages have frequently been ineffective. Conflicting messages of different programmes have been a source of confusion, e.g. advice to burn rubbish and advice to use if for composting.

(c) Integration with existing programmes

Some form of nutritional education or communication will usually exist in the project area as a part of one or more of the following types of programme: primary health care, family planning, schools, social welfare, women's programmes, day care, community development youth programmes, hospital services, supplementary food distribution, nutritional rehabilitation, religious organizations or political party activities. The nature of the communications offered by these programmes will be adapted to the other services that they provide. The development project should not find it difficult to make use of these existing activities since most nutrition educators are eager to obtain new teaching materials. However, the project may also require its own communications component. Message content should be developed in coordination with other agencies in order to avoid confusion due to conflicting advice.

(d) Effectiveness

(i) Nutritional impact: difficult to isolate from other components such as health care or supplementary feeding. Yet where impact has been isolated, it has sometimes proved high, as in one project with two-and-a-half to five-year-old children who had received food alone had a 32 per cent malnutrition rate compared with 16 per cent among children whose mothers received food plus nutrition education. In another case, mothers were taught to

prepare a weaning food; infants whose mothers acted on the advice gained nearly twice as much weight during the following three months as those whose mothers did not.

(ii) Reduction of inequalities: moderate. Nutritional communication can reduce inequalities in food distribution within the household when resources are adequate.

(iii) Stimulation of participation and increased self-reliance: potentially high, when the nutrition educator teaches learner groups to be more self-sufficient by making better use of resources.

(iv) Strengthening of other project components: high. Not only strengthens but is essential for the effectiveness of most of the other programme types discussed in this guide.

(e) Ease in targeting

Targeting is easy when mothers attend maternal and child health centres or participate in rehabilitation programmes; it is most effective during home visitis by primary health care workers. The greatest difficulty is found in reaching those mothers not attending maternal and child health centres or similar services. Ease in targeting depends on the effectiveness of the extension system and the communicator.

People communicate best with individuals of their own community and social class. Village mothers if correctly advised make the best nutrition educators for other mothers. The same is true of farmers.

(f) Cost-effectiveness

This is high, because the effects of other types of programmes on food consumption and dietary practices are not reliable without appropriate communication.

If an extension system for nutritional communications already exists, major costs are for concept testing, development and production of materials, and training. If a new extension system has to be developed, there will be additional planning and start-up costs. The most effective community supported and operated projects may have the lowest costs. Experience indicates that the annual per mother cost for nutrition education can be as low as US$ 0.05. Group activities are cheaper than home visits if workers are paid project staff, but groups of more than 20 to 30 mothers will not learn efficiently.

(g) Ease in evaluation

Moderate. National and other large-scale nutritional communication evaluations use expensive sample survey methods. For small local programmes an informal process review is usually sufficient and relatively easy. The goal of this assessment is to determine by discussions with the community whether the new practices taught by the programme are actually being implemented by the learner groups and whether these new practices have a beneficial effect on nutritional status. A change of knowledge alone is not a sufficient measure of success.

(h) Likelihood of becoming a long-term ongoing programme

High. Nutritional communications are quite likely to become long-term because they are a core component of many programmes and should be easily integrated with others.

Overall appraisal

Nutritional communications are always necessary since they maximize the impact of programme inputs and outputs and attack the causes of malnutrition. Their impact can be enhanced through support of the messages through mass media such as radio and television.

3.2 ON-FARM AND COMMUNITY FOOD STORAGE

Definition

This section considers the improvement of on-farm, household and village-level storage of staple foods or 'durable' commodities such as cereal grains, legumes or root crops. Section 3.13 covers preservation of perishable foods. On-farm and household storage may be identical in subsistence agriculture, but may differ increasingly with diversification of the agricultural economy. Among the most common forms of storage interventions are the following: improved (drier, more pest-resistent) traditional stores both on the farm and in the household; ferro-cement or butyl-lined silos; protected open-air storage; food warehouses.

Selection criteria

(a) Relevance

High in situations where a significant proportion of the food that is produced is lost to pests or spoilage. Relevance will depend entirely on local circumstances, but will be greatly increased in programmes that introduce new agricultural varieties that are less pest- or mould-resistant than traditional strains.

(b) Feasibility

The feasibility of implementing a successful food storage programme depends on the following:

(i) support for the project within the local community. The low success rates of some new storage schemes make a demonstration trial period highly desirable in order to prove cost-effectiveness.

(ii) availability of capital. Even simple improvement of traditional storage requires some capital input. As wealth and political power are usually unequally distributed in a project area, there will be pressure to use local capital to build storage facilities that benefit the affluent. External funding may be needed to justify the allocation of resources for small-scale storage programmes and to pay for the off-road vehicles, travel expenses and so forth that are needed to reach poor farmers in remote areas.

(iii) availability of construction materials such as lumber, sheet metal, cement, plastic material, etc., though local material should get priority. Lack of transport vehicles and impassable roads may be limiting factors even when the materials are available in the regional or capital city;

(iv) availability of technical assistance to provide training and supervision;

(v) availability of labour. This is the least constraining factor since it should usually be available free of charge as a part of individual or village-level support for the project.

(c) Integration with similar existing projects and services

Such programmes depend on the infrastructures that are available for exchanging information with farmers and delivery of materials to poor rural areas. Agricultural extension and farm and village cooperatives are the logical channels. Practically speaking, additional extension personnel may need to be added, at least temporarily, to the extension system operated by the project.

(d) Effectiveness

(i) Nutritional impact: undocumented as yet by nutritional evaluation methods but may be considerable. In addition to reduction of overall loss of food and natural deterioration caused by exposure to moisture and pathogenic organisms, qualitative food losses through rodents and other pests can be reduced.

(ii) Reduction of inequalities: high when special efforts are made to give small farmers preferential access to improved storage. Insofar as the poor do receive the benefits, reduction in food loss (if there are heavy losses) will increase their disposable income and provide a buffer against the precipitous rise in food prices that follows a poor harvest. Poor farmers should also have greater leverage against exploitative middlemen, less recourse to exploitive loans from moneylenders and landlords and less need to buy back food at higher prices.

(iii) Stimulation of participation and increased self-relaince: usually high because local participation in the provision of labour, selection of storage sites, etc. is a necessary part of this intervention. Self-reliance increases when individuals and communities can insulate themselves against the need to enter local food markets to cover periodic shortages. Improved storage may also eliminate or reduce the need to import food from neighbouring areas. Savings can be reallocated to other social and economic needs.

(iv) Strengthening of other project components: high. The project that increases the production of staple foods obviously benefits from improved storage of these foods. Butyl-lined or ferro-cement storage projects require substantial labour input which may be provided by food for work or may simply improve short-term employment and worker training and experience.

Storage improvement may lead to better health by reducing the risk of mycotoxin contamination caused by moulds. Environmental sanitation may also be improved with the removal of open, easy access to food stores. The prevalence of insects, rodents and other vertebrates in the household is reduced substantially.

(v) Other development effects: an essential aspect of food security.

(e) Ease in targeting

Variable. Targeting presents complex questions, such as level where storage will be most effective (on-farm vs. village), location of sites, prefer-

ential consideration to specific crops, and so on.

(f) Cost-effectiveness

This varies by storage type as summarized in table 1.

Table 1. A comparison of the cost-effectiveness of various food-storage intervention techniques

Cost-effectiveness considerations	Improvement of traditional storage practices	Ferro-cement silos	Butyl-lined silos	Open air storage a/	Warehouses
Capital requirements b/	low	moderate	moderate	low	high
Administrative and maintenance requirements	low	moderate	moderate	high	high
Socio-cultural impacts	low	moderate	moderate	moderate	high
Losses from infestation	moderate	low	low	moderate	moderate
Losses from rodents and other vertebrates	moderate	low	low	moderate	moderate
Moisture losses	moderate	none	none	moderate	none
Fungal losses	moderate	low	low	moderate	low

Notes:

a/ Open air storage employing gunny sacks and tarpaulins

b/ Includes materials, labour, transportation, etc.

Source: Partially adapted from Guggenheim, H. and H. H. H. Kiallo, 1977, "Grain storage in the fifth region of Mali: problems and solutions", USAID Grant BKO 688-77-06

(g) Ease in evaluation

High if increasing the quantity of stored food is the main criterion. It is not difficult to measure whether the new storage facilities increase available food stores over baselines or controls. Improvement in food quality may require laboratory tests. Improvement in nutritional status would be difficult to measure, unless the new storage methods prevented extreme seasonal shortfalls.

(h) Likelihood of becoming a long-term ongoing programme

Moderate, since this depends on prevailing political and economic circumstances and the type of storage technology selected. Funding agencies must be willing to continue to provide a high initial capital investment in each new region where storage is introduced, justified by the fact that recurrent maintenance costs should be low.

Overall appraisal

Need for improved storage may have been exaggerated. However, in areas where poor storage facilities cause much food to be lost, storage interventions represent a moderately priced and generally cost-effective means of expanding the available food supply. They certainly are preferable to resorting to imports to cover shortfalls. Projects that introduce agricultural varieties that increase yields or have special storage requirements or that alter the use of existing storage facilities should take the issue of storage particularly seriously.

3.3 PRIMARY HEALTH CARE

Only recently has the establishment of primary health care become adopted as policy by ministries of health. Agricultural or rural development projects offer a very propituous framework for introducing a food and nutrition dimension into primary health care when such a service exists in the project area. Typically, there may be one or more health centres or health posts serving the entire project area, but usually they are able to extend service to only about 10 per cent of households who live within four kilometres of the centre. Introducing nutrition services to the centre will benefit only a few, whereas training and equipping community health workers to reach the entire population may significantly benefit nutrition.

Definition

Primary health care is the basic treatment and prevention of common complaints, illness and accidents and the referral services that ideally are available to the entire population. The primary health care worker is the contact person to whom the heath problem is reported. This worker treats simple complaints and refers more serious cases to a higher level. Regarding less-developed areas, primary health care refers to care that is provided by community members who lack advanced professional training, but who have been briefly trained in specific tasks.

A primary health care programme commonly provides training of from two weeks to about six months to at least two types of workers: a midwife (usually retraining of traditional birth attendants practising in the area) and a combined curative and preventive village health worker. There may also be a "nutrition monitor" described further in section 3.6 and a community-based distribution worker for family planning. Village volunteers of even lower training levels may assist the village health worker. Some village health workers may be retrained traditional healers, and some may be pharmacists and medicine peddlers already operating and practising in the project area. The majority will be community members who are without previous experience in providing health care, but who have been selected for this role by local village authorities. Technical training is usually provided by health services and day-to-day supervision by the village governing body, such as the village development committee, village people's council, or chief and elders. Common methods of recompensing workers and replenishing drugs and supplies are as follows:

(a) Worker collects a fee for services and/or drugs that is fixed or monitored by the village governing body to prevent exhorbitant charges;

(b) Village governing body or health committe collects health insurance fee from villagers quarterly or yearly to cover services and/or drugs;

(c) Village governing body takes a collection to cover worker payment and/or drug replenishment;

(d) Villagers pay the village health worker in kind or in labour, e.g. communal labour on the worker's farm for the number of days equivalent to days of service provided;

(e) Central or regional government pays all or part of worker's stipend and/or distributes all or part of drugs free;

(f) Worker is unpaid volunteer;

(g) Worker tells villagers which drugs or supplies they should obtain on the open market.

Selection criteria

(a) Relevance

High, because the interactions between nutrition and infection are well established, particularly in the preschool age group. It is common for 50 per cent of all mortality in a developing area to be in this age group (compared with less than 3 per cent in industrialized countries). About half of these early childhood deaths are claimed to be caused by a downward spiral of poor nutrition reducing resistance to infection, which aggravates malnutrition and so on.

(b) Feasibility

The first requirement is the willingness of the government health services to (i) permit community members to serve as primary care providers, (ii) participate in their training and supervision, and (iii) provide prompt treatment for cases they refer. Traditional medical education tends to bias doctors and paramedical personnel such as nurses against the use of village health workers. National interest groups such as medical associations may oppose primary health care. Despite ministerial support, local health officials may not strongly support the programme. If local support is weak but still available, the project is advised to calculate its own ability to provide extra inputs or incentives on a pilot basis and to go ahead with such a scheme because the chances are high that it will demonstrate its effectiveness.

Factors favouring success within the official health structure include the following:

(i) a higher priority accorded to public health than to hospital care, or at least equal priority and seniority;

(ii) a decentralized health structure in which authority over staff appointments and funds has been delegated to local managers;

(iii) a national or regional ministry of health that has more multipurpose than unipurpose workers at the health centre level. These multipurpose workers make better trainers and supervisors for the multipurpose village health workers;

(iv) a results-oriented rather than a procedure-oriented approach to providing health care, within the entire health system;

(v) willingness of the health ministry to work with social scientists, such as medical anthropologists, in establishing community-based primary health care.

A rural development project usually has little power to affect these structural features of the health system. It may, however, be able to undertake primary health care in spite of unfavourable conditions by setting up services that are almost entirely self-financing, so that they require little or nothing in the way of salaries, supplies or drugs from the official health structure. This

means starting with a village health worker since the local population will usually be quite willing to contribute toward curative treatment. A self-financing scheme also is recommended in order to reduce dependency on central funding, which is always limited.

(c) Integration with similar existing programmes and services

Necessary. Primary health care must be integrated into the vertical health system, although dependence on this system for recurrent costs of salaries and drugs must be minimized. During the formative stages, nutrition can be integrated into the village health workers' tasks at low level. After primary health care has been established in concept and practice, additional nutrition services should be added.

(d) Effectiveness

(i) Nutritional impact: moderate but significant. Nutritional impact of oral rehydration, deworming, immunization and anti-malarial treatment all are high in specific cases. For example, measles, which is preventable by immunization which the worker can promote is the major precipitating cause of kwashiorkor in many countries.

(ii) Reduction of inequalities: high, because health care is a basic human need and primary health care is by definition a form of programme that extends health treatment to isolated low-income groups.

(iii) Stimulation of participation and increased self-reliance: high. The local governing body or other community organizations must take responsibility for selecting the persons to be trained as village health workers and for programme management tasks determined by the forms of worker payment and drug replenishment that are selected. The community that pays for its own health services - and receives proper treatment instead of quackery - increases in self-reliance.

(iv) Strengthening of other project components: moderate. Environmental sanitation should be introduced as part of the village health worker's job description. Primary health care services are popular. They may increase the overall popularity and credibility of the project.

(v) Other development effects: potentially high. Primary health care directs attention to low-income communities where the problems lie and de-emphasizes the clinic where the professionals practise. By directing attention to the target group, primary health care can achieve social advances not conceived as part of the project's original objectives. For example, the selection of a female as the village health worker, which is appropriate in dealing with problems of infants and pre-school children, may increase the status of women.

(e) Ease in targeting

High. The entire purpose of creating primary health care is to improve the targeting of the centre-based health system. Initial demand for curative services, however, may not come primarily from the groups at highest risk of mortality and malnutrition.

(f) Cost effectiveness

High, since primary health care is the cheapest solution to providing health services.

(g) Ease in evaluation

Low. Change in mortality rate is difficult to measure because large samples of 20,000 or more families must be interviewed at the household level in order to obtain reliable data. Morbidity change is even harder to measure outside a research programme. Performance and indicators such as numbers, ages and complaints of persons served are not difficult to collect and usually suffice for programme development, together with the formative evaluation of specific procedures.

(h) Likelihood of becoming a long-term ongoing programme

High if the community health worker services are self-financing. High dropout and inactivity rates have been found in programmes that rely on central government supplies or funds that fail to materialize. Reliance on a central budget for salaries also prevents the pilot programmes from expanding, because the total amount of funds needed to provide one worker for every 200 households is always beyond central funding capacity.

Overall appraisal

Primary health care is a basic need and provides a service structure that must be in place before nutrition services can be extended to the population as a whole. The health services *per se* reduce the incidence of severe malnutrition. The provision of primary health care should increase the overall popularity and credibility of the project.

3.4 HOME AND VILLAGE WEANING FOODS

Definition

Weaning foods are the first versions of solid foods given to infants in addition to breast-milk or an equivalent liquid diet. These foods should be started at four to six months of age, when breast-milk no longer adequately supplies the total nutrient needs of the rapidly growing infant. Specially prepared weaning foods should usually be given in addition to the adult foods until the age of three to five years in order to increase the number of meals to about five a day. Such frequent feeding is particularly necessary where the adult diet is a bulky staple. Moreover, the mother may be more likely to prepare the food if she can serve it to all her preschool children and not only the baby.

Weaning food programmes work with the local community to develop methods of enriching or supplementing the local weaning diet. Weaning foods must be soft in texture and must contain a high concentration of nutrients per serving, or at least 75 kcal/100 g after addition of water and 12 per cent of calories from protein, using vegetable protein sources. Even higher nutrient density is better, but may not be affordable. The commonest weaning foods are the following:

(a) A culturally familiar porridge of rice, maize, wheat, sorghum, millet or cassava to which enrighing ingredients are added during cooking. Protein and energy enrichment are compulsory. Vegetable additions are optional when vegetables are eaten in other forms or fruits given instead. Enriching ingredients include:

(i) protein: beans, pulses and other legumes; oilseeds such as groundnut, sesame, or pumpkin-seed paste; and animal protein such as powdered fish, milk, egg or meat;

(ii) energy: oil, fat or butter (not necessary when an oilseed provides both protein and energy) and sugar (optional);

(b) A preroasted dry mixture of ground cereal grains (wheat, corn, sorghum, millet or rice flour or beans). Sugar and oil may also be added. Most of these mixtures are cooked rapidly in boiling water. A few are eaten in dry form;

(c) Adult foods that are sufficiently soft, fresh and lacking in hot spices like chili pepper. These foods may include commercially and home prepared snacks as well as the family meal.

Selection criteria

(a) Relevance

Always high. There is no developing country that has not documented a flatening in the growth curve that indicates inadequate nutrition during the weaning period. The age at which growth retardation starts (three to nine months) and its severity varies by country and region. Dysfunctional health and feeding practices are extremely common for this age group.

(b) Feasibility

Weaning foods that require small modifications in the previous family diet are more likely to succeed. Foods which demand extra resources, such as more fuel, more cooking time or enriching ingredients, that must be purchased by families with a low cash flow are likely to be constrained by the relative scarcity of these resources. Preparation on a larger scale by a vendor or women's cooperative may be most cost-effective, but a significant investment in technical assistance in marketing will be needed to make production of enriching weaning-food self-supporting.

Concept testing is critical in developing new recipes. Untested recipes have been the cause of many failures. The programme staff must persuade low-income families to try out a variety of recipes in their home and must work together with these families in making adjustments to the recipes until they are truly practical to prepare and good-tasting. Nutritional quality of the recipe must be rechecked after each adjustment in quantities or ingredients. Care must be taken that the weaning-food recipes promoted are adequate in calories, as has not been the case in some countries.

High levels of phytic acid in whole-grain cereal flour are a cause of potential concern in new porridge recipes because phytates reduce calcium and iron utilization. Many traditional porridges are sour, or lightly fermented. This practice of fermentation should be continued in the new recipes because it reduces phytic acid levels. A variety of alternative recipes is better than a single one.

Nutritional communications are the key to successful introduction of new weaning foods (in addition to low cost and year-round availability of ingredients). Families must be motivated to increase their present level of investment if possible in the diet of the child being weaned. They must have the opportunity to observe demonstrations of new home preparation and baby feeding methods. If they are afraid the new food will cause diarrhoea in the baby they must be able to discuss this fear with programme staff. If the baby does get diarrhoea, treatment must be available.

National weaning-food production developed from pilot schemes has usually failed as commercial prices could not be kept low enough for poor people to buy it, government subsidies could not be sustained, marketing was inadequate.

(c) Integration with similar existing programmes or services

The nutritional rehabilitation programme should be the best source for new weaning recipes and feeding practices because the growth effects of the rehabilitation recipes should be well established. They also should be practical for home preparation by poor families. Weaning food development should be a part of mother and child health services or primary health care. It may also be carried out by home economists working under agricultural extension and be cooperatives. Village-level production may be coordinated with commercial milling, food vending and small food shops. Weaning-food development should include the promotion of breastfeeding in order to prevent the food from substituting breast-milk during the first year.

(d) Effectiveness

(i) Nutritional impact: high for designed weaning foods. Sub

stantial reduction, even elimination, of severe malnutrition has been observed in sample populations involved in nutritional programmes, in contrast with prevalence rates in surrounding areas.

(ii) Reduction of inequalities: not a short-term effect. However, children who receive proper nourishment are stronger physically and mentally than their malnourished counterparts. They should grow up to be more competitive economically, thus decreasing the gap in human and material resources in the next generation.

(iii) Stimulation of participation and increased self-reliance: depend on community activities associated with weaning-food development, but certainly weaning foods reduce dependency on cow's milk.

However, efforts to develop community participation in the production of weaning foods may slow down the important process of changing weaning practices which can start with home-prepared foods. A basic diet for poor children, such foods made from locally vailable ingredients could be expected to contribute to reducing inequalities, as they will improve mental and physical development.

(iv) Strengthening of other project components: potentially high. Improved nutrition of this high-mortality age group reduces the burden on primary health care, reduces the need for nutritional rehabilitation, improves the performance of children entering primary school, and increased willingness to accept family planning.

(v) Other development effects: moderate. Parents invest more resources in the individual infant and become more aware of the child's potential opportunities in the modern sector. Well-nourished infants and toddlers are more active and learn more from their environment.

(e) Ease in targeting

High because the age group is so clearly defined. The programme should be targeted to all income levels within the low-income rural community because poorer families imitate the behaviour of opinion leaders. An outreach system obviously is needed but outreach requirements are less limiting than for primary health care because the local food-marketing system may be used.

(f) Cost-effectiveness

This appears high, and in many cases a weaning-food programme is the only means to bring improvements in the nutrition of young children through direct intervention. Both home- and village-based programmes require the sustained efforts of nutritionist and nutrition educators during the concept testing and early development stage. This stage must be followed by ongoing education, marketing and production of the foods. Costs for these should gradually be absorbed by the existing health and nutrition education system and market system for commercial products. The final cost for the consumer must always

be within the reach of poor families.

(g) Ease in evaluation

Difficult. To the extent that improved weaning-foods are often new to the community, a simple household survey can determine the degree to which its use has been adopted by village families. However, the effects of the food on nutritional status are much harder to measure because of intervening variables such as income and health.

(h) Likelihood of becoming a long-term ongoing programme

Low because primary health care, village cooperatives and related activities should take over teaching the recipes and procedures that have been developed. Health workers continually need to provide new mothers with advice on weaning practices. After the initial development phase, the weaning-foods programme *per se* can be terminated. Its promotion and education activities will continue indefinitely as a part of health services.

Overall appraisal

Necessary, because poor nutrition at the weaning age is a universal and severe problem. Short-term investment in developing new foods and feeding practices bears long-term benefits as these practices are promoted by the health services on a continuing basis. Activities should start at the home or community level rather than at a national commercial one, as in the latter case the product will not reach the target groups in need unless government subsidies are high and sustained. This has not usually proved possible.

3.5 FAMILY PLANNING

Definition

Family planning refers to programmes designed to inform men and women on child spacing and modern contraceptive methods, to provide these and to encourage their use. Rural programmes in developing countries frequently provide Depo Provera injection, which is effective for three to six months; the pill, or oral contraceptive; the intrauterine device; the condom; vasectomy, or male sterilization; and tubectomy, or female sterilization.

Common programme designs are as follows:

(a) Family planning integrated with maternity and child health services

This type of programme is most effective because:

(i) families seek outside assistance at the time of birth, but they may not be reached at other times;

(ii) couples have a high degree of confidence in the person providing maternity care who brings them safely through the experience of childbirth. They are likely to trust the advice of such a person on such an intimate subject as contraception;

(iii) contraception should be timed to start at about the six-week check-up following birth;

(iv) it is important to use the breastfeeding months to learn how to practice contraception. Very fertile women become pregnant so quickly that they never learn to practice family planning.

The contraceptive protection provided by breastfeeding overcomes this hyperfertility problem and permits learning; post-natal vistits for the infants also serve to monitor the family-planning learning and adjustment process;

(b) Family planning integrated with agricultural development

Agricultural programmes sometimes promote family planning directly in the context of agricultural education and the introduction of new technology. Analogies of land and crop management are used to teach the importance of spacing births and not having more children than can be fed and educated adequately. Agricultural incentives are given to prevent preganancy. Condoms are the chosen method for agricultural programmes because they can be disributed independently of health services;

(c) Family planning as an independent service structure

In many countries there is an independent family planning office or agency which may or may not have effective outreach into rural areas.

Selection criteria

(a) Relevance

Family planning is always relevant to the nutritional problems in rural development project areas because it is necessary to prevent:

(i) the food needs of an exploding population from outstripping the production capacity of the land. When death rates decrease even moderately, family size should not exceed two or three children in order to prevent unmanageable population growth;

(ii) malnutrition at the weaning age, which often is caused by short birth intervals and high birth order.

(b) Feasibility

The factors that favour successful family planning are:

(i) government policy supporting family planning;

(ii) equal educational and employment opportunities for women;

(iii) relative equity of land and income distribution;

(iv) rapid modernization of the countryside with expansion of new agricultural technology;

(v) social welfare policies benefiting the elderly.

Political power structures may reject the limitation of births for their own people when they fear that competing groups may have more children and may outnumber them. Some religious groups reject contraception entirely.

A major constraint to the limitation of family size in areas practising traditional agriculture is the fact that each additional child brings an economic benefit to the family by providing farm labour. Where this is the case, families can still be persuaded to use contraception for birth spacing, so that each child will be stronger and healthier.

(c) Integration with similar existing programmes or services

Refer to the first section of family planning, "Definition".

(d) Effectiveness

(i) Nutritional impact: High, but has not been measured as a direct result of family planning programmes. Mathematical projections of the size of malnourished populations in the decades to come show many millions more will be malnourished if population growth rates remain high than if they are reduced. Nutrition surveys typically find differences in malnutrition rates between large and small families that are many times larger than the

differences between the participants and non-participants of nutrition programmes.

(ii) Reduction of inequalities: Moderate. Family planning reduces inequality by changing the family's investment strategy with regard to child-rearing. As the number of children are reduced, poor families invest more resources in each child.

(iii) Stimulation of participation and increased self-reliance: high. By deliberately controlling the number and the timing of births, families move beyond the fatalism and resignation contributing to dependency and underdevelopment. Community-based distribution of condoms and pills may be carried out by family planning "acceptor clubs".

(iv) Strengthening of other project components: high. Family planning strengthens all other nutrition-related services since the main nutritional problem in many families is related to excessive fertility; e.g. a mother overburdened with successive pregnancies, too many young children to care for and not enough food or income.

(v) Other development effects: beneficial. Adoption of family planning is associated with increased participation in other forms of development.

(e) Ease in targeting

High, if integrated with village-level prenatal and postnatal services.

(f) Cost effectiveness

This has not been calculated but is potentially high. Cost of contraceptives may be covered by donor agencies, or they may have to be covered by the programme. Typical costs quoted by the United States Agency for International Development in 1982 dollars are as follows:

Type	Unit	Cost
Depo Provera	1 injection lasting 3 months	US$ 1.00
pill	1 month's supply	US$ 2.00
intrauterine device	per device	US$ 0.25 - $7.00 (varies by type)
condom	Per gross (144)	US$ 8.00

(g) Ease in evaluation

High. The simplest indicator is the percentage of fertile couples practising contraception. Zero population growth is achieved when this figure reaches from 65 to 80 per cent depending on marriage and childbearing patterns in the society.

(h) Likelihood of becoming long-term ongoing programme

High. As families become confident that their children will survive, and as modern education and employment opportunities become available, their demand for family planning increases.

Overall appraisal

Access to information on and use of modern family planning techniques is a human need. A reduction in the death rate creates the need to limit births in order to prevent the population from growing faster than the food supply.

3.6 NUTRITION INTEGRATED INTO HEALTH CARE

Definition

The nutrition component in health care is the set of activities carried out by village-level health and nutrition workers to provide full nutritional coverage to a population. These continuous and preventive activities are simplified or extended versions of services that are available at clinics but, where a primary health care system exists, are extended into the villages in order to reach the 70 to 90 per cent of the rural population who do not have access to formal health facilities. The main tasks to be performed are (a) prenatal and neonatal nutrition services; (b) postnatal and preschool nutrition services; and (c) other community nutrition activities, when required.

Because the recipients of these services are mainly women and young children, the village workers who provide them are usually women. However, in some locations male workers have proved to be very effective and have had more free time to give to programme activities than women. The workers' educational level may vary from no formal schooling to high-school graduate, depending on literacy rates in the country and region. The form that the services take will depend on a variety of socio-demographic and programme considerations, including educational level, community structure, and existing programme structures. Common programme forms are described below.

(a) Prenatal and neonatal nutrition services

A traditional birth attendant or programme-trained community-level midwife is logically the person to conduct these tasks. A nutrition monitor may be appointed to help midwives who are often overworked. Tasks include:

(i) monitoring nutritional status and referring severely malnourished cases to the health centre or maternity hospital, when possible. A woman with arm circumference of less than 21.5 cm is severely malnourished; less than 23.5 cm, mildly malnourished. Pregnant women who weigh 39 kg at three months and 43 kg at seven months are severly malnourished. Their weight gain should be more than 1 kg/month from the third month;

(ii) distribution of ferrous sulphate tablets or multivitamin and mineral tablets if available;

(iii) nutritional counselling, including advice to eat more if the woman is thin or not gaining, eat more of foods that correct common deficiencies in the local diet; and also eat certain animal proteins, vegetables, or fruits even if this is contrary to cultural habits;

(iv) establishment of breastfeeding by putting the child to the breast immediately after delivery or during the first four hours and correcting dysfunctional beliefs and practices such as avoidance of colostrum, giving other foods to the baby until white milk comes in, or restricting the diet of the new mother.

(b) Postnatal and preschool nutrition services

An older mother is frequently the best village-level worker for providing nutritional services to mothers of infants or preschool children. If she herself still has preschool children, she may identify most closely with the group she serves. Nutrition may be added to the existing tasks of the village health worker or community-based distribution worker for a family planning programme. However, the most successful programmes have usually trained a separate category of worker for nutrition. This nutrition monitor has only a one-or two-week training period and limits herself mainly to nutrition activities working usually on a part-time volunteer basis. The nutrition monitor should be responsible for not more than 30 households within walking distance of her home. She may do the work herself, lead a women's group who conduct nutrition activities together, or act as neighbourhood coordinator for mobile health team visits during which children are weighed, vaccinated, etc. Her tasks include:

(i) nutrition education and counselling on weaning foods, breast-feeding and the diet of the lactating mother. She will give weaning-food demonstrations, explain to mothers how to correct unsatisfactory weaning practices in her neighbourhood, and also teach oral rehydration and diet during illness. The "echo method" may be used; nutrition monitors from neighbouring villages meet once a month with a middle-level worker from health or agriculture to learn about a new weaning food or attend other cooking, feeding or gardening demonstrations. Each monitor repeats the demonstration lesson with the mothers in her village. Together they feed the children what they have prepared.

(ii) growth monitoring and referral to identify babies who are not gaining weight, so that their mothers can be taught how to impove their diets. There are five basic growth monitoring designs that provide community coverage:

a. community operates weighing programme for all children (as in Indonesia);

b. mobile team weighs children monthly;

c. children identified as malnourished by community screening, using arm circumference or weight, are enrolled for monthly weighing (as in the Philippines). Well-nourished children are not weighed frequently;

d. arm circumference is used for monitoring nutritional status (Nepal);

e. visual detection only is used to monitor child development (Upper Volta).

(c) Other community nutrition activities

Related primarily to agriculture and include home gardening, food storage, food processing and preparation, use of new foods introduced by the agricultural programme, among others. These tasks can logically be given to a unipurpose nutrition monitor.

In fact, an additional reason for creating a nutrition monitor category is to provide a village - level worker who can link appropriate village food technology to agricultural extension activities. A multipurpose village health worker should probably not be given these tasks. However, a farmer might perform them under the supervision of his agricultural extension agent.

Selection criteria

(a) Relevance

Always high, since it attacks some of the immediate causes of malnutrition and extends its services through the health care extension system, so reaching the people most in need. By definition it implies continuity in treatment and prevention.

(b) Feasibility

It may not be feasible to create a nutritional monitor category until mainly curatively orientated village health workers have already been trained. These workers can do some nutrition counselling and referral but they should usually not be overloaded with growth monitoring and food demonstrations.

Major requirements for successful nutritional activities are the following:

(i) existence of a sufficient number of village-level workers to cover the population;

(ii) job descriptions that give sufficient priority to nutrition. A curative village health worker may be too much in demand for health emergencies to give sufficient time to nutrition;

(iii) a growth monitoring system suited to the technological constraints in the area. Use of weighing requires an exact knowledge of a woman's stage of pregnancy or the age of a child, ability to plot weights on a chart or otherwise interpret the appropriateness of weight change compared with time change, and accurate scales. Use of arm circumferences is much easier and the measuring strips are much cheaper and ligher than scales. Visual detection is technically the easiest, but identifies only the most severe cases since 95 per cent of cases of growth failure cannot be detected visually;

(iv) appropriate training programme and materials. Unless specific messages and materials appropriate to the area exist or are developed by a weaning-food or nutrition education programme village-level nutrition workers will teach the only message they know and themselves reinforce the wrong attitudes which led to the nutritional problem;

(v) an incentive structure that rewards nutritional activities. If a volunteer, the nutrition worker's status in the community must be enhanced by nutrition work. Otherwise, a payment system must be devised;

(vi) a supervision and in-service training system. Although most supervision may be conducted by the village government,

technical advice from health services which may conduct in-service training is needed;

The following drawbacks and constraints have been noted, among others: existing village health workers assigned to nutrition but too busy to conduct activities; existing traditional birth attendants overworked and set in their ways; women too overworked to participate in nutrition activities; social barriers to recruiting women nutrition monitors; male village health workers treating mainly adults, males.

(c) Integration with similar existing programmes and services

Refer to the first section of integrated nutrition and health care, "Definition".

(d) Effectiveness

(i) Nutrition impact: high. Combined nutrition and primary health care is the only type of programme that has shown rapid impact on the health status of under-fives. In a number of different locations, infant and child mortality has decreased by over 50 per cent within a five-year period. Nutritional status indicators may not improve rapidly because extremely malnourished infants who would otherwise have died are kept alive by the combination of health care and improved feeding practices and these children's low weights hold down the averages. However, in some programmes severe malnutrition has been eradicated after five years or more of activity.

(ii) Reduction of inequalities: moderate. The main inequality reduced is unequal access to nutrition services between urban and rural areas. As in the case of other types of programme, care should be taken not to overburden women with nutrition activities but to include men when possible.

(iii) Stimulation of participation and increased self-reliance: high when communities organize and support their own monitoring programmes.

(iv) Strengthening of other project components: high, because the village-level health and nutrition workers are the implementers of messages that are produced by weaning-food development and nutrition education programmes. Improved nutritional status reduces susceptibility to infection and therefore lessens the burden on the primary health care component.

(v) Other development effects: not noteworthy, at least in the short term.

(e) Ease in targeting

High, when the programme is developed in a low-income rural area. All pregnant women and infants require nutritional services, and are easily identifiable, as are these high-risk groups: children with low birth weight, children with malnourished siblings.

(f) Cost-effectiveness

High, whenever the services are effective, since the community-level solution is by definition the lowest-level, lowest-cost approach to service delivery.

(g) Ease in evaluation

Low because the routine records kept by nutritional outreach workers are not accurate enough for impact evaluation and because many factors affect change in nutritional status. Routine records and site visits are sufficient to monitor the development of the programme. Comprehensive survey evaluation research is required to measure its impact, unless impact becomes obvious, as when severe malnutrition is eradicated.

(h) Likelihood of becoming long-term ongoing programme

High, particularly if political support for the nutrition component of primary health care remains strong.

Overall appraisal

Placing a nutritional component in health care extension programmes is the best method of providing nutritional services to the vulnerable groups of pregnant and lactating women and preschool children. Results are definite reduction in child mortality, reduction in the duration of common child illnesses, increase in birth weight and reduction in the number of children with low birth weight, decrease in the prevalence of severe and moderate forms of malnutrition. Nutrition integrated in the health care system is more effective than primary health care or nutrition activities in isolation.

3.7 NUTRITIONAL COMMUNICATION VIA THE MASS MEDIA

The use of mass media can increase the impact of face-to-face educational activities, but can never completely substitute for them and is frequently not cost-effective in rural areas. This section assumes that the programme has already made a commitment to some form of direct nutritional communication or nutritional counselling, and focuses on the additional choice: whether to develop a mass media component.

Definition

In the rural development context the term mass media usually refers to radio and less frequently to television, newspapers, books, photonovels, booklets, leaflets, signboards, posters, calendars and product labels. These different media have been used under varying circumstances in different countries. The visual teaching aids that are used in face-to-face teaching, such as flip charts, posters and hand-out sheets, are not considered to be mass-media because they do not have their own independent distribution channels. Audiovisual materials such as non-commercial films, slides, cassette tapes and close-circuit television may reinforce or substitute for mass media in remote areas of for special purposes but require continuous technical support. Traditional communication forms such as dance troupes, fairs or festival exhibits may also be used in mass-media strategies.

The common formats for the use of radio and television in nutritional communication are listed below. Each of them can be combined with others in a multimedia approach or coordinated with face-to-face teaching materials. Only the last two listed must be actively coordinated with a face-to-face component. (a) advertising "spots" lasting 15 to 60 seconds each and repeated several times a day during popular programmes; (b) entertainment with nutrition themes, including comedy shows, soap operas and popular songs; (c) public information broadcasts, such as news or radio-doctor programmes; (d) radiophonic or television schools, where students are enrolled and send in assignments in order to get a certificate or diploma; (e) radio or television forums, for which a trained village leader gathers villagers together to listen to a programme, discuss its content and send a response back to programme headquarters.

Forms (a), (b) and (e) tend to be most appropriate for rural agricultural areas. Forms (c) and (d) are more effective for technical staff than rural audiences.

Selection criteria

(a) Relevance

Section 3.1 discusses the relevance of nutritional communication. Mass-media may be effective in attacking nutritional problems that require behavioural change in the following circumstances:

(i) low perceived risk.

For example, the message to continue breastfeeding is not

perceived to involve risk. The message to feed young infants supplementary foods is high-risk, because people fear these foods may make the babies sick. High-risk messages cannot be taught effectively without a face-to-face programme to convince the learners personally to try the new ways;

(ii) requiring familiar actions.

For example, the message to eat beans suggests a familiar action that anyone can perform. Instructions on how to prepare soybean curd, on the other hand, cannot be sufficiently explained using the mass media alone;

(iii) applicable to everybody in a group.

For example, the message to eat green leafy vegetables is good for everyone. The message that infants should receive supplementary foods at six months is also a good rule for most infants. However, in any society more than 25 per cent of infants may need to start supplemental foods at three months in order to grow normally. Only growth monitoring and individual nutritional guidance can protect these children.

Nutritional problems in the real world rarely meet these simple criteria. Although mass media can be of great help in such special cases, they are more relevant as a support for face-to-face activities, such as home gardening and weaning foods (see sections 3.12 and 3.4). For all types of nutritional problems, mass media increase the effectiveness of field workers' activities by the following means:

(i) lending institutional credibility and impact to the individual field worker's advice;

(ii) increasing popular demand for face-to-face services;

(iii) improving field workers' morale, training and motivation to communicate with target audiences;

(iv) using message repetition to decrease the time needed to learn new behaviour.

(b) Feasibility

Regular radio listening or television viewing by a minimum of about 20 to 30 per cent or the target audience, and a broadcasting system favourable to the provision of free or cheap broadcasting time are preconditions for a favourable response. The programmes must use modern communication techniques. Most early home economics or radio-doctor lectures are practically useless today because the groups in need do not listen to them, since they are unattractive compared with entertainment programmes.

At least two staff members are usually needed: one to coordinate with radio and television stations and other communications agencies, and to monitor broadcasts; the other to develop messages and materials and design curricula. If the mass-media and face-to-face programmes are to be closely coordinated, with copies of broadcasts and related learning materials sent to field workers before each series of messages is broadcast, then a third staff member will be required

for coordination and logistics. a media forum programme requires a training team and a team to tabulate and respond to the results reported from the rural listening groups.

Mass-media programmes are in greater danger than face-to-face programmes of going off the track and becoming irrelevant or losing their audiences. Mass-media efforts have also been plagued by management, production and technical difficulties, such as poor sound quality and failure to broadcast programmes according to previously agreed schedules.

(c) Integration with similar existing programmes or services

Almost every country currently provides some forms of nutrition education over radio, and many use television. The decision whether to integrate with existing efforts should be based in part on the audience of these programmes among the rural low-income groups; e.g., if popular agricultural radio programmes address women, they also may be an excellent channel for nutrition messages.

(d) Effectiveness

(i) Nutritional impact: potentially high. There is evidence to support the conclusion that high-quality mass-media together with face-to-face education may more than double the amount of nutritional behaviour change achieved by face-to-face education alone.

(ii) Reduction of inequalities occurs when the media transmit development information to illiterate and semiliterate audiences. Improvement of the educational content of rural broadcasting also serves to reduce rural/urban inequalities in availability of information.

(iii) Stimulation of participation and increased self-reliance: moderate. Successful nutrition communications stimulate self-reliance by teaching the learner groups to make more efficient use of existing resources.

(iv) Strengthening of other project components: potentially high. Mass-media increase the effectiveness of face-to-face nutrition communications.

(v) Other development effects: moderate. Any use of media by the project creates public awareness over a wide geographical area and may increase demand for agricultural and rural development.

(e) Ease in targeting

Potentially high. Radio and television spots can easily be targeted by inserting them into the music or entertainment programmes that are most popular with the groups that the project wishes to reach, though in practice it may be difficult to broadcast on the most popular stations at the most popular times of day.

(f) Cost effectiveness

This depends on media penetration. Where radio listenership (or penetration of other media) is high, the cost per person reached by a uniform, high-quality message can be extremely economic.

(g) Ease in evaluation

Reasonable. Formal evaluation is costly and difficult but informal evaluation is easy and sufficient in most cases. Repeated formal surveys are the methods most often used by communication specialists to evaluate messages and to change them over time. The difficulty and expense of carrying out formal surveys may be avoided by asking face-to-face extension workers to discuss the mass-media messages periodically with their client families and to report their findings informally to the media team.

(h) Likelihood of becoming long-term ongoing programme

Low. Mass-media campaigns tend to be short-lived. Whether or not mass-media nutrition education is ongoing usually depends on expansion of the media in the area, on continuing pressure from the project or from the central nutrition establishment, and on continuing cooperation of the public information agencies.

Overall appraisal

If media penetration is high and cost of public service broadcasting are sufficiently low, mass media may be an excellent investment and may greatly improve the effectiveness of face-to-face efforts. However, in the context of development, face-to-face nutritional communications have priority over mass-media programmes.

3.8 NUTRITIONAL REHABILITATION

Definition

Nutrition rehabilitation programmes are designed to (a) rehabilitate children who are so severely malnourished that they are at risk of dying if their nutritional status does not improve; and (b) teach family members how to feed and care for infants so that the cured child does not relapse and its siblings do not likewise become severely malnourished.

Rehabilitation may be organized in the following ways. Table 2 summarizes design characteristics of different types of rehabilitation programmes.

(a) Residential rehabilitation centres, usually attached to district hospitals or health centres, keep mothers and infants together for a few days to a month, or until the child is gaining weight rapidly on a local diet prepared by the mother.

(b) Rehabilitation day care centres keep children all day for three to four months. Mothers learn by taking turns helping at the centre. The centre moves to a new location when all malnourished children within walking distance have recovered.

(c) Domiciliary rehabilitation sends a nutrition monitor or health aide to the home daily to assist the mother with the start of rehabilitation. Visits become less frequent as child improves.

(d) On-site feeding and cooking lessons bring children and mothers to a central point for meals and nutrition education.

(e) Hospital admission may be necessary for a few days to control infection and mineral balance before a child starts any of the above programmes. Keeping a child in hospital for rehabilitation leads to higher death rates because of cross-infection and lack of satisfactory education for the mother. Hospital rehabilitation may be organized as a first effort, but the programme should move out of the hospital into the community as soon as possible.

Selection criteria

(a) Relevance

Highly relevant where there is at least a 2 to 3 per cent rate of severe malnutrition among preschool children. Rehabilitation day care centres may be particularly relevant where mothers have a heavy agricultural workload, particularly during harvest seasons.

(b) Feasibility

There are six requirements for success, as follows:

(i) the family must have resources to provide a minimum adequate diet. If not the programme will fail because the children will relapse at home;

Table 2. Design characteristics of different types of rehabilitation programmes

Type of rehabilitation programme	Family requirements	Total population served/centre	Population distribution	Programme requirements	Usual programme period
Day care centre	mother may have heavy workload	3 000 to 5 000	dense rural, urban	need toys, cots (mats), bathing facilities etc.	3 to 4 months
On-site feeding	mother/other caretakers must be able to bring child daily and stay for meals	3 000 to 10 000	dense rural, urban	need simple structure with cooking, eating facilities	1 week to 4 months
Residential centre	other family members must be able to fill in for absent mother	3 000 to 50 000	dispersed rural	need separate rooms or huts for mother/child pairs. Transportation to bring in children and mothers is useful	1 to 4 weeks
Domiciliary rehabilitation	no particular requirements	150 to 500 per community worker	need community nutrition workers who live within walking distance of homes they serve		supervision continues at less frequent intervals
Hospital rehabilitation	mother may go home at night; if nurses supervise child, she may also leave child during day	Usually an early phase designed to help children brought for curative treatment to any given hospital. Coverage is not systematic.		need separate ward for well infants and special mothers' classes	usually not well organized since this component is not a priority of overall hospital work

(ii) cross-infection must be controlled by not permitting sick children to attend. Residential centres that accept sick infants must have separate huts or rooms for each mother-child pair. Domiciliary rehabilitation is the best protection in such cases. Malnourished children have reduced immunity. If they cross-infect each other, a high proportion will die;

(iii) mother must learn feeding methods they can apply at home. Village huts or rooms donated by the community make the best facilities for centres because mothers learn new practices using the same stoves, water supply, utensils, storage facilities, and other items that they have at home. Learning is most complete in domiciliary programmes;

(iv) mothers or other caretakers must have time to participate. The mother who is a major economic supporter of her family cannot spend many hours away from her job or farm in order to care for a child;

(v) milk or special food mixtures must be available for emergency cases. Orphans and twin babies may need extra milk. Critically malnourished children may need special mixtures until normal recovery starts;

(vi) ongoing monitoring must be established, in order to prevent relapses and reduce the incidence of new cases. Rehabilitation may be started first, but community growth monitoring must follow.

A problem for rehabilitation programmes is that they may be pressured by their benefactors and donors to build attractive modern facilities alien to local household conditions. Such facilities interfere with learning and self-reliance. At their worst these programmes may be merely palliative, curing a few children every year without attacking the problems that generate more malnutrition cases.

(c) Integration with similar existing programmes and services

Centres should be located near health or maternal and child health centres, with integrated referral systems for treating sick children. Health centre staff may be supervisors, except where day care is not related to nutrition. Other community groups may operate day care centres in coordination with health services.

(d) Effectiveness

(i) Nutritional impact: high. Children with marasmus and kwashiorkor regain normal weight for height and activity levels, but may not grow rapidly in height because the protein quality of the local rehabilitaiton diet is relatively low. Increases of 3 to 8 per cent in weight for age by 60 to 80 per cent of treated children are common. Siblings may also be protected. Educational impact is poor.

(ii) Reduction of inequalities: high, because children come mainly from poor families and services are provided exclusively to children at highest risk.

(iii) Stimulation of participation and increased self-relaince: potentially high, depending on community involvement. Ideally, the community should donate the huts (rooms or other structures) used for rehabilitation. The families of the malnourished children should provide the food used for feeding their own children, with community assistance if necessary. Waiting patiently for model communities to develop in this manner is a better strategy in the long run than using external donations. When one community develops as a self-reliant model, others will usually follow. The educational aspect of the programme can improve the self-reliance of women in feeding their children properly.

(iv) Strengthening other project components: an important contribution of rehabiliation programmes. It occurs in the following ways:

a. sensitization and motivation by the dramatic cure of starvation cases demonstrates the immediate and visible benefits of nutrition programmes;

b. training of community level workers in nutrition can be done most effectively as part of the programme;

c. referral services are provided for all levels of health workers who encounter severe malnutrition cases;

d. development of weaning-food recipes occurs most reliably in rehabilitation programmes since the recipes developed must pass the test of curing the severely malnourished. Such recipes obviously will be safe and effective for other mothers in the community;

e. nutrition education methods developed in the centre will be applicable to community mothers on a general basis;

f. a warning system is provided for detecting major deterioration in the food supply and in nutritional status when attendance at centres increases;

g. day care facilities may be expanded to serve the entire community during the peak harvest season or on a regular basis, if they are needed.

(v) Other development effects: mixed. When marasmic infants are cured through the use of local foods alone, community attitudes become less fatalistic. On the negative side, such children usually remain below average in mental ability all their lives. They perpetuate the cycle of poverty and underachievement in families with excess fertility. Thus the programme must be integrated with malnutrition prevention and family planning.

(e) Ease in targeting

High by definition. Children with an arm circumference below 10 cm or below 60 per cent of standard weight for age can be enrolled as well as all children with oedema or overt kwashiorkor.

(f) Cost-effectiveness

Usually high. Costs of rehabilitation always are eight to ten times less than those of hospital care. Cost per child rehabilitated may range from US$5 to $50 or more depending on the degree of community contribution. Domiciliary care is cheapest and may be most effective, if community and programme stucture make it feasible.

(g) Ease in evaluation

High, for the short-term recovery phase; moderate for long-term effects where simple programme records can provide most but not all of the following indicators: dropout rate, mortality rate, per centages improving vs. staying the same vs. getting worse, length of time for recovery, percentage recovered who relapse, percentage of younger siblings who become malnourished compared with controls, and percentage coverage of malnourished children in the area.

(h) Likelihood of becoming long-term ongoing programmes

Low. Rehabilitation programmes should become obsolete within a few months to a few years, depending on the type of programme and the sixe of the area served. This can happen only when this programme is part of other clearly preventive programmes such as food production and income generation.

Overall appraisal

Nutritional rehabilitation should usually be the first nutrition programme started in areas with levels of severe malnutrition above 3 per cent. Rehabilitation programmes lay the groundwork for the next steps in nutrition activities, but tend to be palliative interventions as they are not integrated with other programmes attacking the causes of malnutrition. Nutrition in primary health care provides higher effectiveness in terms of the total population and wider coverage. It is more relevant to people's demands and needs, and costs less.

3.9 SUPPLEMENTARY FEEDING OF PRESCHOOL CHILDREN

Definition

Supplementary feeding programmes for preschool children distribute free or subsidized food(s) with the object of increasing energy and protein intake. They are viewed as short-term interventions to alleviate deficiencies until longer-term solutions can be developed. The distribution of food may be done through one of three mechanisms: (a) on-site feeding programmes providing one or more meals a day at the distribution site; (b) take-home programmes distributing commodities on a periodical basis; and (c) nutritional rehabilitation centres (not included in the following discussion, as it is treated in section 3.8).

A take-home food package may also be given to the family as a unit, as part of a contractual agreement. In exchange for the food (which must be perceived by the family as having a certain economic value), the family agrees to provide for the improvement of the child's nutritional status, through better feeding and general care and participation in programme activities.

It is common for the distributed food to be a donated commodity provided as a part of bilateral or international food aid, and for ingredients used in on-site preparation of the food, such as spices or vegetables, to be contributed locally.

Selection criteria

(a) Relevance

Moderate, if there are high rates of second and third degree malnutrition. If the home diet is deficient and the family lacks the household resources necessary to improve it in the short term, then supplementary feeding programmes are relevant.

(b) Feasibility

Success depends on many conditions. Among them are the following:

(i) a demonstrated problem of low food intake (energy or energy and protein);

(ii) community support in the form of contributions to programme management, storage or feeding facilities, foods, and other aspects;

(iii) nutrition education to teach the families that mild and moderate malnutrition are problems that can be corrected by use of distributed and other available foods;

(iv) correct targeting of children, selecting those in greatest need and thus most likely to respond to the intervention;

(v) simultaneous improvement of other local causes of malnutrition, particularly the sanitary improvement of the environment, deworming and the control of infectious diseases;

(vi) adequate selection of the food commodity to assure that the nature and amount of the supplement are useful complements to the usual diet and capable of correcting the nutritional deficiencies;

(vii) local food habits and beliefs that do not prevent the feeding of the food commodities to children under two years of age;

(viii) food supplement that can be prepared and stored in a sanitary manner;

(ix) food packaging that is economically attractive and promotes participation in the programme;

(x) distribution centres that are easily accessible, in terms of distance, transporation, hours, timing and size of rations distributed, and related considerations, with sufficient resources allocated to administration and monitoring aspects (e.g. number and training of personnel).

The net increase in intake of energy by supplemented beneficiaries is usually much lower than the amount of the supplement distributed. This can be explained by food leakages due to:

(i) the child receiving less food at home (substitution effect);

(ii) the food being widely shared by other members of the household (sharing effect).

Although it is usually assumed that such leakages are a measure of programme inefficiency and that they produce no beneficial effect on the child, they do represent an increase in the effective purchasing power of the family and may play a role in reducing overall deprivation in recipient households.

(c) Integration with existing programmes or services

Supplementary feeding programmes are frequently integrated with health services, making use of existing facilities and infrastructure. Integration with nutritional communication (section 3.1) should be compulsory because it is potentially very effective. Food supplements alone have had little impact on malnutrition rates but in combination with effective education of mothers, their results have been dramatic.

Integration with agricultural and rural development programmes has not been part of the usual pattern, but this concept is presently being applied in contractual assistance programmes which require that the family participate in a food production activity as part of the agreement under which they receive donated food.

(d) Effectiveness

(i) Nutritional impact is moderate to low. Improvements in anthropometric measurement (weight and height) have generally been disappointing, although some pilot and research projects have shown quite good results. Greatest impact is usually seen on those children with the greatest apparent weight deficit at

the time of entry into the programme (suggesting greater need). The commonest reasons given for the poor performance of supplementary feeding programmes on improving growth rates include the following:

a. low level of average net supplementation due to leakage (sharing or substitution in the household);

b. low participation and attendance rates and high dropout rates, due perhaps to time and economic constraints on the child's family, particularly the mother;

c. interference from parasites and infectious diseases;

d. inability of programmes to reach effectively the most vulnerable groups (particularly children under two years of age);

e. inadequate design, supervision, operation and coverage of the project.

Those supplementary feeding programmes which have significantly reduced the prevalence of severe malnutrition have usually been associated with the provision of health services, and have been accompanied by a reduction in morbidity and mortality from infectious deseases.

(ii) Reduction of inequalities: low. The dependency usually associated with supplementary feeding makes it unlikely that feeding programmes will reduce inequalities. These programmes also tend to make heavy demands on scarce local management skills and resources that could be directed toward other development activities.

(iii) Stimulation of participation and increased self-reliance: low. While supplementary feeding programmes have in some cases stimulated local participation in activities such as the selection of beneficiaries, supervision and organization of warehouses and of distribution in general they have not sought participation and have tended to increase dependency and reduce self-reliance. This is a most serious drawback, which becomes particularly apparent when an attempt is made to withdraw the free food. The concept of contractual assistance, on the other hand, attempst to move away from dependency into increasing participation and self-reliance.

(iv) Strengthening of other project components: moderate. The offer of free food may induce a government or community to make significant counterpart investments in a maternal and child health centre, for example. The food may also attract participants to under-fives services, although many examples demonstrate that health services alone are sufficient to motivate attendance. It is not known what effect a contractual or an income transfer design might have on strengthening other project components.

(v) Other development effects: negative if the imported donated food commodities are a disincentive to local agricultural production or create dependency on imported foods.

(e) Ease in targeting

Low. Actually reaching low-income preschool children has been a problem in supplementary feeding programmes. Factors which make targeting difficult include the isolation of much of the population from existing infrastructure and services, high non-participation and dropout rates, low attendance rates and food leakages. For maximum efficiency, it would be best if individuals could be screened so that only those most in need received the free food. However, such specificity in targeting makes the procedure more difficult and tends to generate bad feeling in the community, unless the food is reserved for medical emergencies such as milk for orphaned babies.

(f) Cost-effectiveness

Probably low for an agricultural or rural development project. Unless clear benefits to the project can be defined, the low coverage of supplementary feeding combined with its high requirements in administrative resources, storage space and other related cost factors probably make it a poor investment.

(g) Ease in evaluation

Moderate. Data on the process are relatively easy to obtain, especially if included in the design of the project. The main problems in evaluating supplementary feeding programmes are related to the difficulty of finding an adequate control group for comparison purposes, high dropout rates and the difficulty of selecting indicators of nutritional impact.

(h) Likelihood of becoming long-term ongoing programme

Too high. Supplementary feeding may be difficult to withdraw, whereas it should be a temporary intervention. In many communities the population may have achieved a state of equilibrium with an unfavourable environment (namely, chronically deficient levels of food intake) through a number of social and physiological adaptations. The introduction of a supplementary feeding programme may lead to a de-adaptation, with serious consequences for the population if the programme is ever abruptly withdrawn. Careful consideration should be given to the need for some continuity, at least until the environment itself has been improved.

Overall appraisal

Supplementary feeding programmes for preschool children tend to be relatively ineffective in relation to their costs - at least when compared with alternatives such as nutrition in primary health care.

3.10 SUPPLEMENTARY FEEDING OF PREGNANT AND LACTATING WOMEN

This chapter discusses the distribution of food to pregnant women in maternal and child health programmes in which intensive monitoring and supervision can be provided. A less intensive approach to monitoring nutrition during pregnancy is presented in section 3.6 on nutrition in primary health care.

Definition

This type of supplementary feeding involves the provision of food to women whose diets are not sufficient to meet the extra demands of pregnancy and lactation. International food aid is a common source of the distributed foods.

Selection criteria

(a) Relevance

High when the diet available does not provide enough food to meet the extra needs of pregnancy and lactation, or whenever baseline assessment reveals one of the following:

(i) dietary intakes of less than 2,000 calories per day among pregnant women;

(ii) additional food is simply not available, for economic or other reasons to certain pregnant women;

(iii) a significant proportion of women between 15 and 45 years of age weigh 10 per cent less than the standards for a woman of a given height or have an arm circumference of less than 22.5 cm;

(iv) The proportion of newborn infants weighing less than 2.5 kg is greater than 10 per cent.

(b) Feasibility

Preconditions favouring success include:

(i) A strong educational component capable of dealing with local beliefs and dietary practices during pregnancy such as

a. beliefs about proper and improper foods during pregnancy;

b. fear that having a larger baby will result in a more painful childbirth (the purpose being to allow for normal-sized babies in high-risk cases where the baby would otherwise have been abnormally small, not to make all babies larger);

c. a strong tendency among women to share food given them with the rest of the family, who may also need education to resist sharing;

(ii) the project is integrated with a primary health care or maternal/child health programme that is able to identify those in need of supplementation and deliver the supplement. All that is necessary is a supply of supplementary food sufficient to provide 500 calories a day during the last three months of pregnancy and the first six months afterwards. A combination of local cereal grains and legumes can provide these calories;

(iii) the community is educated concerning the benefits of additional food for pregnant women. If a mother is to eat more nourishing foods, it must be explained that these foods are required to develop the health and intelligence of the unborn child.

The programme often requires a leader (not necessarily a woman) who has learned to appreciate the great importance of adequate nutrition during pregnancy and lactation and is able to stimulate the community to initiate the activities required, and to integrate them into existing programmes so that they are carried out routinely and cover the target population.

(c) Integration with similar existing programmes or services

Supplementary feeding of pregnant and lactating women should be integrated with existing primary or maternal/child health care programmes.

Nutrition communications efforts associated with the project shouls stress the importance of adequate nutrition during pregnancy and lactation.

Where projects result in increased staple food production, emphasis can be given to setting aside some of the increase to meet the needs of pregnant and lactating women, either at the household or cooperative level.

(d) Effectiveness

(i) Nutritional impact: high - significantly higher than that of feeding programmes for preschool children. The specific measured impact that is most important is an increase in birth weight of the infants, which has also been shown to decrease infant mortality. The effect of supplements in increasing birth weights have been well documented during the last ten years.

(ii) Reduction of inequalities: moderate. The provision of supplementary food to pregnant and lactating women is a simple and direct way to reduce inequalities in the chances for survival and for a healthy start in life for infants born in poor communities.

(iii) Stimulation of participation and increased self-reliance: low to moderate. Food supplementation is an intervention to be applied when conditions are desperate. Provisions of free food always has the potential for creating dependency and should be temporary or secondary to educational efforts, when possible.

(iv) Strengthening of other project components: moderate. Components that may be strengthened by supplementary feeding of pregnant women are:

a. health care - reinforces prenatal care; better-nourished infants have more resistance to illness;

b. family planning - the feeding programme should be an incentive for participation, but linking the two may require careful planning to avoid the risk of encouraging successive pregnancies, with counterproductive effects on family planning. Education should emphasize that as more infants survive, the family can afford to limit its size. Poor families must also be assisted in limiting family size so that extra surviving infants do not further drain inadequate resources;

c. women's programmes - the importance given to the needs of pregnant women may enhance the status of women in the community.

(v) Other development effects: not noteworthy in the short term, although greater investment in children (starting with pregnancy) may hasten the adoption of family planning.

(e) Ease in targeting

Simple screening methods can be used to target the supplementary feeding of pregnant and lactating women if minimum basic health-service structures exist to do the screening. As a rule all pregnant and lactating women in a population should receive nutrition education. As noted in the section (a) "Relevance" among selection criteria, these women may be identified by inadequate weight, poor weight gain or arm circumference, and they should include those with a previous history of low birth weights, high parity, a malnourished child in the family, poverty.

Ideally, every woman likely to become pregnant should be weighed at regular intervals starting in the first trimester to check that she is gaining 1.5 kg a month during the last six months of pregnancy. If she fails to gain for two successive visits, she should be considered for food supplementation.

The most difficult task is to extend routine prenatal coverage to the whole pregnant population and to train the personnel to obtain the measurements routinely and to interpret them in relation to the supplementation programme.

(f) Cost-effectiveness

Moderate to high. Although documented experience is sparse, it is believed that food supplementation of pregnant women is the most cost-effective mesasure in reducing perinatal mortality in infants. The costs involved are those required to incorporate the activity into an ongoing maternal and child health/-family planning programme that is closely managed and supervised, plus the cost of the food. In-service training, scales, measuring tapes and record forms should be inexpensive.

Food, the largest cost, should be no more than US$10 per mother during the pregnancy and $20 for six months' supplementation during lactation (according to 1981 bilateral-aid prices for wheat-soy blend). The total cost, prorated for an entire population (birth rate 40/1 000) would be $20 per capita per year. An additional six months of supplementation for lactating women would increase per capita cost to $40 per annum. Whenever possible, of course, food supplements

should be locally produced and would therefore be substantially less expensive than the figures estimated above.

(g) Ease in evaluation

High only if birth weights are accepted as impact measures and if they can be routinely collected. Maternal weight-gain during pregnancy is also a satisfactory indirect indicator since it is highly correlated to birth weight. Obtaining accurate infant mortality rates during a baseline or prestudy period, or concurrent rates in a control population, remains a problem.

(h) Likelihood of becoming long-term ongoing programme

Existing evidence makes it clear that assuring adequate maternal nutrition during pregnancy and lactation must be considered one of the important and effective elements of maternal and child health care. There is a danger of long-term dependency, and therefore like all free food distribution, the intervention should be of relatively short duration.

Overall appraisal

Supplementary feeding of pregnant and lactating women has a high proven impact. It is rivalled in effectiveness in reducing infant mortality by only one other measure, namely the provision of tetanus immunization to women in populations where neonatal tetanus is common. If a minimum network of health services exists this is a feasible and effective intervention provided that the supplementary food is available as a donation or is produced. It should be of relatively short duration.

3.11 SCHOOL FEEDING

Definition

School feeding programmes usually provide one free or subsidized meal or snack a day to primary school children. A small part of the food for this meal may be grown by the children in the school demonstration garden as a part of their agricultural education. Food may be provided by the community, local government or external donors. Common programme models include the following:

(a) School meal is a separate item in local government budget, which pays for all or part of the food. Families that can afford it pay part of meal cost;

(b) School garden provides vegetables, fruits and condiments, community donates staples, or children bring their own portion from home;

(c) Community and/or school garden provides fresh vegetables, fruits and condiments. External donors supply staple commodity.

In all of these models the community may also contribute by building a kitchen, providing fuel, working in the kitchen or gardens, or transporting foods from market or storage points.

The major objectives of school feeding are to:

(a) Improve the learning capacity of children by improving well-being and alertness;

(b) Increase school enrolment and attendance, and decrease dropouts;

(c) Improve the nutrition-education component of the curriculum;

(d) Provide a social service to the community and the families, especially where many women are working outside their homes.

Selection criteria

(a) Relevance

School feeding is highly relevant where a proportion of school children are at risk of going through the whole day until supper time without eating a proper meal. This may occur when children leave the house early without breakfast, walk several kilometres to school, and stay in school until about 3 p.m. Even when children are given pocket money, they may buy sweets instead of proper food. One meal a day in the evening obviously is not enough for the primary school child, particularly when the staple diet is bulky. Teachers have on many occasions reported that children who come to school without breakfast are less attentive, sleep in class, lack energy to play, and sometimes cry because they are hungry. In general their learning capacity is reduced and attendance is low. School feeding is also very relevant when a majority of the mothers work outside their homes and have little time to prepare proper food at home.

(b) Feasibility

Implementation requirements depend on whether a hot meal or a simple snack is prepared and served at the school. Snacks may be easier to handle. All the facilities and utensils needed to prepare and serve food for large groups are needed for cooked meals. A cook and programme manager must be selected, trained and paid. It is often necessary to appoint one part-time paid staff member, even when most of the work is done by volunteers.

The following factors contribute to the success of school feeding:

(i) a regular supply;

(ii) familiar food served at the school;

(iii) teachers involved in management, preferably assigned to the school feeding programme by the ministry of education, and trained in basic nutrition and group feeding;

(iv) parents committed to school meals, participating in planning, implementation and nutrition education either at the school or in the community;

(v) children involved in preparing and growing some of the food, possibly bringing own plates from home;

(vi) community construction or contribution of simple feeding place with kitchen;

(vii) monitoring and evaluation involving teachers, parents and children.

Opposition to school feeding may come from the ministry of education and the parents unless its benefits are thoroughly explained. The ministry may fear overloading of the curriculum and teachers. Parents may fear their children will be diverted from their studies in order to collect firewood, fetch water and tend the garden.

(c) Integration with similar existing programmes services

School feeding can be integrated with the school programme, since one of its purposes is to enrich the nutrition education component of the curriculum. The meal programme may be used to teach agriculture, domestic science, health education and basic hygiene. It may also be linked with women's clubs and community nutrition activities conducted by health services, youth organizations, religious groups, adult and nonformal educational programmes, among others. But these other activities should not be permitted to overburden the school.

(d) Effectiveness

(i) Nutritional impact is difficult to measure rigorously, since basic research remains to be done linking short-term fasting to blood nutrient levels and to learning capacity. It is known, however, that reduced calorie intake lowers physical activity levels and increases the amount of time spent sleeping.

Impressionistic reports by teachers strongly support the common perception that hunger reduces alertness and learning performance.

(ii) Reduction of inequalities should be high because school feeding should reduce the learning gap between the well-fed children of upper-income families and the hungry children from poor families. Improving attendance reduces inequlaity since the poorer children are more likely to be motivated to attend because of food. The meal also is an income supplement for poor households who save money on children fed at school.

(iii) Stimulation of participation and increased self-reliance occurs primarily by increasing the school attendance and achievement of lowest income groups. High school performance probably is more important for eventual self-reliance than the effects of community participation in the programme, though all types of community involvement and support, such as provision of local food and construction of kitchens or wells do increase self-reliance. Prolonged use of donated foods, however, may create dependency unless timely steps are taken to phase them out.

(iv) Strengthening of other project components - namely education - is one important purpose of school feeding. The programme may also train other community groups in cooking and gardening methods, as noted in section (c) above. It may be used to develop recipes and menus incorporating new agricultural products and set nutritional and food safety standards for traditional foods. Families may be motivated to adopt these new methods that their children learn at school. Because the feeding programme handles large quantities of food, it may also demonstrate a model food storage system.

(v) Other development effects always occur with improved educational performance which is positively correlated with every type of development.

(e) Ease in targeting

This is high when the majority of children attending school are from low-income families. Contributions may come from all families in different ways - money from the wealthy and in kind (labour contributions) from the lower-income households.

(f) Cost and cost-effectiveness

This is difficult to calculate in monetary terms, particularly when community resources are utilized. When measured against the cost to society of permitting hungry children to perform poorly and drop out of school or the costs of cooking for each child individually, the cost-effectiveness of the group meal at school would appear to be high. However, most of the work in voluntary programmes is done by women, who may already be overburdened and may have to neglect vital tasks in the family. Such hidden costs should be estimated and efforts made to enlist men and young people in the programme.

(g) Ease in evaluation

Relatively easy if there are baseline figures on three major indicators: school enrolement, attendance and dropout rates. Weights and heights of children may also be collected, preferably as part of the educational curriculum in science, mathematics, nutrition, or related subjects. Weights and heights are unlikely to show reliable changes, because addditional food will increase the children's energy expenditure in schoolwork and play, but may not improve their physical growth rate.

(h) Likelihood of becoming long-term ongoing programme

High if well planned and well managed. Political support for school feeding is often strong. Unlike other feeding programmes it is often desirable for schoolfeeding to become a long-term programme based on local resources.

Overall appraisal

Very often fulfills a basic need. A high priority when locally relevant, the school feeding programme may be developed side by side with other nutrition efforts because it draws specifically on the school's community support network and may not compete heavily for other community resources.

3.12 HOME AND COMMUNITY GARDENS AND SMALL LIVESTOCK PRODUCTION

Definition

Home and community gardens and poultry or small livestock programmes differ from major agricultural projects in their scope and purpose. The investment in land and labour for gardens is very small compared with investment in major crops. Similarly, investment in household chickens is much less than in poultry farming. The purpose of these small-scale projects is not to increase the overall food supply, but to stimulate small-scale production and consumption of vitamins, minerals and proteins that may be lacking in the traditional staple diet. Examples are (a) green leafy garden vegetables to supply vitamin A; (b) soybean and other legumes to furnish vegetable protein; (c) citrus fruit trees as sources of vitamin C; (d) hybrid poultry that forage and are disease-resistant like local poultry but produce more eggs and meat.

Obviously, the same vegetables, fruits, poultry, etc. can be raised on a commercial scale. This section discusses their introduction on a small scale, under circumstances where small surpluses still may be sold.

Selection criteria

(a) Relevance

Is high when there is a clear deficit of a specific nutrient, such as vitamin A or animal protein that could be provided by the proposed food(s).

(b) Feasibility

The crops, poultry or animals introduced must not require a major investment of resources, since by definition they have second priority in comparison with subsistence or commercial agriculture. Minimal changes must be made in existing patterns of time use or financial expenditure, unless gardening can be done during agricultural slack periods or by household members who are only marginally employed. Whenever possible, locally familiar varieties and farming or live-stock raising methods should be used. For example, hybrid poultry or goats will be far more successful than pedigree stock. The hybrids will be disease-resistant and will forage for their own food, whereas the imported stock need immunizations, feedstuffs, bedding, nesting and so on. Local vegetable varieties may be grown from local seeds and will not need locally unfamiliar fertilizer or insecticides, for instance.

From unsuccessful rabbit projects it is known that there are difficulties in introducing unfamiliar procedures, even when the methods are not particularly difficult. Such projects can be valuable over the long term, but they need production efforts. Common problems with home garden projects have been: availability of sufficient water, reaching rural people on a house-to-house basis, persuading rural extension workers to work with small landholders, lack of trained people to promote home gardens, competition of animals for human food (grains for chickens) and failure to integrate the nutritional and economic benefits of home garden projects. Moreover, they have sometimes distracted households from staple food production. Community gardens or livestock efforts

require a high commitment to cooperative activities and component management. Otherwise they are plagued by inadequate labour input and petty thievery.

(c) Integration with similar existing programmes or services

Agricultural extension agents, home economist, contact farmers and nutrition monitors (see section 3.6) are logical personnel to teach home gardening methods. Primary school gardens may be integrated with community gardens. Food produced may be used in the school lunch (see section 3.11). Health services can promote the consumption of protective foods through nutrition education and demonstration gardens. The establishment of such applied nutrition programmes has been undertaken in some countries by university students as part of their practical training.

(d) Effectiveness

(i) Nutritional impact: potentially high after inevitable time in adoption of new practices. Home gardens can produce enough to provide for daily recommended allowances of vitamin A, vitamin C, calcium and iron, and in addition for substantial contributions toward thiamin, riboflavin and niacin requirements, for all household members. Home gardens can also contribute toward meeting protein and energy needs to an appreciable degree.

(ii) Reduction of inequalities: unlikely to be achieved by these programmes. Only households with land can participate. They are at risk of adding to the workload of already over-burdened women while continuing to deny these women access to genuine technical assistance in agriculture, represented by agricultural training and credit.

(iii) Stimulation of participation and increased self-reliance. Gardening can stimulate the creation of cooperatives and shops. A community-organized effort may persuade local authorities to improve water supplies. Home gardens tend to foster feelings of self-reliance.

(iv) Strengthening of other components occurs when protective food-production programmes complement farm youth associations, women's rural education curricula, agricultural cooperatives and nutrition education which can refer to home produced food. Home gardening practices such as pest control may prove applicable to field crops.

(v) Other development effects: not noteworthy, although surplus sold may increase family income.

(e) Ease in targeting

Moderate, similar to agricultural programmes with the exception that less land is required for home gardens than for large-scale agriculture so that poor families may be included. Demonstration gardens at maternal and child health centres can be used to reach the most nutritionally vulnerable pregnant and lactating women with nutrition education and gardening assistance.

(f) Cost-effectiveness

This depends on specific deficient nutrients and home grown foods. Centrally located demonstration projects reduce the costs of transporting extension workers or promoters in rural areas. Cost-effectiveness will depend on local infrastructure for reaching village households, initial purchase costs of seed, tools and animal stock, and on the degree to which the foods that are produced succeed in reducing expenditure on family food and medical care of malnourished children and in increasing family income if surpluses are sold.

(g) Ease in evaluation

High if production of protective foods is the criterion. A simple questionnaire based on the design of the programme can identify what has been produced or planted, but quantitative evaluation is difficult.

Community gardens can be judged successful if they are well tended and the people working in them have no complaints. Household consumption is hard to measure precisely but major trends towards use or non-use of the foods are easy to identify by group discussion, informal interviews and observation.

(h) Likelihood of becoming long-term ongoing programme

Moderate. It depends on the success or failure of the initial projects and on ongoing support from the community. Funding or technical support from international agencies has not been dependable in the long run. Garden projects that were dependent on such funds have ceased to exist.

Overall appraisal

A good investment, where practical conditions are favourable, in cultures in which vegetable farming and small animal keeping are a tradition. But care should be taken that gardening projects do not subtly increase economic inequality between the sexes by overburdening the women and distracting people from the priority of staple food production.

3.13 APPROPRIATE TECHNOLOGY IN FOOD PRESERVATION AND PREPARATION

Definition

On-farm and community storage of staple food crops is discussed in section 3.2. Appropriate technology in food preservation refers to household and community methods for preserving perishables such as fruits, vegetables, meats and seafoods. These include the following: (a) drying by using solar driers, cabinet driers; (b) salting meat, fish and vegetables; (c) fermenting foods such as fish, eggs, beans and rice; (d) iceless refrigeration; (e) smoking of fish and meats and (f) protective coating, such as palm oil on cowpeas.

Food preparation technolgy refers to stoves, pots, cooking fuel and cooking methods that use less fuel, cost less, or require less labour and time. Some examples are smokeless stoves, fuel-efficient stoves, propane boilers, solar cookers, hay boxes, biogas cookers, pressure cookers and soybean preparation into bean curd.

Selection criteria

(a) Relevance

(i) Food preservation. Relevance is high in areas with seasonal nutritional deficiency problems, and areas lacking refrigeration for fish and meat. Preservation of leafy greens, yellow vegetables and fruits will provide susceptible children with supplies of vitamin A, for example, out-of-season.

(ii) Food preparation. Relevance is high if lack of cooking fuel or labour-intensive food preparation methods contribute to malnutrition. Nutritional status may be improved in the following circumstances:

a. when savings in family expenditure on cooking fuel increase purchasing power and make it possible to cook more frequently;

b. when savings in time and energy spent by women to gather fuel allow them to cook nourishing foods more frequently and to take better care of their children and themselves;

c. when spoiled or contaminated foods are no longer eaten.

(b) Feasibility

The success of the intervention depends on the following conditions:

(i) the community recognizes that the new technologies will result in savings in food, fuel, or other resources;

(ii) the community has an infrastructure which can provide technological assistance and training to the local people;

(iii) the technologies are culturally acceptable and well accepted by decision-makers and personnel concerned with extension work at the community level.

"Seed" funds will often be needed to provide the initial subsidy to allow the new ideas to take root in the community. It is ideal but not always feasible to develop a working partnership with the community in which both the programme and the community are co-contributors from the beginning. Once the project has proved to be effective, the community members should be willing to spend money or resources on it.

Food preservation and preparation technologies have encountered numerous problems. Food processing techniques may result in the alteration of the taste, texture or appearance of food, making it culturally unacceptable. Some food processing technologies have put women out of work and deprived poor families of income. Cost may be a major drawback. For example, the cost of constructing a biogas unit is beyond the reach of many rural farm families. The same holds true fro certain fuel-efficient stoves and solar cookers. Although solar power would seem to be an appropriate source of energy for many developing countries situated close to the equator, solar power's effectiveness is greatly diminished during long rainy seasong. Another reason for non-acceptance of solar cookers in Africa is that African women prefer to cook indoors when the sun is down. Finally, many technologies developed in one country are unknown in neighbouring countries.

(c) Integration with similar existing programmes or services

The integration of technoligies of food processing and preparation into existing programmes in agriculture, health, nutrition and socioeconomic and educational development is feasible and appropriate because they share common goals and effects. Agricultural extension agents, their contact farmers, home economist, community level nutrition monitors in the primary health care system, primary school feeding and gardening programmes and nutritional communication efforts are logical channels for appropriate technology in nutrition.

(d) Effectiveness

(i) Nutritional impact: not measured, but may be significant. One could argue persuasively by use of regional examples that there is a correlation between the use of food preservation and preparation technologies and nutritional status.

(ii) Reduction of inequalities may be high, particularly with regard to the sexual division of labour. It has been estimated, for example, that the average rural African woman works approximately 15 hours a day. Of these 15 hours, wood collection alone requires four and a half hours or a quarter of the working day. Therefore, any energy-saving technology in food preservation and preparation will leave her more time for economically productive labour and for taking care of herself and her children. Reduced food spoilage also may reduce the need for poor families to buy extra food.

(iii) Stimulation of participation and increased self-reliance: not a major consideration but may occur when the community is

actively involved in developing appropriate technology, as when a women's cooperative makes and markets bean curd.

(iv) Strengthening of other project components depends on the interactions between the specific technology and other programme efforts. For example, if the home garden grows vegetables, a preservation technique will strengthen this component.

(e) Ease in targeting

Moderate to low. Wealthier households usually are the first to adopt new methods. Lower income groups may follow when the method proves its value.

(f) Cost-effectiveness

Undocumented. However, the cost of implementing most food preservation technologies is low. The cost of newer technologies in food preparation may be high in the beginning (e.g. in the construction of a solar cooker or biogas unit). One must weigh this cost against the long-term savings of using fuels that are almost free, like solar energy.

(g) Ease in evaluation

Low for nutritional impact because of the many factors that intervene between technology adoption and nutritional status. Information concerning adoption rates should be easy to collect. Process analysis investigating reasons for success or failure also is not difficult.

(h) Likelihood of becoming long-term ongoing programme

Moderate to low. The food processing and preparation technologies themselves are likely to be implemented continuously because of their great potential for increasing household food and resource availability. However, the appropriate technology efforts of a specific project should take place only at times when specific new technologies need to be introduced.

Overall appraisal

Introducing appropriate technologies at the household and community levels as a component in combating malnutrition is a fairly recent innovation. The potential health, nutritional and economic benefits of these technologies is promising, but their effectiveness and impact have yet to be evaluated.

3.14 DISTRIBUTION OF SPECIFIC NUTRIENTS

Definition

The distribution to a designated target group of specific nutrients in a manufactured form (tablets, capsules, drops, injections) to correct or prevent a particular nutritional deficiency most commonly takes the following forms: (a) vitamin A capsules to young children or pregnant women; (b) iron and folate tablets to pregnant women; (c) iodized oil injections to individuals in areas of endemic goitre.

Selection criteria

(a) Relevance

The intervention is extremely relevant where a specific, acute deficiency has been diagnosed and corrective action is urgently needed, for example when advanced symptoms of xerophthalmia (vision impairment) are present.

(b) Feasibility

The intervention will have a greater probability of success if the region or country as a whole has the following:

(i) a healthy infrastructure which provides coverage in areas where the most afflicted groups are located (generally in rural zones or marginal urban areas) and to which the distribution could be readily added;

(ii) commitment to covering the recurrent materials and personnel costs associated with the nutrient distribution;

(iii) a nutritional surveillance system which enables it to identify the specific nutrient deficiencies and the afflicted groups.

Direct distribution may be able to attract reasonable support from politicians and international donors. Severe deficiencies of Vitamin A and iodine are highly visible, with clearly adverse human and economic consequences. They also appear technically manageable because they do not depend on socio-economic change. Anaemias are not as visible or understandable and may require more education in order to elicit support.

The community may welcome efforts to eradicate goitre or xerophthalmia if they understand the programme. Ease of access will be another key to community acceptance.

Opposition may come from health ministry administrators or service providers who have to mount these programmes on top of existing taxing workloads. Finance ministry officials may not be receptive to the recurring fiscal costs entailed in the programme.

The major problem experienced by vitamin A distribution programmes has been the heavy dropout rates for the second and third doses. This is similar to the experience of immunization programmes. The organizational ability and

infrastructure of the health system are the major limiting factors in implementation. The capacity to mount major periodic campaigns two to three times each year is often, if not generally, weak. If deficient individuals are missed on one round they have to wait another six months to receive another dose. This is not so severe a constraint for the iodized injections because the periodicity is low (every five years). The coverage and outreach of the existing systems are fequently less than needed to achieve sizeable impact. This is particularly constraining for the iron/folate distribution which is on an almost continuous basis.

(c) Integration with similar existing programmes or services

Where existing health services have the necessary coverage or outreach capacity, then adding on the distribution of the nutrients to current activities is feasible and desirable. When mass doses are given with low periodicity, e.g. every four to six months for vitamin A capsules, other existing delivery systems might be used such as family planning programmes, malaria monitors, immunization teams or even supplementary feeding programmes.

There is a close interaction and association between vitamin A deficiency and protein-calorie malnutrition. Therefore, it may be necessary to address both deficiencies simultaneously in order to get a positive impact on either. Thus, the direct distribution programme might have to be coordinated with a supplementary feeding or food subsidy programme. Similarly, iron and folate distribution should perhaps be coordinated with sanitation programmes or deworming programmes at maternal and child health centres.

(d) Effectiveness

(i) Nutritional impact: high.

a. vitamin A

Doses of 100,000 to 200,000 IU every six months can rapidly increase the blood serum levels of vitamin A and decrease the incidence of xerophthalmia in preschool children. Vitamin A levels in the breast-milk of lactating women can also be raised. For severe deficiency cases water-based vitamin A injections of 50,000 to 100,000 IU appear appropriate. The effects of longer-term results tend to diminish significantly in terms of coverage due to commonly high dropout rates for the subsequent distribution.

b. iodine

Where goitre has been very geographically concentrated the administration of iodine-oil injections at five-year intervals has significantly decreased the prevalence of endemic goitre and of cretinism. Where goitre has been more widespread, the iodization of salt has proved to be an extremely effective alternative to direct distribution.

c. iron and folate

Iron and folate distribution has been effective in raising

the mean haemoglobin concentration in pregnant women and in reducing the prevalence of anaemia. Iron supplementation has improved physical endurance and work capacity of anaemic labourers. Other nutrient deficiencies, intestinal parasites and bilharzia may limit the effectiveness of the iron/folate supplement.

(ii) Reduction of inequalities: not a short-term effect. However, given that the afflicted groups are primarily of lower-income families and that the afflictions can adversely affect their earning power (vision or hearing impairments lower work capacity), the eradication of these deficiencies may ultimately lead to enhanced incomes. The reduction of the anaemia levels in women may help remove one of many impediments to their fuller participation in the development process.

(iii) Stimulation of participation and increased self-reliance: currently low. Traditionally, mass dose distribution programmes have been conceived and administered from the top down. The level of community participation has been nil, perhaps as evidenced by the high dropout rates. This need not be the case. Once the programme is established the delivery of the nutrients could rest largely with the community, with the central government providing the doses for distribution.

(iv) Strengthening of other project components: moderate to high. The delivery of specific nutrients has a synergistic effect with other nutrition and health interventions on overall health status. Furthermore, to the extent that work capacity is increased, a positive effect on agricultural production may be achieved.

(e) Ease in targeting

High. The afflicted or vulnerable groups are not difficult to identify and the whole thrust of direct distribution is to reach precisely these groups. Thus, targeting is easy but actually reaching the desired group on a continuous basis will be limited by the coverage of the delivery system and the continued motivation of the recipients.

(f) Cost-effectiveness

High. Costs include the nutrient, the targeting and the distribution processes. Figures given below provide an estimate based on data collected during the 1970s. All figures are in United States dollars and are presented only to illustrate comparative costs.

(i) Total cost per recipient per annum

iron tablets	0.50
iodized oil	0.09

(ii) Cost of nutrient (per 1,000 doses)

iron tablets (100 mg of elemental iron)	0.95
iron and folate tablets (idem + 5 mg FH_4)	0.97
iodized oil (1 ml)	200.00
vitamin A tablets (200,000 IU)	10.44

(iii) Cost of nutrient as percentage of total cost

iodized oil	40%

(iv) Cost per person at risk per annum

iron tablets	1.85
iodized oil	0.36

(v) Cost per cured or protected person per annum

iodized oil	0.44

Lowering these costs is possible by integration with other activities. When distribution is part of other services activities such as primary health care or integrated nutrition and health care, it takes little time, and if in addition screening has already been done, costs can be substantially reduced.

(g) Ease in evaluation

Moderate. The effectiveness and efficiency of delivering the nutrients can be evaluated relatively easily because the distribution system is not complex. Evaluation of the biological impact is manageable for vitamin A, iron and iodine, but most difficult for vitamin A. Assessing the vitamin A levels in the serum requires a specialist. Verifying the clinical signs of xerophthalmia requires special training, although it can be done by competent paramedical personnel. Anaemia can be assessed by auxiliary personnel. Assessment of goitre prevalence needs a specialist but can be done in a short period and at long intervals.

(h) Likelihood of becoming long-term ongoing programme

Moderate. Direct distribution of iodized oil would have the highest likelihood of continuity because the frequency of efforts is lowest. The distribution of iron and folate through existing health centres should also be reasonably easy to institutionalize because it would require minimal change in prevailing procedures. The distribution of mass doses of vitamin A would be the most difficult to sustain assuming that it would also require special outreach efforts to contact the target group.

Overall appraisal

Iodized oil injections are feasible and desirable where the incidence of goitre is geographically concentrated. If it is more widespread, iodization of salt or another more appropriate vehicle should be considered. Iodized oil injections for individuals at highest risk might be considered as an interim measure until fortified salt can be marketed.

Iron and folate distribution should be a normal activity of maternal and child health clinics but special efforts should be made to reach the most severely afflicted women and children. Distribution to anaemic adult males through work places should also be considered. Complementary measures attacking other aspects of the etiology of anaemia should be undertaken simultaneously.

Mass doses of vitamin A are necessary for seriously afflicted individuals. However, larger-scale undertakings should be made only if there is a strong capability to mobilize the target communities periodically. Alternatives to the mass dose approach should be considered: the development of home gardens to provide local sources of vitamin A and the fortification of an appropriate foodstuff with vitamin A.

3.15 PROMOTION OF BREASTFEEDING

Definition

Promotion of breastfeeding involves both its encouragement and facilitation.

Encouragement includes (a) education of pregnant and postpartum women and their families and health care providers about the nutritional benefits of breastfeeding, its management, and the nutritional needs of the mother. This education must be combined with supplementary feeding advice (see section 3.10); (b) nutritional support, in the form of supplementary foods for malnourished low-income pregnant and lactating women and their infants.

Facilitation includes the following:

(a) Childbirth facilities and procedures that

(i) put the infant to the breast immediately following delivery or within the first four hours and continue putting the child to nurse each time it cries;

(ii) do not give the infant any substances by bottle except on doctor's prescription;

(iii) keep mother and infant together from birth, using supporting staff and home network to lighten the mother's work burden, not to "free" her of the baby;

(b) Child care, in the form of day care at the mother's work place designed to support breastfeeding, or personnel who bring the mother and child together at nursing time;

(c) Flexible work schedules for lactating women and a work place structure that provides time out for breastfeeding;

(d) Paid maternity leave;

(e) Support of home-income generation for lactating women;

(f) Legislation to prohibit the sale of feeding bottles and formula to mothers who lack the means to bottle-feed safely.

Selection criteria

(a) Relevance

There is no need to argue the benefits of breastfeeding. Its promotion is relevant when breastfeeding practices are dysfunctional, as when colostrum is not given to the child or mothers feed from one breast only, or practise token breastfeeding. Also relevant when the project area is exposed to the promotion of commercial infant foods or formula that substitute for breastfeeding and when women's employment opportunities are in conflict with it. The project itself may expose the community to urban or international influence or generate employment for women in a manner that reduces breastfeeding rates unless

preventive or remedial action is taken.

(b) Feasibility

Many factors influence infant-feeding decisions including income, time, education, social status, power relationships in the family, and exposure to 'modern' marketing. To be successful, a breastfeeding intervention must address the specific constraints and do so in a manner appropriate to the problem and the population. Advertising and posters may be adequate to encourage breastfeeding and proper feeding habits when the deviation from optimal behaviour is not great. When poor infant-feeding practices differ significantly from ideal methods, then more staff time and money is required. In a cultural setting in which men do not approve of their wives breastfeeding, an education programme focused on the men may be most successful. Breastfeeding should be easily acceptable because it is inexpensive, convenient and has great health benefits for the infant, but a promotional campaign is unlikely to receive much support outside the health system unless political leaders have made it a national issue. Resistance to changes in childbirth procedures generally comes from within the health services. Obstetrical and paediatric hospital and health centre personnel frequently receive benefits from infant-formula companies. Legislation that prohibits the distribution of samples is the only method of eliminating this.

(c) Integrating with other services

Breastfeeding promotion should be integrated with maternity services. It has been successfully integrated into primary health care projects as part of the nutrition education curriculum. Theoretically, breastfeeding education could be linked to the agricultural extension system as well but such attempts have not yet been made. Family planning also provides an appropriate structure for breastfeeding education.

(d) Effectiveness

(i) Nutritional impact: depends on local socioeconomic level. Breastfeeding is highly protective of infant health and nutritional status in areas where the water supply is unpurified, environmental health is poor and maternal education is low. Nutritional impact of breastfeeding promotion programmes can be dramatically influenced when accompanied by legislation prohibiting the sale of feeding bottles.

(ii) Reduction of inequalities: not a long-term benefit of breastfeeding promotion, although breastfeeding enables infants from low-income families to make a healthy start in life. Frequently, the post-weaning child from a low-income family whose mother breastfed him is still not as well off as his peers from wealthier families simply because he can progress only so far before the family's economic situation constrains his progress.

(iii) Stimulation of participation and increased self-reliance: limited. In that breast milk is a natural product that requires no external inputs (aside from a small increase in the mother's diet), breastfeeding encourages self-sufficiency on an individual, household and national basis. It is unlikely, however, that breastfeeding promotion encourages women's participation in economic development unless services exist to facilitate it.

The choice to continue breastfeeding past the early weeks may decrease a woman's economic self-reliance and limit her employment options if breastfeeding support is not available.

(iv) Strengthening other project components: high, as breastfeeding enhances child health and family planning efforts. Breastfeeding exerts a natural birth spacing effect. Money saved on infant formula may become available for other nutritious foods.

(v) Other development effects: possible. For example, foreign exchange would be saved if all women breastfed their infants for four to six months.

(e) Ease in targeting

All pregnant and lactating women in the project area are potential targets of such programmes. Through the primary health care providers it is fairly easy to identify and target to low-income pregnant and lactating women. (See section 3.7 for a discussion of targeted use of radio and other nutrition education channels.)

(f) Cost-effectiveness

Not documented, but may be high. Although direct data on the cost-effectiveness of promotional programmes are not available, data from indirect calculations show clearly that breastfeeding may represent economic savings when compared with formula feeding:

(i) the extra food cost for a mother to produce adequate milk is only between one half and one third of the cost of purchasing infant formula;

(ii) to rehabilitate a malnourished infant costs many times the extra food cost of the mother to produce breast milk;

(iii) the cost to society of a child's death caused by malnutrition cannot be quantified, as it is difficult to put a monetary value on the fertility-reducing effect of breastfeeding.

Changes in maternity hospital procedures could actually reduce the costs per birth by eliminating bottles and infant formula.

(g) Ease in evaluation

Average.

(i) Assessment of mean duration of breastfeeding or of number of children breastfed at a given age, through a brief questionnaire, is easy;

(ii) Evaluation of combined artificial feeding requires a specialist, but is feasible at reasonable cost;

(iii) Evaluation of impact on nutritional status is extremely difficult for the following reasons:

a. relative ignorance of the factors that affect length of breastfeeding and decision to wean the child;

b. the important role of socioeconomic factors on mothers' behaviour (in Europe or the United States of America, breastfeeding is more common among more educated classes; in many developing countries it is the reverse);

c. marked spontaneous change, particularly as urbanization proceeds. Impact needs to be compared with the national trend or a control group, which is not easy;

d. changes in motivation and effects of legislation or of counter-advertising are still improperly understood.

(h) Likelihood of becoming a long-term ongoing programme

Intensive promotion of breastfeeding in developing countries will be needed as long as the alternatives remain unhygienic, expensive and inferior in nutritional value to breast milk. Ultimately, the subject should become part, on a long-term basis, of the normal educational activities of health and extension programmes.

Overall appraisal

Any development programme which influences the supply of potential weaning foods, women's non-domestic work opportunities or work place, or exposure to external influences should integrate a breastfeeding programme into its framework to forestall a reduction in rates of breastfeeding. This entails extra expense, extra staff and sensitivity to local needs some or all of which may be lacking in the usual agricultural project. In other circumstances breastfeeding promotion should be a part of general nutrition education.

3.16 FOOD FOR WORK

Definition

Food-for-work projects provide food as a partial or total payment for work that promotes socioeconomic development. Thomas and Hook and World Food Programme literature describe seven major types of such programmes.

(a) Relief projects respond to acute shortfalls in food and/or income resulting from disaster. Projects usually cover a single crop cycle, providing enough food to compensate for lost income and crops.

(b) Directly productive projects promote economic growth, usually by increasing the amount of land in production and intensifying the use of presently cultivated land. These are irrigation, flood control, drainage, forestry and water management projects.

(c) Economic infrastructure projects enhance regional economic development by constructing roads, markets, post-harvest storage facilities, and other works.

(d) Social infrastructure projects address social causes of under development and enhance human capital by building schools, health care facilities, community buildings and private houses.

(e) Training projects provide training either in improved agricultural practices or in development of marketable skills.

(f) Agricultural adjustment projects use food as payment and insurance to small farmers willing to innovate and/or alert their crop mix.

(g) Land settlement projects provide food as payment and encouragement for resettlement or to develop new areas, until agricultural self-sufficiency is realized.

A distinction is made between food-for-work objectives in the short term, or "construction phase", when food is actually being distributed, and in the long term, the operational phase, when the flow of food has ceased and the newly created infrastructure, asset or skills are influencing the recipient population.

Selection criteria

(a) Relevance

The food-for-work concept is very relevant if absolute lack of food is the cause of malnutrition, as in relief and land settlement projects. It is relevant, at least during the construction phase, if poverty is the cause of malnutrition and if the implementation requirements in the following section (b) are met. Relevance during the operational phase depends on the success of the construction phase and on equitable distribution of the created assets.

(b) Feasibility

An essential condition for food for work is a pool of unemployed or underemployed labour. If women are employed, child care may have to be provided. Projects may be organized on a seasonal basis to take advantage of slow periods in the agricultural cycle. A second major condition is inadequate regional food availability. If enough food is available, the large food rations distributed by the project will have disincentive effects on local agriculture and markets.

Projects have frequently encountered operational difficulties with the following:

(i) timely food distribution. Late delivery of food is a common, serious problem. Administrative costs may be 25 to 50 per cent higher than for public works projects paid in cash, due to transportation, storage and distribution requirements;

(ii) complementary resources and equipment to complete the work, which have sometimes been lacking.

(iii) supervision, administration and technical assistance.

These problems can result in low enthusiasm and productivity on the part of the worker. When they are severe, work stops and projects become food doles. Poor maintenance of completed structures is a problem, suggesting that communities and operating authorities expect the state or donor agency to maintain them.

(c) Integration with similar existing programmes or services

It is imperative that food-for-work schemes be used to implement or complement the government's overall development framework. Such a strategy makes it worthwhile for government developers to pool resources with the project and to minimize problems with planning, technical assistance and complementary inputs.

(d) Effectiveness

(i) Nutritional impact: little known. It is assumed that the food ration should have a positive impact on dietary intake during the construction phase, but this assumption has never been tested. In cases of famine relief and resettlement, the effects are obvious.

(ii) Restriction of inequalities depends on government commitment to equity and ownership of assets and access to services in the project area. If government is not highly motivated to rectify inequities in the existing rural power structure, the assets created by food-for-work projects may benefit the elite. See table 4 for effects by project type and phase. During the construction phase, managers may discriminate against weak workers for the sake of increasing productivity.

(iii) Stimulation of participation and increased self-reliance may occur if the project specifies self-reliance as a programme

objective. On the other hand, payment in food may be viewed as psychologically degrading and is often unpopular with workers. To some it implies a public admission that they are unable to produce enough food to feed themselves and are dependent on foreign assistance. Dissatisfaction is particularly likely if unfamiliar foreign foods are provided.

(iv) Strengthening of other project components and other development effects: high. These are more important objectives than improved nutrition.

(e) Ease in targeting

A major trade-off occurs between employing needy persons with low capabilities and maintaining a reasonable level of worker productivity. Participation that is limited to the destitute carries a social stigma. Lower wages result in self-targeting to the most malnourished. But higher wages may have the benefit of increasing equity by driving up wages in the local labour market, if the project is large enough to offer a real sources of alternative employment. This strategy will backfire if landowners turn to labour-saving capital investment when wages rise. The size of the food ration (wage) will determine both the numbers and the alternative occupations of those who enrol in the project. A ration set equal to existing cash wages will not draw workers away from other viable employment, such as productive farming.

(f) Cost-effectiveness

Reasonable. Economic returns to investment have generally been found to be quite respectable, and vary by type of project (see table 3).

(g) Ease in evaluation

Difficult, because of differing phases and long-term effects on production, employment and income. At the project level, process evaluation is probably the only tool available and is sufficient until evaluation researchers succeed in developing simpler designs. Active and critical research on this subject is currently being conducted.

(h) Likelihood of becoming a long-term ongoing programme

Low. The labour force employed in the construction phase of food for work will usually be out of work again when this phase is over, unless the project provides for them.

Overall appraisal

The best effect may be to mitigate temporary dislocations caused by land reform or resettlement, which provide opportunities for the poor to help themselves as a consequence of the food-for-work programme outputs.

Food-for-work projects will fail if they are not carefully designed and well managed. The food itself cannot pay for the costs of design and management. The food cannot be given in isolation but must be given together with adequate

Table 3. Objectives of food-for-work projects

Project category	Employment creation (and income effects)	Redistributive effects	Economic returns e.g. agricultural output
Relief programmes	short term: high long-term: none	short term: in favour of the poor long-term: none	low
Productive assets, e.g. wells, cleared land	construction phase: low to medium operational phase: high	construction phase: in favour of the poor operational phase: usually in favour of landowners	high
Training projects	short term: low long-term: low	in favour of the poor	low to medium
Economic infra-structure, e.g. roads, market facilities	construction phase: high operational phase: low to medium	construction phase: in favour of the poor operational phase: vairable	medium
Social infra-structure, e.g. health clinics, community centres	construction phase: low to medium operational phase: low	construction phase: in favour of the poor operational phase: usually in favour of the poor	low
Agricultural adjustment	short term: low long-term: medium	in favour of the poor	high (if there are reasonable incentives for agricultural productivity)
Land settlement	short term: high long-term: high	in favour of the poor	variable

funding to cover these other costs. Moreover, the project design must be supported by a macroeconomic policy that is not biased against agriculture or the rural sector. Such projects will not be successful in benefitting the poor in most of the cases where distribution of income in the project area is highly inequitable.

Annex

SELECTIVE BIBLIOGRAPHY

The following listing is not a complete bibliography as the document is intended for practical use and not as a review of research in the field. The references given are major sources in which extensive background information may be found.

Austin, J. E. and Zeitlin, M. F., ed. 1981 — Nutrition Intervention in Developing Countries: an overview
Study 1: Supplementary Feeding
Study 2: Nutrition Education
Study 3: Fortification
Study 4: Formulated Foods
Study 7: Integrated Nutrition and Primary Health Care Programs
Oelgeschlager, Gunn and Hain; Cambridge, Massachusetts

Beghin, I. D. 1976 — Centres for combatting childhood malnutrition in Nutrition in the Community, ed. D. A. McLaren John Wiley and Sons, New York

Burgess, A. 1982 — Evaluation of Nutrition Interventions, Annotated Bibliography and Review of Methodology and Results second edition; FAO Food and Nutrition Paper 24, Rome

Carr, M. 1978 — Appropriate Technology for African Women United Nations publication, New York

FAO 1982 — Management of Group Feeding Programmes FAO Food and Nutrition Paper 23, Rome

FAO 1978 — Post-harvest Food Losses in Developing Countries National Academy of Science, Washington, D.C.

FAO 1982 — Report of the FAO Expert Consultation on Rural Poultry and Rabbit Production, FAO, Rome.

FAO 1983 — Integrating Nutrition into Agricultural and Rural Development Projects
Nutrition in Agriculture Series No. 1, FAO, Rome

Jelliffe, D. B. and Jelliffe, E. F. P 1978 — The volume and composition of human milk in poorly nourished communities, review A. J. Clin. Nutr. 31

Mason, J. B. et al.
1982
Principles for Evaluation of On-going Programmes
Cornell Nutritional Surveillance Programme Working Paper No. 5 Cornell University, Ithaca, New York

Pacey, A.
1978
Gardening for Better Nutrition
Intermediate Technology Publications Limited,London

Singer, H.
1978
Food Aid Policies and Programmes: a Survey of Studies of Food Aid
World Food Programme, Rome

Zeitlin, M. et al.
1982
Nutrition and Population Growth: the Delicate Balance
Oelschlager, Gunn and Hain; Cambridge, Massachusetts

M-80
ISBN 92-5-101402-7