

Conceptual Article

Selective feeding centres in refugee settings: evaluation framework protocol

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Selective feeding programs are centres for the treatment of persons suffering from acute malnutrition. Unlike chronic malnutrition, acute malnutrition reflects recent problems. In a crisis situation, wasting is preferred above other indicators because it is sensitive to rapid change, indicates present change, can be used to monitor the impact of interventions and is a good predictor of immediate mortality risk. This paper reviews the current approach being used in the field to evaluate the effectiveness of feeding programs. There is no comprehensive evaluation framework in place to assess the impact of feeding programs on mortality due to malnutrition. Some loose outcome measures, such as the number of children enrolled in a feeding centre, are being used to determine if a feeding centre should continue. In addition, malnutrition prevalence and crude mortality rates determined through nutritional and mortality surveys are used to assess the impact of feeding programs. This procedure does not take into account potential confounding factors that impact on malnutrition prevalence, including access to non-relief foods and the general food ration. Therefore, one could not confidently say that the reduction of malnutrition prevalence is a result of feeding programs. This paper presents an alternative approach to evaluating feeding centres.

Key words: evaluation, feeding programs, malnutrition, refugees.

Background

Selective feeding programs (SFP) are programs that look after acutely malnourished people and those at high risk of malnutrition. They include therapeutic feeding programs and supplementary feeding programs.^{1,2} Therapeutic feeding programs are programs that treat severely malnourished persons (children, adolescents and adults), while supplementary feeding programs deal predominantly with moderately malnourished children, pregnant women, lactating mothers and, in some cases, people who are unable to look after themselves: notably unaccompanied children, orphans, the disabled and elderly. This paper, however, will concentrate solely on proposing an evaluation framework for SFP to treat acutely malnourished children.

There are various published materials and guidelines regarding the management of malnutrition in emergency situations,^{3,4} but there is a paucity of evaluation frameworks to appraise the effectiveness of feeding centres. Current practice in the field is not based on clearly defined goals and objectives and hence, lacks a framework whereby it can be objectively evaluated. Therefore, the aim of this paper is to apply standard program evaluation methods to refugee public health nutrition in emergency situations. In proposing this evaluation framework, the author is drawing from his experience working with international non-government organisations (NGO) and United Nations agencies as a nutritionist in refugee settings, and is attempting to respond to concerns raised in forums and symposia on nutrition in emergency

situations, in which the author has participated. This evaluation proposal is applicable both to nutritional programs at the onset of a disaster and also to established refugee camps, although some adjustment to the timeline is needed such that it is reflective of any given situation.

Introduction

Having crossed borders into neighbouring countries, refugees leave behind their belongings and are totally dependent on humanitarian aid. They find themselves without food, shelter or health care and are therefore susceptible to infectious disease outbreaks. Some of these diseases are contributing factors to malnutrition in the most vulnerable groups, such as children aged less than 60 months. A complex nutritional and medical intervention needs to be put in place in order to reduce the crude mortality rate and maintain it at normal levels. Nutritional intervention without a medical intervention is not sufficient to reduce the mortality due to global (severe and moderate) acute malnutrition. Considering the relationship between malnutrition and infectious disease, the success of selective feeding programs is limited

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Accepted 7 November 2001

without treatment and surveillance of the main causes of death in the malnourished. These include dehydration, infection, hypothermia, hypoglycaemia, cardiac failure and severe anaemia.¹ Thus, selective feeding programs will aim to treat infections while at the same time correcting metabolic imbalances and vitamin deficiencies. It is not the aim of this paper to discuss systematic treatments and feeding practices in selective feeding programs; a well-covered discussion of these issues is presented by Médecins Sans Frontières.⁵

There are other types of nutritional programs that are run in emergency situations alongside SFP to meet the nutritional needs of the whole population. These programs are known as general feeding programs.⁶ The general food program most commonly implemented in emergency situations is the general food distribution (GFD) program. A GFD program is a nutritional program that aims at meeting the minimum food and nutritional needs of the whole affected population through the distribution of a standard general ration. Ideally, the ration provides at least 2100 kcal per person per day, of which 10% comes from protein and at least 10% comes from fat.⁷ There is, however, a relationship between a GFD program and SFP. Research has shown that GFD programs are inversely associated with malnutrition prevalence. That is, an adequate GFD program limits the deterioration of nutritional status of the affected population while inadequate GFD programs have been associated with high malnutrition prevalence.⁸ Because malnutrition prevalence is a key factor when determining the need for SFP, GFD programs impact indirectly on the effectiveness of SFP. Hence, when evaluating SFP, the impact of GFD programs should be measured and correlated to the effectiveness of SFP.

Are selective feeding programs amenable to evaluation?

There is a process to undergo in order to determine if a program can be evaluated. This process is known as evaluability assessment.^{9,10} Evaluability assessment is more concerned with whether or not a program is ready to be evaluated, and with four evaluation requirements¹¹ that need to be satisfied. These conditions are also valid for selective feeding programs and can be summarised as follows:¹ (i) There must be a logical reasoning between completely defined program activities and the program goals.² (ii) The program must have been properly implemented.³ (iii) There must be a clearly defined evaluation question that is agreed upon.⁶ (iv) There must be an agreed evaluation measure and method of evaluation. Careful planning is required to meet these conditions. However, given that selective feeding programs are usually designed in response to an emergency, some steps, such as designing clear and concise goals and objectives, are often missed. If a selective feeding program is well designed, the final plan should be precise enough for a person other than the designer to pick it up and implement it. Because goals, objectives, sub-objectives and strategy objectives relate directly to the evaluation outcome measure,¹¹ failing to determine them makes valid evaluation of selective feeding programs problematic, if not impossible.

Defining goals, objectives, sub-objectives and strategic objectives of a feeding centre

There are many ways of defining goals and objectives. For this paper we have used a health analysis model using the Precede–Proceed planning model¹² as a conceptual framework to illustrate how goals, objectives, sub-objectives and strategic objectives of selective feeding programs should be defined. The Precede–Proceed model has been successfully used in health planning and is based on the premise that factors important to a health problem must be diagnosed before the intervention is designed. These include factors that affect behaviours that are divided into predisposing, enabling and reinforcing factors. Predisposing factors deal with issues related to attitudes, beliefs and values as means of motivation for behaviour. Enabling factors are skills and resources that are required to facilitate change, while reinforcing factors are issues related to social support, which provide an incentive for particular behaviour.^{13,14} So, the use of the Precede–Proceed model as a tool to analyse health problems and define the goals, objectives, sub-objectives and strategic objectives of the feeding program will in turn indicate the responses required to address the identified health problems.

A potential problem with the implementation and subsequent evaluation of selective feeding programs arises if providers fail to start the planning from an outcome point of view. In an emergency situation, good planning should consider the health problem and work backwards to determine the cause of and contributing factors to it. Interventions should be targeted at the preceding factors that resulted in the health problem. The health problem may, for example, be a high malnutrition prevalence rate or a high proportion of mortality due to malnutrition, or even a high proportion of malnutrition and mortality due to inappropriate feeding practices such as bottle feeding. It is the cause and factors that contribute to the health problem that should be targeted when shaping and defining both the nature of selective feeding centres and the appropriate goals and objectives to achieve; ultimately determining outcome measures and the kind of evaluation to be carried out.

Suppose that a selective feeding program composed of two therapeutic feeding centres and four targeted supplementary feeding centres has been running for 5 months in a refugee camp. A formative evaluation identifies high mortality due to malnutrition as the main health problem. How would one redefine goals and objectives? Fig. 1 presents how a health analysis would be carried out using a Precede–Proceed planning model, and Fig. 2 presents the goal, objectives, sub-objectives and strategic objectives as a response to identified health problem pathways. We note that, in Fig. 2, the goal is concerned with the outcome evaluation, the objectives and sub-objectives are concerned with the impact evaluation and the strategy objectives are concerned with the process evaluation. In addition, it is implied from Fig. 2 that one works from bottom to top when implementing nutritional programs. In other words, the achievement of sub-objectives is dependent on how successfully and effectively one implemented the strategy objectives. Likewise, sub-objectives must

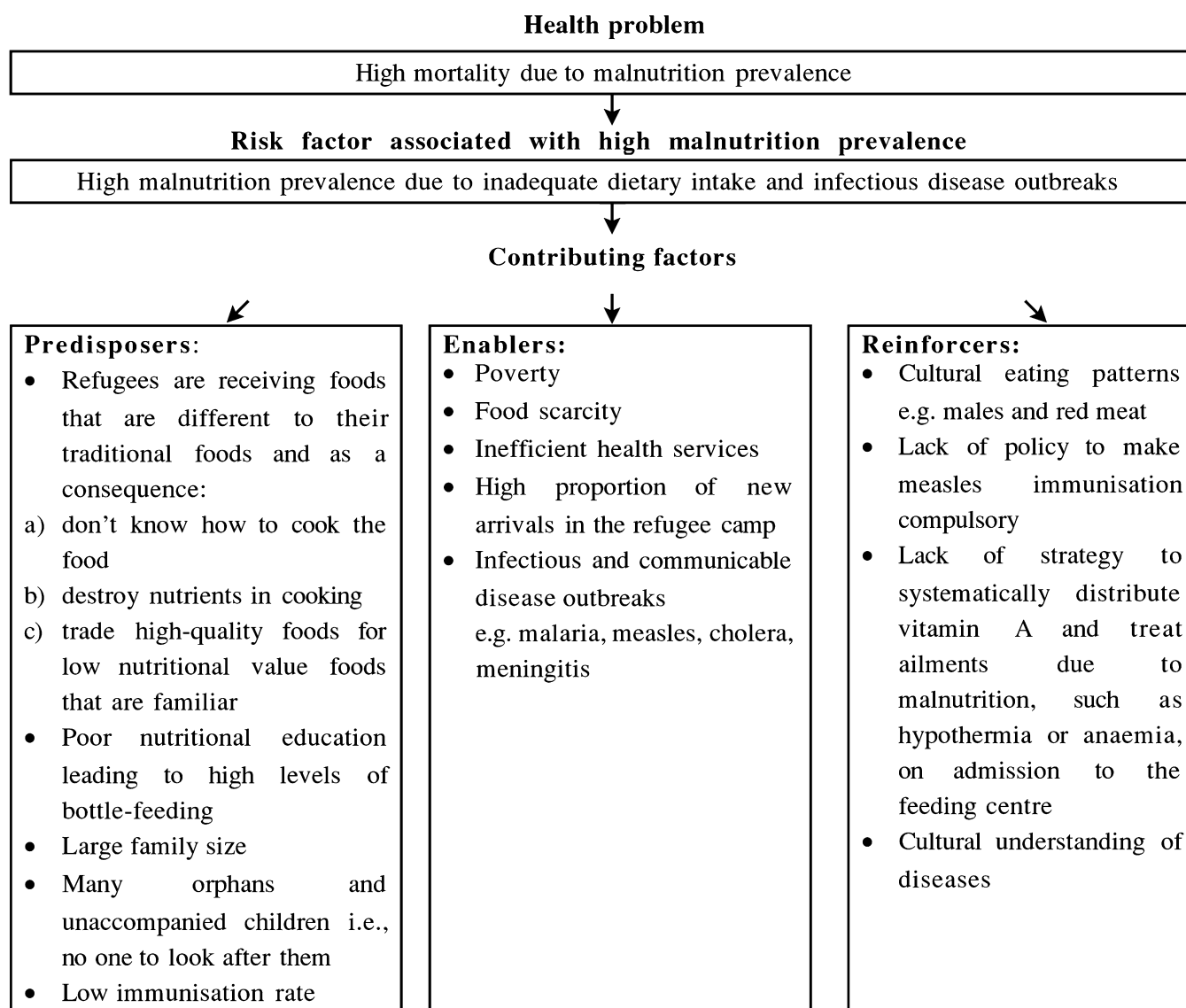


Figure 1. Analysis of the health problem.

be met to ensure the achievement of objectives and ultimately the achievement of the program goal.

The percentage points by which the sub-objectives are to be increased or reduced should be reflective of the actual situation and will vary from one refugee camp to another. However, the baseline data may not exist at the time of defining sub-objectives. We suggest that baseline data regarding key indicators of sub-objectives be collected through a health survey, either planned and implemented as part of the initial nutritional survey or a stand-alone survey. This health survey should incorporate the 'educational diagnosis'. The educational diagnosis is a process whereby the causes of health behaviours are assessed and those factors, if modified, that are known to be most likely to result in behaviour change are selected and form the basis of the formulation of learning objectives (sub-objectives).¹⁵ In emergency situations the health survey should collect data on the factors that motivated behaviour prior to the occurrence of the observed nutritional status.¹ These include the knowledge and under-

standing of malnutrition and the malnutrition-infection cycle, beliefs and values regarding feeding practices, food sharing at the household level and attitudes towards the nutritional strategies that are being implemented for the affected population.² Factors that facilitate action required to attain specific objectives, notably, accessibility to and acceptability of health and nutritional programs (e.g., health-seeking behaviours, level of security, household food security), availability of tools (e.g., availability of cooking utensils), skills (e.g., existence of skilled refugees that could be employed locally) and health legislation and policy in the host country (e.g., identify rewarding legislative measures or policies regarding immunisation, public health surveillance, management of chronic disease and so forth) are also important.

Planning the evaluation

If a selective feeding program has been thought through carefully and planned thoroughly prior to implementation, then it will outline clearly three evaluation steps critical to its

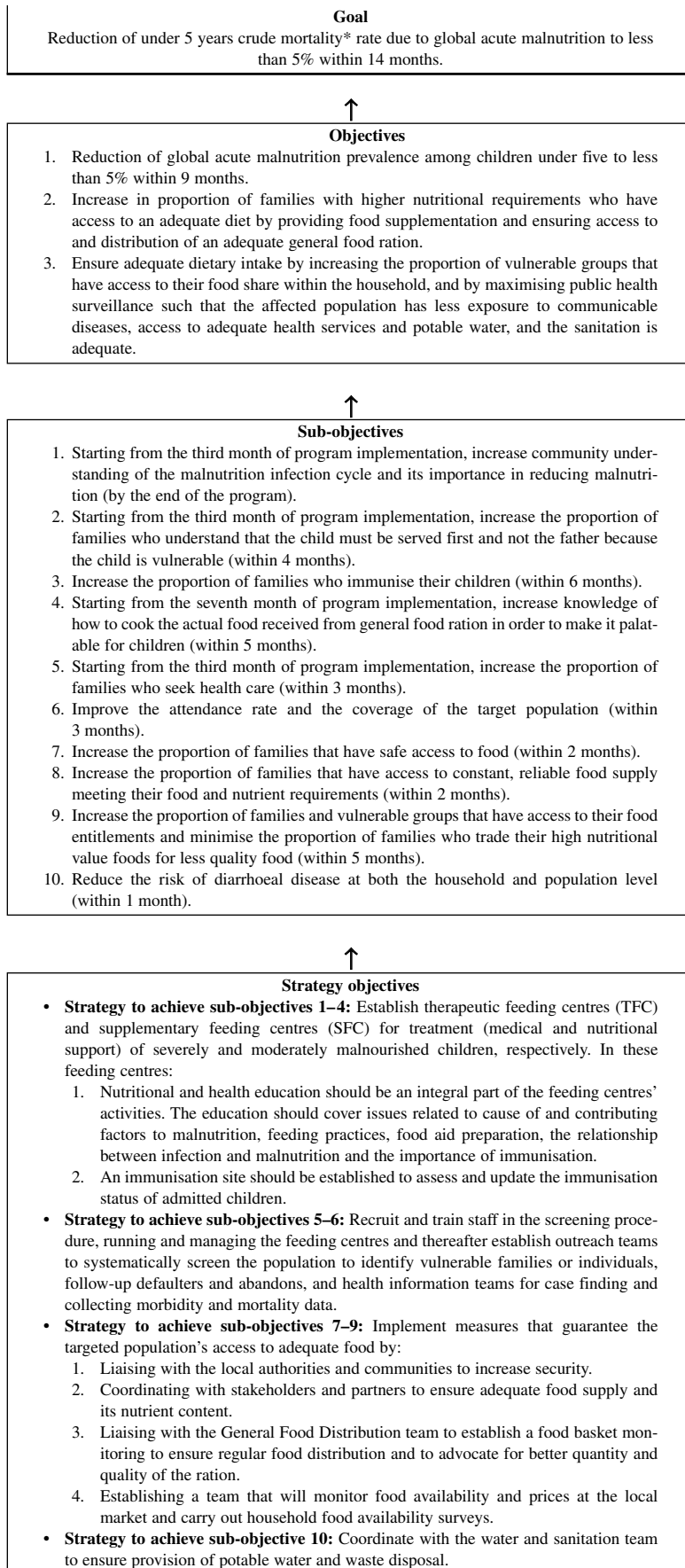


Figure 2. Response to identified health problem pathways. *Suppose that a formative evaluation found a mortality rate of 4/10 000/day, of which 35% was due to measles, 30% to diarrhoeal disease, 25% to malnutrition and 10% to respiratory infection. The goal is to reduce the mortality rate due to malnutrition to less than 5% (that is, a reduction of more than 20%).

success:¹¹ (i) formative evaluation; (ii) process evaluation; and (iii) summative evaluation. A formative evaluation is the evaluation conducted before the program is implemented and includes a needs assessment. This process aims at identifying the priority health problem and analysing the health problem. Process evaluation measures the extent to which the program is implemented and run the way it was intended, while the summative evaluation assesses the extent to which the program impacts immediately on the identified health issue (impact evaluation) or in the longer term (outcome evaluation).

Formative evaluation

Needs assessment

Needs assessment is the first step in planning an evaluation framework. This stage aims to answer three questions:¹⁶ (i) What other needs assessments have been done in the region? (ii) What questions remain to be answered? (iii) What form of data collection is appropriate to answer these questions?

Qualitative survey. Through observation, interviews with community leaders and existing NGO, a quick evaluation of the situation will aim to determine food availability and accessibility. This evaluation will help define the severity of the problem and therefore estimate the resources and staff required. Data to be gathered include determining where the food comes from, food retail outlet data, breast-feeding initiation and duration, food habits and practices, existence and quality of water and the presence of infectious and communicable disease outbreaks, notably diarrhoea and measles.⁷ This data is often collected in an initial rapid assessment.

Quantitative survey. At this level, the formative evaluation is concerned with nutritional surveys conducted generally among children under five years of age. Data to be collected include weight, height, age, presence of oedema and mid-upper arm circumference (MUAC) to compute the indexes, such as weight-for-height or MUAC-for-age, that are used to define the nutritional status.¹¹ It is worthwhile pointing out that, in emergency situations, the age distribution data may be inaccurate. Therefore, the total number of children under five years of age is assumed to be 20% of the total population where this figure cannot be obtained.⁵ Using standard sampling methods, the prevalence of malnutrition will be estimated and hence the number of malnourished children determined. The number of malnourished children expected to be admitted to a therapeutic feeding centre would be the total number of children under five multiplied by the percentage of severe acute malnutrition prevalence. Likewise, the number of malnourished children expected to be admitted to a supplementary feeding centre would be the total number of children under five multiplied by the percentage of moderate acute malnutrition prevalence.

Other quantitative data to be collected include demo-

graphic data, that is, the population size and its age and gender distribution, how much food is given to each person per day (estimated as kcal/person/day), mortality rate, number of doctors per 10 000 persons and number of nurses per 10 000 persons.⁵ Figures obtained are evaluated against existing benchmarks to assess the severity of the situation and influence decision making.

Once a formative evaluation is completed a program logic and outcome hierarchy should be constructed. A program logic, also known as treatment theory, refers to the fundamental logic that guides the development of a health intervention program, underpins program activities, gives good reason for resource allocation to the program and leads to a hierarchy of specific outcomes.¹⁷ In other words, program logic provides a theoretical framework of how a program functions. An example of program logic is presented in Fig. 3. The program logic should not be confused with the decision-making framework for the implementation of SFP. Program logic should be understood as a process that occurs after a decision has been made to start SFP and after data from the initial rapid assessment are available.

Process evaluation

The variables to taken into account during the process evaluation of SFP are summarised in Fig. 4. During process evaluation, there are four questions that should be asked about the program.¹¹ These are: (i) To what extent is the program reaching the target group? (ii) Is the program meeting its participants' expectations in terms of satisfaction? (iii) Did the program implement all its activities? and (iv) Are the quality of materials and components of the program good enough? Therefore, variables used traditionally for monitoring selective feeding programs, such as attendance rate, coverage rate, length of stay, average weight gain, proportion of exits and attendance reports,⁵ are more concerned with how well a program is functioning, that is, process evaluation. Given that the number of children registered in feeding centres is dependent on coverage rate, closing down selective feeding centres based on the number of patients registered can be misleading. For instance, one current criterion being used in the field is that if there is less than 20 children registered in the therapeutic feeding centre and less than 30 children in the supplementary feeding centre,⁷ the centre should close down. There are three grounds on which to dispute this decision-making process. First, it may be that children are not attending because foods given to them are not culturally acceptable or staff and services being provided are culturally insensitive. Second, it may be that there is high insecurity in the area or the centre is situated far from the beneficiaries, making accessibility to the centre difficult. Finally, it could be that the program does not have an effective outreach program to follow up defaulters. These problems should be picked up by the process evaluation and the program adjusted accordingly. Therefore, because closing feeding centres should be an outcome-based evaluation, the above-mentioned variables do not tell us anything about the impact of selective feeding centres.

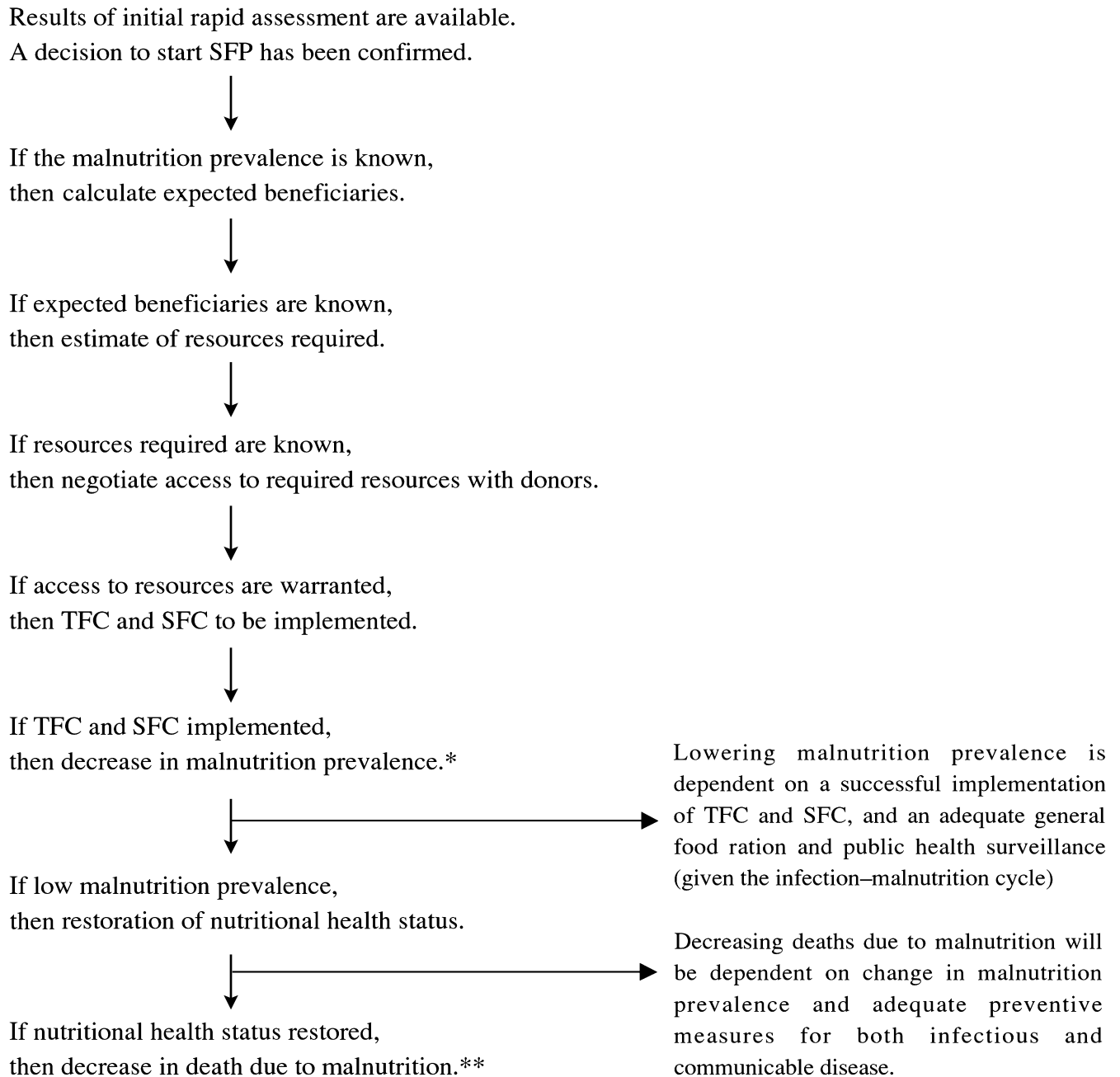


Figure 3. An example of program logic for selective feeding programs. *This assumes that the general food ration is itself adequate. **This assumes also that other medical services (e.g., paediatric hospitals, public health interventions regarding water and sanitation, immunisation) are adequate. TFC, therapeutic feeding centre; SFC, selective feeding centre.

Consider the case where a program is implemented but the outreach program is inadequate. Children may fail to attend the feeding centre because they died at home. At the end of the month these children may be classified in the statistics as defaulters rather than deaths. Because the denominator used to compute the proportion of exits is the sum of the successfully discharged, deaths, defaulters and transfers, failing to correctly classify deaths from defaulters underestimates the proportion of deaths, thus masking the program's ineffectiveness.

Summative evaluation

Impact evaluation

The impact evaluation is more concerned with attainment of objectives and sub-objectives. Outcomes to be taken into account can be categorised into two groups: behaviour change and variation in health and nutritional status. However, in emergency situations, the behaviour change has always been overlooked. It is paramount to re-emphasise that behaviour change should be an integral part of any impact evaluation of SFP. The impact evaluation being carried out in

Questions			
Extent of implementation	Quality	Reach	Satisfaction
<ul style="list-style-type: none"> Attendance report will reflect the size and the expansion rate of the program. Is the admission rate increasing? If not, why is that? Who is responsible for case finding? ⇒ If all malnourished children cannot be reached, there is a section which is not fully implemented; needs review. Is the proportion of defaulters high? If yes, who is responsible for follow-up? ⇒ if defaulters are not followed up to find out reasons for absenteeism, then some sections of the program are not fully implemented; needs review. Number of feeding centres: is the number of feeding centres commensurate with expected malnourished children? Is the centre picking up some of the newly arrived malnourished children where the population is unstable and a major influx is expected? Does the centre have enough staff and materials to run? 	<ul style="list-style-type: none"> Mean weight gain Objective: 15 g/kg bodyweight/day for therapeutic feeding centres and 0.5–2.5 g/kg bodyweight/day for supplementary feeding centres Mean length of stay Objective: mean length of stay <30 days in TFC and <60 days in SFC Transferred Objectives: <15% transferred Successfully recovered Objectives: >80% recovery for TFC and >70% recovery for SFC Deaths Objective: death rate <5% for TFC and <3% for SFC Measles vaccination Objective: 100% measles vaccination 	<ul style="list-style-type: none"> Coverage rate Objective: >75% coverage of expected malnourished children estimated by nutritional surveys 	<ul style="list-style-type: none"> Attendance rate Objective: >80% attendance rate of registered children Defaulters Objective: <10% defaulters

Figure 4. Example of a process evaluation of selective feeding centres. Cut-off points adapted from WHO.² TFC, therapeutic feeding centre; SFC, selective feeding centre.

emergency situations to assess the effectiveness of SFP is just not extensive enough as it concentrates solely on the reduction of malnutrition prevalence. This implies that one is evaluating the effect of dietotherapy without taking into account the nutrition and health education provided within the centre, such as the effect a feeding centre may have on health-seeking behaviour. In other words, while 3–6 monthly interval nutritional surveys are used customarily to assess the effectiveness of SFP, this evaluation is deficient without assessing whether the nutrition education provided in the therapeutic feeding centres has increased parents' knowledge of feeding practices (e.g., the child must be served first) or the proportion of parents who understand the relationship between infection and malnutrition and the importance of

immunising children. If nutrition education is to be seen as an integrated part of the strategies implemented in SFP, its effect should be evaluated.

Another confounding factor that is always neglected is the effect of the general food ration. General food ration, together with SFP and other public health interventions, contributes to the amelioration of the nutritional status of the refugee population in emergency situations. Hence, the impact evaluation of SFP should not rely solely on fluctuation of malnutrition prevalence, as is the current practice, but should be thoroughly designed and implemented in such a way that the effect of other confounding factors (e.g., adequate general food ration and immunisation strategies) is estimated.

Outcome evaluation

Outcome evaluation is more concerned with goal attainment. As far as selective feeding centres are concerned, a goal-based evaluation could be utilised. This could be achieved by reviewing the six-monthly interval specific mortality rate and cause-specific mortality rate to check if mortality due to malnutrition has decreased. Goal-based evaluation alone is not sufficient to justify the change in occurrence. Therefore, it would be complemented by the theory-driven evaluation whereby a reduction in the malnutrition prevalence is checked through the effectiveness and completeness of the implementation of selective feeding programs. This involves assessing the reliability and adequacy of the general food ration, reviewing the public health and disease control measures in place and conducting seasonal and weather analysis. The reduction of the malnutrition mortality rate would also be checked through the reduction of malnutrition prevalence. An evaluation framework that shows the three levels of evaluation is presented in Fig. 5.

Evaluation timeline

Another element that is critical to assessing the effectiveness of SFP is the timeline. Timelines are rarely used. This is

evidenced by the practice of using existing criteria for closing down a feeding centre based on enrolled numbers alone. This blurs the effective planning of SFP. Instead of having decision-making criteria as the basis of program planning, it would be better if building up a plan for intervention became a tool to set out what the programs aimed to do. This means defining goals and objectives, designing an evaluation framework and an appropriate timeline that shows different stages of program implementation. An example of an evaluation timeline to selective feeding centres is presented in Fig. 6.

Conclusion

Re-feeding malnourished children is an essential part of refugee health interventions where malnutrition contributes significantly to mortality. Therefore, the practice of re-feeding should be amenable to scrutiny and evaluation in order to guide best practice. Current practice in the field is not based on clearly defined goals and objectives and, hence, lacks a framework whereby it can be objectively evaluated. This paper presents a model for applying a modern evaluation framework to the traditional field-based feeding practices.

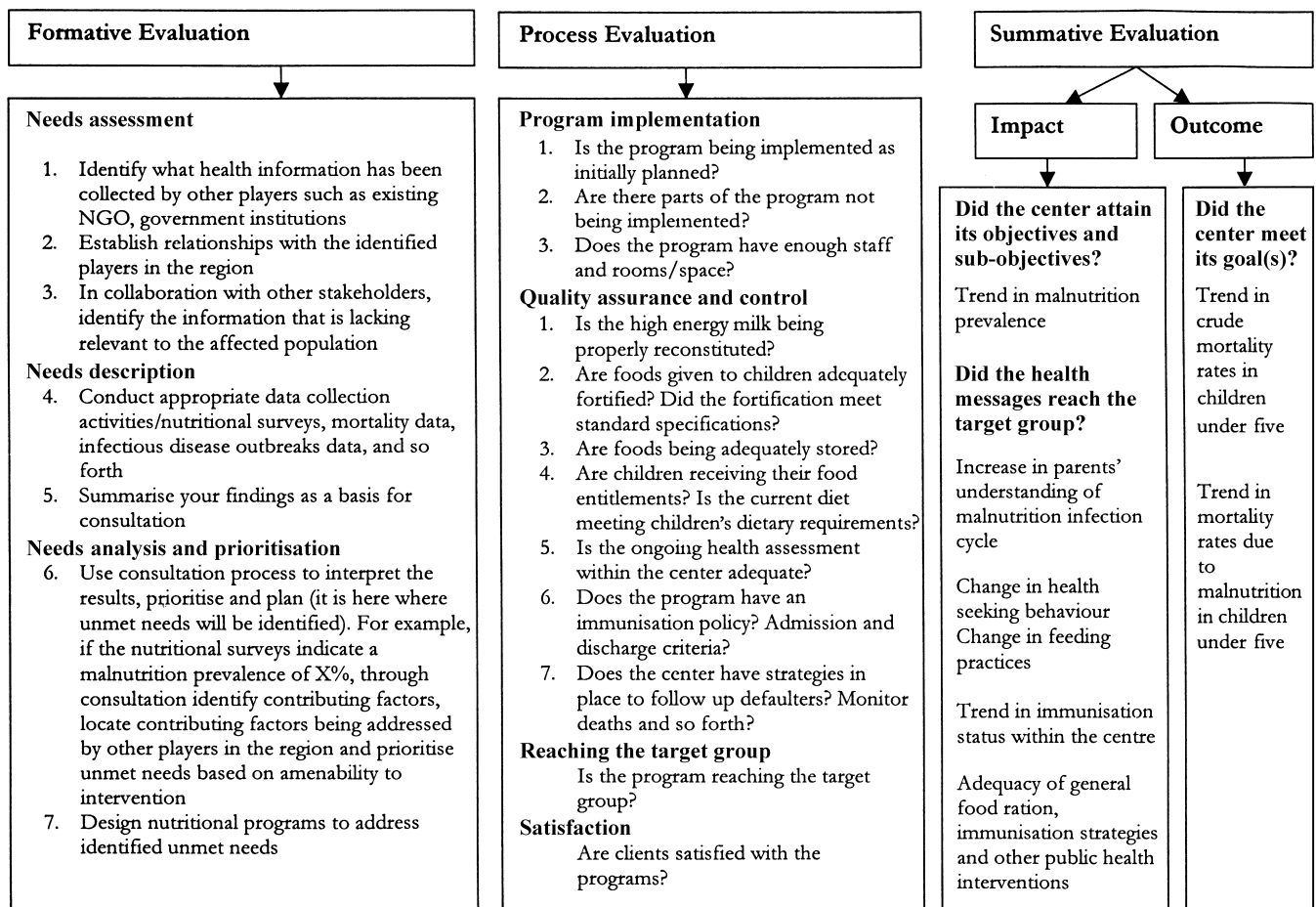


Figure 5. Evaluation framework incorporating three levels of evaluation. NGO, non-government organisation.

Months	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M
Formative evaluation																			
Inventory of local health infrastructures (a)	█																		
Rapid assessment qualitative indicators (a)																			
Meeting community leaders (a)		█	█		█	█		█	█		█	█		█	█		█	█	
Meeting local government (a)																			
Program development (b)																			
Recruitment of staff (b)																			
Interview with staff (b)																			
Training of data collectors (b)																			
Initial nutritional survey (b)																			
Process evaluation																			
Construction of tents (c)		█	█	█															
Program implementation (d)																			
Monthly report																			
Review of program																			
Summative evaluation																			
Repeated nutritional survey																			
Mortality survey																			
Writing report/survey																			
Recommendations-continuation-close down or change perspective																			
Months	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M

Figure 6. Example of an evaluation timeline for selective feeding centres. The program starts in September of year *x* and the summative evaluation is carried out 19 months later. (a) These activities are carried out within the first 2 weeks of arrival at the site. (b) Activities are carried out in the third and fourth weeks of September. (c) Construction of tents is progressive over a period of 3 months and starts in the fourth week following arrival at the site. (d) Selective feeding programs are implemented in the fifth week following arrival at the site.

Acknowledgement. The author would like to thank Dr Catherine Renzaho, General Practitioner, Grimshaw Street Clinic, for her feedback on the earlier draft.

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