

# **A Retrospective Study of Emergency Supplementary Feeding Programmes**

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## Acronyms

AAH	Action Against Hunger
ACF	Action Contre la Faim
ACH	Acción Contra el Hambre
ALNAP	Active Learning Network for Accountability and Performance in Humanitarian Action
CIDA	Canadian International Development Agency
CMR	Crude Mortality Rate
CRS	Catholic Relief Services
CSB	Corn Soya Blend
DCI	Development Cooperation Ireland
DFID	Department for International Development (UK)
DRC	Democratic Republic of Congo
ECHO	European Commission Humanitarian Aid Department
FH	Food for the Hungry
GAM	Global Acute Malnutrition
GFD	General Food Distribution
IDP	Internally Displaced Person
IFRC	International Federation of the Red Cross
Iqr	inter-quartile range
IMC	International Medical Corps
INGO	International Non-Governmental Organisation
MERLIN	Medical Emergency Relief International
MoH	Ministry of Health
MSF	Médecins Sans Frontières
MSF-B	Médecins Sans Frontières - Belgium
MSF-H	Médecins Sans Frontières - Holland
MUAC	Mid-Upper Arm Circumference
NCHS	National Center for Health Statistics
NGO	Non-Governmental Organisation
NIE	Nutrition in Emergencies
OFDA	Office of U.S. Foreign Disaster Assistance
OTP	Outpatient Therapeutic Programme
RNIS	Refugee Nutrition Information System
RUTF	Ready-to-use Therapeutic Food
SAM	Severe Acute Malnutrition
SFC	Supplementary Feeding Centre
SFP	Supplementary Feeding Programme
TFC	Therapeutic Feeding Centre
U5MR	Under-Five Mortality Rate
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
WFH	Weight-for-height
WFP	World Food Programme

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## Executive Summary

In 2005-6, Save the Children UK and the Emergency Nutrition Network (ENN) undertook a study aimed at determining the efficacy and effectiveness of emergency supplementary feeding programmes (SFPs). The study consisted of a retrospective analysis of SFPs implemented between 2002 and 2005. After selection of the programmes, the database consisted of 82 programmes implemented by 16 agencies. Only 67 SFPs provided information on programme performance (programme statistics).

Eight of the SFPs were implemented in Asia, one in Central America and all the others in Africa. There was a marked lack of consensus over the objectives of the SFP ranging from treating moderate malnutrition, preventing severe malnutrition, reducing population malnutrition rates, improving quality of care of malnourished children and improving nutrition and hygiene education. Twenty-five programmes did not cite programme objectives.

Programme reporting and analysis of outcome statistics was found to be grossly inadequate in many programmes with a large number of information gaps, inaccuracies, statistical errors and other inappropriate uses of information and data. A key finding of the study is the need to establish minimum reporting standards that must be adhered to by those implementing emergency SFP. Another major reporting issue is that current Sphere standards do not require agencies to report patients that are transferred to TFC or to hospital or that are discharged without having recovered ("non response"). Therefore, a programme could theoretically have 50% of its patients being sent to TFC because they are losing weight yet still meet Sphere standards of 75% of patients recovering.

When calculated following Sphere standards recommendations, 63.9% of the SFPs in the study obtained a recovery rate equal to or above 75% for the whole period of operations reported. Following the addition of non-response" exits only 39.3% of the SFPs reached this threshold of quality.

Overall, only 25 SFPs (41%) meet all Sphere standards, even when not including "non-responders". If the raw data of all the programmes are pooled together (61 SFPs 376 179 beneficiaries), a total of 260 034 children recovered (69%), 67 366 defaulted (17.9%), 1 763 died (0.46%) and 47 016 (12.5%) were classified as non-responders to treatment.

A small number of SFPs which contributed many children to the study had good recovery rates. Although this relationship is not statistically significant (simple linear regression,  $F = 0.32$ ,  $p = 0.57$ ), it does explain the apparent discrepancy between the low number of SFPs that attained a recovery rate equal to, or above 75% and the fact that, when pooling all the data together, 69% of children recovered.

Most of the variation in recovery rates is due to defaulting rates. Forty-five out of 61 SFPs (73.8%) have a recovery rate equal to or above 75%, after exclusion of defaulters. The median recovery rate among these patients is 86.5% (iqr 74.0 – 94.0).

In the majority of programmes (65%), the rate of defaulting is higher and varied more than the rate of non-response. The monthly mortality rates were very low in all programmes and varied little. The monthly variation in defaulting rate seems to be influenced by seasonal factors with higher rates observed in the cultivation and harvest months, when access to programmes is reduced due to rains, flooding or snow, or where there are sudden increases in insecurity. In some exceptional months, default rates exceeded 80%. These findings suggest the need for programmes to be more

sensitive to the opportunity costs of carers and to modify design accordingly. For children that stay in the programme (once defaulters are removed) there is still a significant number who do not respond. This suggests room for manoeuvre to improve programme protocols and design.

A number of context factors were explored in relation to programme outcomes. The presence of a general ration, existence of a therapeutic feeding programme for treatment of severe malnutrition the chronicity of the crisis and whether populations were displaced were all shown to have some statistical impact on outcomes.

The data collected by agencies on coverage and prevalence of malnutrition do not demonstrate any impact of emergency SFPs at population level. Indeed, a significant number of nutrition surveys showed a decline in nutritional status following a period of implementation of the SFP.

Given the methodological difficulties of population level impact assessment (need for control groups to account for other factors or interventions which may impact prevalence of malnutrition at population level), a new approach was considered based on the estimation of the ratio of children with moderate malnutrition to severe malnutrition. This approach takes into account that SFPs can be expected to reduce the incidence of severe malnutrition, but not that of moderate malnutrition. Proper monitoring of these variables, through repeated surveys, analysis of the admissions to SFPs and TFPs, or through surveillance, could provide an easy way to evaluate impact and to consider the quality and coverage of SFPs during field operations, without the need to select a control group.

This study concludes that while a large number of children have significantly benefited from implementation of the programmes reviewed it is unlikely that the programmes have had a significant impact on levels of wasting at population level. This is due to low levels of coverage and recovery. Therefore, if population level impact is a programme goal it may be that in some instances alternative interventions addressed to the wider population are more appropriate.

The process involved in carrying out the study and the initial findings highlight a set of institutional issues regarding the capacity of the current humanitarian system to evaluate collective agency experiences and outcomes of specific types of intervention or to answer specific programmatic questions in order to improve practice.

It may now be time to start advocating for a body or organisation to take overall responsibility for assessing the relative impacts and cost effectiveness of the various types of intervention carried out during nutritional crises. This will help ensure that in future interventions are more likely to be rolled out on the basis of empirical evidence rather than agency mandate, 'track record' and availability of donor funding.

## Introduction

Supplementary Feeding Programmes (SFPs) have been a standard strategy to address moderate malnutrition in emergencies since the seventies.<sup>1</sup> During this period, the basic set up of programmes has remained virtually unchanged, apart from some modifications to recommendations on distributed foodstuffs and standardized medical treatment.<sup>2</sup> In contrast, other strategies like Therapeutic Feeding Programmes have undergone dramatic changes, i.e. the introduction of Therapeutic Foods and specific medical protocols and, more recently, the development of Community Based strategies.

The implementation of SFPs in practically all emergency situations where high rates of acute malnutrition are detected, and the lack of evolution of their protocols is at odds with the substantial controversy over the efficacy and appropriateness of SFPs in emergency contexts.<sup>3</sup> Over the years, critics of emergency SFPs have raised questions about their appropriateness in the absence of adequate general rations (a frequent occurrence during emergencies) and the relative cost-inefficiency of setting up a separate infrastructure from the general ration programme in order to allocate small quantities of food to vulnerable groups.

In spite of such controversy, there has been no credible overall assessment of the impact or effectiveness of these programmes. Implementing agencies and donors for these types of intervention have conducted evaluations on a small percentage of programmes but methodologies have been variable making comparison difficult.

A recent review<sup>4</sup> of published evidence for impact of SFPs in emergencies between 1980 and 2004 involving five data bases revealed that only a minute percentage of programmes have been rigorously evaluated in terms of impact with findings published. The review found that not only was the quality of these studies generally poor but that the findings were largely equivocal with regard to programme outcomes. Furthermore, it is possible that as agencies chose to publish these studies there may have been a bias in selecting programmes with positive outcomes. These findings were supported by a short postal questionnaire conducted during this review involving 10 INGOs/UN agencies. This sub-study found that in the Horn of Africa in 2003-4, 65 SFPs were implemented by those agencies contacted but that only 7 formal evaluations were conducted (less than 11%) and only 1 evaluation report was published (in Field Exchange) – less than 2%. The review also searched two other relevant databases for published evidence on the cost of emergency SFPs. No data were found on this important element of programming.

In a recent study<sup>5</sup> in the Great Lakes Region involving seven programmes over five years, implementation of SFPs was criticised from the standpoint that the major immediate causes of malnutrition were poorly understood so that there was little justification for implementing these programmes. Furthermore, there was little impact assessment of the programmes, while the majority of malnourished children did not

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<sup>1</sup> The first guidelines addressed specifically to SFPs were published by Oxfam in 1977 (Lusty & Diskett 1997; quoted in Mason and Taylor 2003 – A Review of the Advances and Challenges in Nutrition in Conflicts and Crisis over the last 20 years).

<sup>2</sup> ACF Scientific Committee developed recommendations for the composition of flours used in nutrition rehabilitation in 1994; ACF, MSF and other agencies developed SFP guidelines in the following years; and a ODI Good Practice Review by Shoham in 1994; All quoted from Mason and Taylor 2002, op. cit.).

<sup>3</sup> See for examples Machakos meeting (1994), Addis Ababa meeting (1995) and Dublin meeting (1997), as well as plenty of publications....

<sup>4</sup> Duffield A, Reid G, Walker D, Shoham J (2004): Review of the published literature for the impact and cost-effectiveness of six nutrition related emergency interventions: Draft report prepared for CIDA by the ENN.

<sup>5</sup> Levine S, Chastre C, (2004) Missing the Point: An analysis of food security interventions in the Great Lakes. Humanitarian Practice Network, No: 47.

attend making it impossible to say with any confidence how effective the programmes were. In addition, there was little consideration given to alternative or complementary responses.

While the majority of emergency SFPs conduct routine monitoring of key programme outcomes as indicated in the Sphere Minimum there has been no attempt to conduct a comprehensive collation and analysis of the findings of these project data.

This lack of comprehensive over-view and critical analysis of this form of programming is surprising and potentially worrying. At the beginning of the 1980s, a large-scale multi-country review of the impact of supplementary feeding programmes in non-emergency situations was conducted by Beaton and Ghassemi (1982).<sup>6</sup> The reviewers concluded that there was little impact of these programmes in terms of growth performance. Arguably, these findings had a significant impact on the perception of these programmes that in turn contributed to a reduction in the subsequent scale of their implementation. A similar review of emergency supplementary feeding programmes is long overdue, as it cannot be assumed that these types of emergency programme automatically achieve their objectives or that if they do, they do so in a cost-effective manner.

Lack of certainty over the impact and effectiveness of these programmes stems partly from the many factors which can undermine SFP performance during emergencies, e.g. breaks in the food aid pipeline, overcrowding at feeding centres, poorly trained staff, lack of health inputs, insecurity and poor access, etc. Furthermore, rations that are provided are not designed for maximum catch-up growth.

### **Reasons for lack of a comprehensive overview of impact and effectiveness**

There may be many reasons why there has never been a comprehensive review and analysis of the impact and effectiveness of emergency supplementary feeding programmes. These include:

- There is no single body or agency responsible for assessing the overall effectiveness of nutritional programmes in emergencies or for comparing effectiveness of different types of programme design. Thus, there is no collation of overall evidence about the impact of programmes and hence no entity which can publish findings and advocate for change.
- There are many ethical difficulties of mounting randomised control trials (the gold standard of impact assessment) in emergencies.
- In order to undertake and publish good quality studies researchers need training in epidemiology. Many nutritionists (who usually run SFPs) or logisticians (who usually run GFDs) do not have this training.
- Impact assessments (prospective) are expensive and time-consuming. In an emergency situation they may not be seen as the first priority.
- Impact assessments need careful planning. The intrinsic unexpected nature of most emergencies militates against planning.
- Incentive structures in agencies promote defensive behaviour and a culture of blame so that transparent impact assessment may be threatening.
- Short-term funding mechanisms and high staff turnover rates militate against a learning environment.

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<sup>6</sup> Beaton, G. H. & Ghassemi, H. 1982, 'Supplementary feeding programs for young children in developing countries', *Am J Clin Nutr JT - The American journal of clinical nutrition.*, vol. 35, no. 4 Suppl, pp. 863-916.



- There is often a lack of clarity as to the objectives and desired outcomes of emergency supplementary feeding interventions.

## Set up of the data review

In order to address this evidence gap, a group of 10 INGOs<sup>7</sup> and a member of one consultancy group<sup>8</sup> met in November 2004 to discuss and plan this review. This inter-agency group agreed to support the review by providing all available agency reports on emergency SFPs conducted by their agencies during a three-year period. Since this meeting, four other INGOs,<sup>9</sup> the International Federation of the Red Cross and three UN agencies who are major players in the sector (UNICEF, WFP and UNHCR) have agreed to participate in the study, and the period of interest has been extended until the end of 2005. The study is led by Save The Children UK and the Emergency Nutrition Network, with the support of a Research Advisory Group of experts to advise on the methodology and analytical findings.<sup>10</sup> It is funded by OFDA, DCI, Save the Children UK, ACF, Oxfam and Save the Children USA.

The primary purpose of the review defined by the inter-agency group was “to determine the overall effectiveness of emergency SFPs as well as the relative cost-efficiency of this type of feeding programme compared to other types of intervention with similar objectives, and to examine the context specific effectiveness of emergency SFPs”.

A retrospective study of data from existing and recent field programmes was therefore designed. This was preferred to other study designs, e.g. case control studies or clinical trials, as such studies are time and context specific so that findings cannot be easily extrapolated. It is hoped that this review will build up a body of evidence for the overall performance of SFPs which will lead to further studies designed to answer specific questions and provide more detailed understanding of how and when these programmes perform well.

This retrospective study builds on the findings of the recent ENN review of the published literature for impact of SFPs and other emergency interventions (Duffield et al in 2004<sup>11</sup>). This review contains references for all published studies on the efficacy and impact of SFPs, as well as a comprehensive discussion on the methods used to generate evidence in emergency contexts.

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<sup>7</sup> Action Against Hunger UK, Action Against Hunger-USA, Action contre la Faim France, Acción Contra el Hambre España, Catholic Relief Services, Concern, Medecins Sans Frontieres-Belgium, Medecins Sans Frontieres-Holland, Oxfam-GB, Save the Children-UK and Save the Children-USA.

<sup>8</sup> Valid International.

<sup>9</sup> Food for the Hungry, International Medical Corps, Médicos Sin Fronteras-Spain, Merlin.

<sup>10</sup> The Research Advisory Group comprises: Dr Andre Briend, Dr Yvonne Grellety, Dr Jane Knight, Mark Myatt, Dr Peter Salama, Prof Andrew Tomkins and Dr Helen Young. The Terms of Reference included: To discuss relevance & appropriateness of planned work with respect to international nutrition policy; To draw attention to existing / planned research which may complement / challenge the areas of investigation; To advise the interagency group on appropriate methodology (particularly with respect to the retrospective study design as well as feasibility and design of potential prospective studies); To comment on research findings & advise the interagency group on strategies for disseminating these to maximise their use.

<sup>11</sup> Duffield A, Reid G, Walker D, Shoham J (2004): Review of the published literature for the impact and cost-effectiveness of six nutrition related emergency interventions: Draft report prepared for CIDA by the ENN.

## Methods

The study consists of retrospective analysis of SFPs implemented between 2002 and 2005.<sup>12</sup>

### Collection of reports from agencies

The participating agencies were asked to identify the SFPs that fitted the criteria defined in the scope of the study (see Objectives), and select and send those reports that contained the information and data defined in the methods of the study (see Appendix 1). The reports received included needs assessments, funding proposals, nutrition protocols, internal reports, internal and external evaluations, intermediary and final donor reports, nutrition surveys as well as internal monthly reports, statistical reports from the centres and/or from the programmes and financial reports. Some agencies included other material e.g. internal communications, lists of materials used in the centres, field visit reports, etc.

In order to ensure standard criteria for the selection of variables of interest, the agencies (apart from two) did not extract the information from the reports themselves, but sent the reports. The degree of detail obtained in this way was variable with each agency selecting different materials for the study: for instance, some agencies only sent proposals and final reports with collated data, while others would send all available documents including spreadsheets of the monthly statistics of each centre in the programme. To some degree the variation related to different agency interpretation of the information needs for the study. However, it also reflected agency ability to identify and collect reports: For some organisations, collecting the reports was very difficult as copies were only kept at field or regional level. For other agencies high turnover of staff meant that older reports could not be located.

A substantial effort was made to recover all variables of interest for the study. However, this was often not possible. On numerous occasions, important information was not included in the reports. In these cases, the agency was contacted to determine whether they could furnish missing information. Although this helped identify some relevant reports, in most cases the demand for extra information could not be satisfied.

### Information extraction from reports

A standard form was developed to include all the variables relevant to the study. During the process of data extraction, each programme was summarized using these forms. The variables were then coded and entered into the final database. All data extraction was conducted by the same person. The summary forms were also provided a comprehensive picture of the programme. These forms included, a description of the main characteristics of the programme, problems encountered and the agency's own assessment of programme performance (see Appendix 1).

Where there were information gaps for a programme or discrepancies between different reports, the form was used to communicate with the relevant person in the participating agencies. It was also used by agencies to validate the data that had been extracted by the study team.

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<sup>12</sup> This includes any programme that was implemented during these years, even if it was opened before 2002 or was active after 2005.

Statistical information from surveys and centre reports was summarized in a spreadsheet table. Where necessary, the indicators were recalculated as will subsequently be explained.

Detailed scrutiny of the reports represented the most challenging and time-consuming part of this study. Data extraction took much longer than originally envisaged reflecting the wide variety of reports obtained, their different formats and the need to check and often recalculate all numerical information.

### **Definition of SFP as unit of analysis**

The unit of analysis of the study is the SFP. For the purpose of the study, a SFP was defined as *“one or more Supplementary Feeding Centres or Units – fixed or mobile - established in a defined regional area, addressed to a specific population group and managed by the same structures – even if this involved several actors working in coordination”*.

The process of identifying what constituted a SFP from was not straightforward:

In ten projects the statistics of several centres were reported separately, although they constituted a single programme: their respective data were therefore aggregated to represent one SFP observation unit. This aggregation was not possible for seven other projects as all the data were presented as percentages without enough information to re-calculate the actual numbers for each programme. Therefore each centre had to be considered separately.

Some projects reported as a single programme were divided into several SFPs for the analysis if different geographical areas were covered and data for each area could be disaggregated. This was feasible for ten SFPs. Seven other SFPs in the database should have been treated as more than one programme as they included populations from different areas or regions. However, the data could not be disaggregated. These data were kept for analysis on the basis that the characteristics of the population assisted and the characteristics of the programme were ‘reasonably’ similar for each of the areas. However, for a different data set where several SFPs in different regions were reported as one single programme, the data were excluded from the analysis, as the SFPs in each of the regions had significantly different characteristics (for example, some were implemented alongside a general food distribution and others were not while the foodstuffs distributed at each SFP were not the same).

Finally, a programme that reported a 100% recovery rate with no explanation of the activities implemented was excluded from the study.

As most reports were originally addressed to donors, they only referred to a specific funding period and when several funding periods followed each other information was merged to form a single SFP. However, when information in each report were recorded as percentages for the whole period such aggregation was not possible.

For many programmes, the number of centres may vary over time, with the opening of new structures, relocation or closure of old centres. In other cases, the characteristics of the programme varied over time – for example, changing treatment protocols or replacement of food commodities due to problems with the food pipeline. When this information was clearly documented, it was noted in the database. However, such information was often not available in sufficient detail.

## Number of programmes reported

After selection of the programmes, the database comprised 82 programmes implemented by 15 organisations (see Results for a more detailed description).

**Table 1: Agency contribution to the review**

Organisation	Programmes reported <sup>13</sup>	SFPs in study
AAH	11	12
ACF & ACH	13	13
CONCERN	9	10
CRS	0	0
FH	1	1
HCR	4	5
IFRC	1	1
IMC	6	7
MERLIN	1	1
MSF - B	4	9
MSF – H	3	6
MSF – Spain	4	3
OXFAM	3	3
Save the Children UK	5	7
Save the Children USA	3	3
UNICEF	0	0
WFP	3	1
TOTAL	72	82

Only 67 of the 82 programmes included in the study supplied statistical information on the outcomes of the programme.

No data on individual children were obtained for the study.

The programmes included in the study were voluntarily submitted by the implementing agencies. As such, they cannot be considered as a representative sample of SFPs implemented during the period. This is discussed further in section 4 - 'description of the SFPs'.

## Data screening and assessment of reliability

All statistical information from the centres were checked and validated specifically with regard to the following points:

- age groups covered by the data,
- numerator used for the calculation of percentages of exits,
- minimum level of aggregation that can be obtained from the reports in terms of time (monthly, quarterly, or only figures for the duration of the project) and geography (by centre, by programme, by region...),

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<sup>13</sup> Action Contre la Faim and MSF – Holland sent information on a large number of programmes. A choice therefore had to be made to exclude some programmes so as not to over-represent these agencies and to make data extraction more manageable. The choice of programmes from these agencies was made on the basis of data accessibility and ensuring as much variety of contexts as possible.

- whether information presented as percentages were available as raw data (to allow recalculation of rates),
- gaps in information for a specific month or centre.

Information on population mortality and malnutrition rates were checked to clarify:

- nutrition indicator used
- population to which data refers (and if this was the same population covered by the SFP),
- method used to collect the information,
- sample size and other statistics of dispersion of the rate,
- presence of baseline data for comparison.

When possible, the actual nutrition survey report was used to allow this verification and checking.

Reliefweb, ALNAP and RNIS were also consulted on the Internet in order to obtain additional information. These resources were used, for example, to identify the location of programmes, when the names of districts and regions were unfamiliar, and to add information on basic contextual characteristics of certain programmes where this information was lacking in agency reports.

### **Re-calculation of outcome statistics**

In many cases the only outcome data reported were “recovery rates”, “mortality rates” and “defaulting rates”, i.e. there were no data on individuals that were transferred to hospitals, or those who were discharged but had not recovered. Where these three rates did not add up to 100% the remainder of the percentage was attributed to transfers or non-recovered patients (in both cases defined as “non response”).

Subsequently, if data for the total number of children discharged from the centres each month were available, the number of children in each exit category (including non-response) was calculated from the percentage figures. If data on the total number of discharges were not available, then the statistics were kept as presented in the report.

If, on the other hand, “recovery rates”, “mortality rates” and “defaulting rates” added up to 100% it was assumed that the other patients (transfers, discharged non-recovered, or other) had been excluded from the numerator for the rate. If data for the total number of children discharged from the centres were available (including non-response), all the rates were recalculated using this figure as the numerator. If the total number of those discharged was not available, then the statistics were presented as in the report, but where appropriate in the analysis these SFPs were considered separately from SFPs where the numerator included all children.

Children who are transferred to hospitals or to TFCs, those that are discharged before recovery and those where treatment fails, etc. are reported in different ways by each agency. In order to standardise data for the study, these cases were all aggregated into one category for each SFP and labelled “non response”.

*Average rates of weight gain and average duration of stay* in the centre in recovered children are usually presented by month (or quarterly). This information could not be collated to represent longer periods of time, i.e. provide the rate for the duration of the programme, because there was insufficient data on the number of children on which the rate was calculated for each month. Furthermore, it should be noted that average

weight gain and duration of stay are usually reported only for recovered children. In many respects this biases results towards positive outcomes. A more objective way of representing weight gain and duration of stay would be to present data for all children that remained in the programme.

The *kilocalories* in each recipe distributed were calculated from the components of the ration reported by the agencies, using standard food composition tables. When more than one recipe was used in the same programme, the one that had been used most of the time was used for the calculation (as it was observed that changes in recipes were usually temporary). On some occasions there were so many recipe changes that no single recipe could be considered “most usual”, and therefore this information could not be used.

#### **Box 1: Definition of outcomes**

**Recovery:** A beneficiary that reaches the programme defined discharge criteria. These are described in the next chapter.

**Defaulter:** A beneficiary that is lost-to-follow up by the programme before reaching discharge criteria or other, and whose actual status (dead, recovered, other) is not known. Typically two weeks of absence are required before classifying the child as a defaulter, though this varied between programmes.

**Death:** A beneficiary lost-to-follow up that is reported dead by the family or by home visitors.

**Non-response:** This category includes:

- patients transferred to TFC due to a deterioration of their nutritional status,
- patients transferred to hospital due to a medical complication independent of their nutritional status,
- patients that remain in the programme but do not reach discharge criteria after a given length of time (typically 16 or 24 weeks although this varied),
- occasionally, other patients “discharged” in irregular ways may be included in this group: for example, patient admitted by error. This subgroup is assumed to be negligible in most, if not all, of the SFPs.

There is some variation in the criteria used by each SFP to define recovery and defaulting. The analytical limitation of the study introduced by this phenomena cannot be overcome in the absence of data on the outcomes of individual patients.

#### **Information on costs**

##### **Box 2: Information on programme costs**

Only seven programmes provided details of costs incurred (five of these were from the same organisation). Fifteen other programmes reported the budget, nine of them as a single figure for the reported period and the other 6 with a breakdown of the budget lines. Unfortunately this information was often incomplete (e.g. referring to only one of several donors for the programme, or to one period and not others). Furthermore, the budget data usually included costs of other programmes. Given the poor quality of the cost data and the complexity of trying to derive ‘better data’, it was decided to abort Objective 4 of the study (to describe and compare the costs of SFPs in different emergency contexts).

## Objectives of the Study

1. To describe the characteristics of emergency SFPs implemented in recent years (Targeted SFPs and Blanket feeding). This includes:
  - a. To describe how SFPs fit into the overall nutrition intervention.
  - b. To identify the explicit and/or implicit objectives of emergency SFPs.
  - c. To determine the extent to which programmes follow current guidelines.
  - d. To determine the extent to which SFPs feed into longer-term programming.
2. To assess the effect of emergency SFPs on children enrolled in the programmes (efficacy), and the underlying programmatic and contextual factors influencing outcomes.
3. To assess the impact of emergency SFPs at population level (effectiveness) and the programmatic and contextual factors influencing outcomes.
4. To describe and compare the costs of SFPs in different emergency contexts (cost-effectiveness). To compare these costs with those of other types of interventions with similar objectives.

## Scope of the study

The review included SFPs following criteria below:

- SFPs implemented in acute and chronic emergencies
- The main focus is on children < 5 years.
- The objective of the SFP includes the prevention / treatment of malnutrition (using W/H and/or micronutrient deficiencies as both eligibility criteria and measures of outcome).
- Targeted and Blanket SFPs.
- Implemented by the participating agencies between 2003 and 2005 (inclusive).<sup>14</sup>

Programmes specifically addressed to HIV positive patients were not considered for this review. Also, data were not collated or analysed on pregnant and lactating mothers or other age groups attending the SFPs.

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<sup>14</sup> Even if the SFP existed before or after these dates.

## **Assessment of Quality of Reports and Statistics**

Programme reports are both a tool for the design and management of the programme and for communication with partners. They are also a reflection of the quality of the programme, not just for what they say, but for the way they say it.

During scrutiny of reports to extract data and build the dataset for this study, we have come across an unexpected number of information gaps, inaccuracies, statistical errors and other inappropriate uses of information and data. These problems have been a major constraint for the implementation of this study. More important, as the information in the reports analysed were originally used for decision making and communication inside the implementing agency and with donors or the public, the mistakes identified in the reports raise concerns over the quality of the intervention itself, the accountability of agencies and the capacity of agencies to learn from experience.

This section presents a list of the most common reporting problems identified. While this information has not been quantified, or the responsible agencies identified, all agencies participating in this study should be alerted to the need to address reporting problems. The list presented below highlights the main reporting problems identified.

### **Summary of reporting weaknesses**

It was exceptional to find a single programme document that provided comprehensive information on all programme variables, e.g. inputs, context, design and outcomes. A general description of the programme would only be found in some evaluations and donor reports. Fortunately, for most cases such information could be found in other reports so that general descriptive information about the programme could be constructed from these sources. Even so, discrepancies about programme activities occurred and it was often difficult to follow the logical linkages between the assessments, the interventions and the results obtained. It seems remarkable that for most programmes there was no one “general report” containing information on what was done, why and with what results.

Some of the reporting problems highlighted below only occurred once while others were common. They are all mentioned here “for the record” and as a basis for discussion on the need for, and the characteristics of, good reporting.

### **General description of programmes**

- Lack of a description of the location of the programme: Names of places are often quoted assuming that the reader is familiar with the region. While this may be true for readers of internal reports, it is not necessarily the case for “external” readers, e.g. reports to donors. Some reports used more than one name for the same centres (e.g. using name of the district and then name of the village). One internal report referred to the centres by their radio codes making it impossible for the reader to understand anything (this report was excluded from the study).
- Lack of brief history of the programme: Longstanding SFPs are reported on a quarterly basis with no description of programme history. A summary of opening dates of the programme (and the centres if some were opened or closed during implementation) would help the reader to better understand the intervention.



- Ambiguity about the start of the intervention and the actual opening of the centres (sometimes separated by several months)
- In some reports there was no indication of implementation dates.

### **Context and causes of malnutrition**

- Lack of any information on; the programme context, the problem being addressed, needs assessment and exploratory missions or other documents to help understand the reason why a programme was started.
- No explanation of the ways in which the objectives and set up of the programme is expected to contribute towards the resolution of the problem.
- In many programmes the causes of malnutrition are assumed rather than based on empirical evidence. The particular assumption appears related to the organisation implementing the programme, e.g. certain organisations assume a medical cause and others a food security basis.
- Where causes of malnutrition have been investigated the link between the cause and programme set up is not always clear.
- The general food and health situation of the population is not always known. More often than not it is not clear what the Supplementary Programme is supplementing, as there is no description of other food sources or the presence or absence of food rations.

### **Protocols and design**

- In almost all reports, there is no account of whether other interventions may be serving the same populations, i.e. whether there are other organisations working in health, food and/or nutrition in the same area, even when the programmes are supposed to be complementary (i.e. for many of the programmes in this study it is not clear if there was an ongoing general food distribution).
- No identification of the role of different actors where more than one agency are working in the same programme in partnership.
- Lack of information on the protocols of the intervention: what food is being distributed, to whom, with what frequency, etc. Lack of information on the procedures of the programme, e.g. screening, patient follow up, referral system, etc.
- When the presence of a general food distribution is indicated there is insufficient information on key variables, e.g. target population, targeting system, foods distributed, frequency, etc.
- Important events that may affect the efficacy of the SFP, e.g. the start or end of a general food distribution or a change in protocol, are not always mentioned or described in adequate detail.

## **Data presentation**

- Data derived from screening activities may be quoted as if these are surveillance data (in some cases this is used as population level data on rates of malnutrition).
- When a malnutrition rate is quoted in a programme it is often impossible to determine whether it refers to weight for height or some other indicator or if it is a percentage of the median or Z-score figure.
- Malnutrition rates are reported in isolation of the associated mortality rates. Reporting both would facilitate interpretation of the indicators.
- Malnutrition rates are often quoted without any reference to the method of data collection (e.g. a cluster survey, purposive sample, etc.). The date of estimation of the rate and the geographical area from which it is derived are not always quoted (rendering the information unusable).
- In estimating numbers of patients expected in a programme from the results of a survey there is no allowance for the incidence of malnutrition (new cases). In some proposals, the prevalence of malnutrition is used as if it was the "incidence" of malnutrition, and inappropriate estimates of needs derived.
- A survey reporting a high rate of severe malnutrition comprising mainly kwashiorkor cases was used to justify a SFP even though the programme does not admit such patients and there is no evidence to date to prove that SFPs would prevent the development of kwashiorkor.

In addition, two programmes reported population malnutrition rates using weight for age, rather than weight-for-height.

## **Presentation and interpretation of outcome data from the centres**

Statistical reporting of programmes is often incomplete and in many cases reveals mistakes that may undermine the validity of the information reported. Common mistakes identified include:

- Frequent presentation of percentages without indicating total number of subjects used for the calculation. Although some reports state the percentage of recovery in conjunction with the number of admissions the number of exits (denominator) from which the percentage was calculated is also necessary.
- Presentation of recovery rate over a period as the average of successive monthly percentages (average of percentages is meaningless unless the number of individuals in each percentage is taken into account).
- Presentation of rates of recovery, defaulting, etc. aggregated for several SFPs in different regions or for a very long period of time. While this is not a mistake in itself, this practice can mask poor performance of one particular centre.
- Reporting data for a period without providing the data for the preceding months to inform interpretation.

- No mention of the method used for calculating average weight gain (if it was calculated from first to last weight, or from first to maximum weight, and if the calculation has been based on a sample of children recovered or on all of them).
- Reporting recovery rates without specification of the group of patients to which it refers (children, adults, all patients).
- Aggregating into one single group data for different groups of patients (infants, children, pregnant and lactating mothers).
- Information on rates being presented only in graphs so that the actual figure can not be read.
- Mixing different levels of aggregation in the same statistics (e.g. rates given for each centre in conjunction with the number of admission for the whole SFP- this makes interpretation difficult).
- Exclusion of groups of patients. There are no Sphere indicators for rate of transfer (to TFC or to Hospital), or for other patients that are discharged without having recovered ("non response"). As a consequence organisations that report SFP performance following Sphere recommendations do not account for these patients. In other words, one programme can have 50% of its patients being sent to TFC because they are loosing weight yet still meet Sphere standards. If, in addition to this, the total number of children discharged from the centre is not reported, it is impossible to re-calculate the rates to take into account all children.
- Other programmes follow the Sphere recommendations but also report those patients transferred or who were discharged as "no response". As a consequence, given that recovery rate, defaulter rate and mortality rate calculated following Sphere recommendations add up to 100%, addition of other groups lead to percentage figures that are systematically above 100%. On preparing the database for this study we have seen exit statistics that added up to 150% and higher.
- Many centres that admit patients that have recovered in TFC mix them with patients that were admitted directly into SFP in their statistics. Considering that these "follow-up" patients already meet the target weight for height when they are admitted it is not correct to consider that they were "recovered" at the end of the follow up period. Therefore, if there are a significant important number of "follow up" patients in a SFP it is easy to overestimate the recovery rate of the programme.
- Changing formats of statistics: In compiling the data for the database the statistics from some reports could not be merged as the data were presented in different formats in different months (different criteria to calculate the rates), or referred to a different level of aggregation (one month data are presented by centre, the next by district or for the whole area, etc). While some organisations use the same templates to collect statistics from SFCs, others use more ad hoc arrangements. In one case an SFP comprising five centres reported monthly statistics using 4 distinct formats which appeared to change when the expatriate in charge was replaced.
- Cheating: In one report, the recovery, mortality and defaulter rates were each calculated with different numerators in such a way that the final result met Sphere standards.

- Interpretation of statistics is often naïve or biased. For example, in one case, an obvious deterioration in the quality of a centre was not highlighted on the basis that Sphere standards were still being met.

### **Box 3: Frequency of statistical problems**

The figures in this box provide an indication of the frequency with which these statistical problems were found:

Out of the 67 SFPs that provided outcome statistics,

- 15 provided percentages without the actual numbers;
- 16 only included “recovery”, “defaulter” and “death” in the denominators;
- 29 included children being followed up after TFC recovery, mixed with children admitted directly into the SFP
- 20 did not specify whether the children being followed up after TFC recovery had been included or not in the statistics
- 17 mixed several age groups in the statistics
- 13 did not specify the age group to which the statistics referred.

### **Overall**

Many of the final reports examined in this study, and in particular those addressed to donors, place more emphasis on the volume of the activity implemented than on results. This is justifiable to the extent that information is needed for planning and evaluation of logistics and financial resources. However, it is not a substitute for reporting programme results.

The need to “sell” the quality of the programme implemented to organisation headquarters or to the financing donor may undermine the quality of the report, particularly when it comes to the presentation of data on efficacy and effectiveness. It is not unusual to read self-justifying statements about why a particular standard was not met, e.g. including “blaming the victim”.

Programme reporting usually follows a regular schedule, e.g. monthly, quarterly or annual. Even when a “final report” is produced, the “final” refers to the end of a contract with a donor, and seldom to the actual end of the programme. In this way, the history and information of the programmes gets split up into several documents and the experience and potential lessons learnt may be lost.

Comprehensive documentation of a programme is usually only carried out in special situations, e.g. where an organisation decides to conduct an evaluation. This type of document can be crucial to future implementation of similar programmes in the same area, a frequent occurrence in some countries where food crisis are chronic or cyclic.

### **Good reporting practice**

Not all reporting systems were as problematic as this list implies. Two good examples of reporting practice deserve mention:

- Action Contre la Faim network uses a reporting format for SFPs that is similar in all programmes they implement around the world. This format has separate lines for each age group, and permits both the calculation of recovery rates following Sphere recommendations and with all children that exit the centre. It can also be

adapted to include information specific to a particular programme. Variations of this format have been adopted by other organisations in some countries.

- Valid International uses a spreadsheet table format in which the data of each centre for each month are entered as a single observation. A system of pivot tables allows the user to extract statistics on demand for the writing of reports. The set up of this system may be complex and needs some knowledge of spreadsheets, but once the system is in place it is the ideal way of managing centre data for keeping records and elaborate reports.

## **Conclusion**

Although the extent of the problems reported here varies greatly among organisations, it is obvious that these difficulties should be of concern to all actors involved in SFP implementation. A set of basic reporting guidelines, at least for statistical information, would be of great benefit for all, would improve the quality and accountability of programmes and would allow better comparison and communication of results.

In this study every effort has been made to mine the actual data used to derive the percentages and the figures in the reports, including recalculation of recovery rates, etc. All statistical information was critically assessed, and when there were doubts about data quality or accuracy these were noted in the database. Each piece of statistical information entered into the database is labelled in such a way that its derivation and application can be clearly understood.

## Results

### 1. Description of the characteristics of SFPs

This chapter presents a description of the 82 SFPs that were selected for the study. The programmes and their data are not statistically representative, as programmes were submitted by the participating agencies, rather than randomly selected.<sup>15</sup> However, given the large number of programmes included and the wide range of regions and crisis where programmes were implemented, the description constitutes a broad representation of current field practice.

Only 67 SFPs provided information on programme performance (programme statistics). These will be analysed in terms of their efficacy and effectiveness in subsequent chapters.

Two of the programmes reported were Blanket SFPs, all others were Targeted SFPs. Table 2 presents information on whether the SFP were conducted in the presence or absence of general food distributions (general ration). Lack of clarity regarding GFD provision for some programmes has meant that 24 were placed in an ‘unknown’ category.

**Table 2: Type of SFP and presence of general ration**

SFP	General ration			
	Yes	No	Unknown	Total
Blanket	1	1	0	2
Targeted	40	16	24	80
Total	41	17	24	82

With few exceptions, the design of the SFPs followed standard guidelines. Programmes selected patients with moderate malnutrition (see above for the criteria used for this selection), in one or several centres over a district or a region. The beneficiaries selected received a standard medical treatment and supplementary food and were invited to attend the centre at regular periods (weekly, fortnightly or other), until weight monitoring indicated that the beneficiary has reached pre-defined discharge criteria.

One of the targeted SFPs was unusual in that it mixed features of targeted and blanket feeding. Families were selected on the basis of having a child under 2 years of age with weight-for-height below 80% of the median. Selected families then received a food distribution for the whole family for the duration of the programme (more than six months) with no specific follow-up of the child, and therefore, no “discharge” criteria. This programme was implemented in Guatemala, the only Central American example in this review.

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<sup>15</sup> For this reason, the information is not presented as percentages or any other statistical form.

## Number of programmes reported by country and region

Eight of the SFPs were implemented in Asia, one in Central America and all the other in Africa (Table 3). As expected, the distribution of SFPs in this sample reflects the main crisis where humanitarian assistance has been delivered over the past 4 years.

**Table 3: Distribution of SFPs in the review by country and region**

Country	Region	SFPs	Total country	Country	Region	SFPs	Total country
<i>Africa</i>							
Angola	Bie	5	11	Malawi	Dowa	1	2
	Moxico	2			Nkhotakota	1	
	Huambo	1		Niger	Maradi	1	4
	Huila	2			Zinder	1	
	Benguela	1			Agadez and Maradi	1	
Burundi	Muyinga	1	6		Tillaberi	1	
	Kirundo	1		Sierra Leone	Bo	1	1
	Rutana	1		Somalia	Lower Juba	1	2
	Karuzi	1			Luuq	1	
	Bujumbura Rural	1		Sudan	Darfur	9	14
Chad	Cibitoke	1			Red Sea St.	1	
	Biltine	2	2		Bahr el-Gazal	1	
DR Congo	Maniema	2	13		Upper Nile	2	
	North Kivu	2			Unity St.	1	
	Kinshasa	2		Uganda	Northern Region	3	3
	South Kivu	3					
	Katanga	4		<i>Asia</i>			
Eritrea	Gash Barka	1	3	Afghanistan	Parwan & Kapisa	1	4
	Debub	1			Ghor	1	
	Anseba	1			Kabul	1	
Ethiopia	SNNP	2	6		Balkh	1	
	SNNP, Afar	1		Bangladesh	Nyapara & Kutupalong camps	1	1
	Oromiya	1		Cambodia		1	1
	West camps	1		Myanmar	Northern Rakhine State	1	1
	East camps	1		Tajikistan	Kathlon province	1	1
Ghana	Gomoa district	1	1				
Guinée Conackry	Guinée Forestière	1	1	<i>Central America</i>			
Kenya	Lokitaung	1	3	Guatemala	Quiché	1	1
	Garissa	1					
	Mandera	1					
Liberia	Western Liberia	1	1				

## Population and context

Table 4 presents a summary of the context and programme characteristics for the 82 SFPs reviewed.

**Table 4: Summary of context and programme characteristics (82 SFPs)**

	Yes	No		Yes	No
<i>Context</i>			<i>Programmes</i>		
Insecurity	52	16	With TFC for severe malnutrition	62	-
Limited access	33	36	With OTP for severe malnutrition	11	-
Population displacement	54	28	No facilities for severe malnutrition	9	-
Resident population	64	18	With associated general ration	41	41
Population war affected	65	17	With health system	80	2
			"Nutrition surveillance"	59	23
<i>Setting</i>					
Camps only	15	-	Implemented with a local NGO	4	-
Rural	54	-	Implemented with local MoH	17	-
Urban	3	-	Participatory design with community	1	-
Mixed rural, urban and/or camps	10	-	Plans hand-over to MoH	36	-
<i>Economic profile</i>			<i>Population information provided</i>		
Pastoralist or agro-pastoralist	28	-	Nutrition mortality surveys	68	14
Mainly agriculture	33	-	Surveys on micronutrient deficiencies	3	79
Food aid dependent	8	-	Coverage surveys	2	80

\* note that those not included could be NO or Not known.

*Insecurity* affected to some degree the implementation of 52 programmes. Levels of insecurity ranged from small or isolated incidents affecting those on route to the programme to high levels of insecurity resulting in the closure of a programme, e.g. in Luuq, Somalia. Some programmes frequently evacuated their international staff, e.g. in East DRC and Sudan, often resulting in interrupted activities. In others, significant numbers of beneficiaries defaulted due to presence of land mines or other threats to their security.

Insecurity significantly restricted regular access to the centres in 8 of the programmes. Twenty-five other programmes reported access problems related to other factors including political exclusion (1 programme), distance or seasonal flooding or snow.

The *type of emergencies* reported includes a large range of situations. In summary, 54 of the emergencies involved displacement of population (9 refugees, 15 returnees, 29 IDPs and 1 returnees and IDP), while 40 of the programme were implemented in areas of open conflict (33 of them with population displacement). Sixty-five of the



programmes assisted populations affected by current or past war. Poverty or social breakdown was identified as part of the problem in 45 programmes – usually in conjunction with the conflict. There was no conflict or displacement reported in 9 of the latter. Drought was identified as the main cause of the nutritional crisis in 13 programmes. Thirty-three of the programmes defined themselves as operating in a “chronic emergency” (23 of which are in conflict areas and 3 in drought affected areas).

Most programmes were implemented in *rural* areas, followed by displaced or refugee camps or both camps and resident population. The populations assisted were exclusively *resident* in 23 programmes, while 4 programmes served returnees and a further 14 were targeted at refugees or IDPs. The remainder of the programmes assisted both resident and displaced populations.

Eight of the populations assisted were dependent almost entirely on food aid while for 33 the main activity was agriculture with the remainder (28) comprising pastoralist or agro-pastoralists.

### **Malnutrition and mortality rates**

Fourteen of the programmes reported did not provide any information on population mortality or malnutrition rates. For 20 other programmes, there is only information from one *survey*.

Very few programmes assessed micronutrient status or included prevention or treatment of micronutrient deficiencies as an objective. Micronutrient deficiencies are mentioned in only fifteen programmes, and only 3 of them report specific surveys to investigate the existence of micronutrient deficiencies (usually in places where this was already known to be a problem).

Only one programme implemented a survey specifically to assess coverage. Nineteen programmes had at least one nutrition survey in which coverage of the programme had been assessed (a total of 40 surveys). According to these data, the coverage of programmes ranged from 1% to 71.7% (median 20.5%, iqr 10.8 – 35.3%).

### **Characteristics of the operations**

For the programmes that provided statistical information on admissions and entries, the *periods reported* ranged from 2 months to almost 5 years. The median is just below one year (11.1 months, iqr 6.6 – 23.3 months). Half of the programmes reported here lasted for at least one year, and one quarter for at least 2 years. Nine programmes in this study cover periods longer than 3 years.

This is not, however, the actual duration of the programmes. Only 29 of the programmes are reported from the start of implementation, and only 15 were reported at the end of the programme. In total only 6 of the programmes reported cover the start to the end of the operation.

Only 5 of the programmes reported seem to have been set up at the onset of the crisis. All the others were implemented while the crisis was ongoing (at least for the period that was reported to the study). We attempted to estimate the time between the identification of the crisis and the period reported. However, this could only be done for 33 programmes for which this information was available or could be estimated. From

this analysis it appears that only 6 were implemented in the first 6 months of the crisis, another 11 in the first year, and the other 16 from the second year onwards.

The total duration of the programmes cannot be estimated, as many of them were implemented before or after the period reported for this study.

### **Characteristics of programmes**

The *number of SFCs in each programme* reported varied between 1 centre (in 12 of the programmes) to 200 centres (in one programme). The latter, in Tajikistan, is an integrated programme in which each Health Post in several regions implemented SFP activities. The median number of centres per programme is 6 (iqr 2 – 13). In many programmes the number of centres increased or decreased during implementation, as the programme adapted to needs and resources. The figure for the number of centres used here corresponds to the average number of centres per month of the period reported.

Most programmes used a strategy based on *fixed centres*. Others used mobile centres in which one or more teams travelled to the distribution points on specific days, or a mixture of fixed and mobile distribution centres.

The activities of the SFP were implemented in existing structures like health posts, health centres, hospitals or schools in 38 of the programmes (though this does not necessarily imply that the activities were fully integrated into the existing health system). In some cases this was associated with the rehabilitation of health facilities.

Nine other programmes built new (usually temporary) structures. Where described, these consisted typically of a shelter for consultation and food distribution, a stock for material and food and sometimes a shaded area for beneficiaries waiting to be attended and for education sessions.

Almost all programmes for which there was information mention the presence of *health centres* or other primary health facilities assisting the same population (sometimes managed by the same or another NGO, or by the national health system). The majority also mention presence of a hospital.

Only 9 of the 82 SFPs reported here were not *associated with a therapeutic feeding programme*. Thirty-six were associated with in-patients TFCs (for which 30 provided exit statistics from programmes) and 11 with community based therapeutic programmes - OTP with or without stabilisation centres (only one did not provide statistics).

*Donors* funding these programmes were: ECHO (19 programmes), OFDA (16), DFID (6), CIDA (5), and a number of others. WFP and UNICEF or UNHCR usually participated and contributed resources in some way, e.g. providing the food items and drugs for the programme. Three of the programmes reported were discontinued for lack of funding.

Information on the size of the *area covered* by the programmes and the estimated population in the area were often missing or were not reliable and are not used here.

Fifty programmes were *implemented directly* by the agency that reported them. Four were implemented with local NGOs, seventeen with the local health system (five of them including both the local health system and local NGOs). One programme, by

IFRC, was implemented by the national Red Cross and representatives from the Red Cross Societies of several countries. Four programmes were implemented by the reporting agency but with important inputs from an international private consultancy group (Valid International).

Only one programme implemented a comprehensive *participatory process in designing and implementing the programme*. While others declared such intentions in their proposals subsequent reports do not collect the details of this process.

Thirty-six of the SFPs indicate their intention to *hand over* the programme to the national health system (typically the Ministry of Health). In three cases this actually took place during the period reported. One of them provided detailed information on the functioning of the centres after disengagement of the international NGO (the organisation maintained a programme monitoring role). Two other programmes were handed over to a different international NGO and three to local NGOs. Fifteen other programmes did not indicate any plan, or the plan was to close the centre when the number of beneficiaries or malnutrition rates decreased to a certain level. .

Only 2 of the programmes reported worked entirely with national *staff* (no expatriate involvement in daily activities). Team composition and information required to calculate the staff beneficiary ratio was not available for most of the programmes.

All programmes for which narrative information are available mention specific *training* of staff and supervision as core implementation activities.

Sixty-two programmes reported narrative information including *events* affecting the implementation of the programme. The events reported included breaks in the food pipelines, population movements, security incidents, staff problems, overcrowding of centres, deviations from protocol, etc. When relevant, these will be considered in interpretation of findings.

## Objectives of the SFPs

Out of those SFPs that explicitly declared a main goal, 20 cited “a reduction in mortality and morbidity caused by malnutrition”.<sup>16</sup> Other stated overall goals included “improving the food security and nutritional situation of the population”, “improving access to primary health”, “meeting the nutritional needs of the population”, “reducing impact of war on children”, “ensuring the nutritional recovery of the children in the population”. Most of these programmes had additional components to the SFP in order to attain their goal.

The specific objective of the SFPs was also formulated in different ways, e.g.

- “to treat moderate malnutrition and prevent severe malnutrition” (6 programmes),
- “to prevent cases of severe malnutrition” (5), or
- “to treat patients presenting with moderate malnutrition” (3).

One programme explicitly defined “the treatment of morbidity associated with moderate malnutrition” as an objective of the SFP.

Fifteen other programmes defined SFP objectives in terms of expected impact at population level, e.g. “to maintain/improve the nutritional status of the population”. In some cases, target Global Malnutrition Rates were defined e.g.. 5%, 10%, 15% or a

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<sup>16</sup> Worded in different ways.

reduction to 4 percentage points from the baseline. While some of these programmes had associated interventions at the population level (food security, etc.) others anticipated population level impact on levels of malnutrition through the SFP alone.

Other operational objectives commonly cited included:

- to improve quality of care of malnourished children (6 programmes),
- improve nutrition and hygiene education (3),
- build capacity, improve health and nutrition practices and increase utilisation of local health services (1),
- increase coverage of screening of malnutrition (9), three of them through specific community based strategies mentioned in the objective,
- to integrate nutrition services (the SFP) into health centres (6), some of them specifically setting objectives of training local staff, integrated management, etc.),
- to monitor the nutritional situation through surveillance (2).

Other indirect objectives implicit in the proposals included:

- to prevent further population displacement (or promote return of those already displaced) (2),
- to empower community health workers and the community to analyse nutrition problems and implement solutions
- to support the coordination of humanitarian assistance.

Twenty-five programmes did not state objectives of the programmes in the documentation provided.

These findings highlight the lack consensus on the potential impacts of these programmes in emergencies.

## Protocols

Table 5 summarises the protocols of SFPs. Two of the programmes reported are *blanket* feeding programmes. One of them admitted all children from 6 months to 12 years, the other admitted all children from 6 to 59 months plus pregnant women and nursing women with a child below 6 months.

All the targeted SFPs reported for this study were implemented as take-home *dry rations*. In some cases the design of the programmes varied over time. For example, two programmes combined periods of targeted distributions with short periods of blanket feeding, depending on the availability of foodstuffs and other programme constraints.<sup>17</sup>

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<sup>17</sup> In the following chapters, only the period in which these two programmes operated as targeted SFPs are included. It was not possible to isolate the periods of wet feeding for analysis due to their short duration.

**Table 5: Summary of information on protocols of SFPs**

	Yes	No		Yes	No
<i>Type of feeding</i>			<i>Activities</i>		
Blanket feeding	2	-	Frequency of distributions		
Targeted feeding	80	-	- twice per week	2	-
- dry (take-home rations)	80	-	- weekly	28	-
- wet (on-site feeding)	0	-	- fortnightly	14	-
			- monthly	4	-
<i>Admission criteria</i>			- weekly or fortnightly	7	-
WFH 70 – 80% and/or MUAC 110 – 120 mm	57	-	- no information	27	-
Other criteria	6	-	Family ration	24	?
No information	17	-	Nutrition education	53	?
Admits severe as well (no lower limit for admissions)	6	76	Community screening	52	?
			Defaulter tracing	45	?
<i>Recovery criteria</i>			Medical protocol explained	45	37
WFH>85% and MUAC > 120 mm	32	-			
Other criteria	6	-			
No information	44	-			

*Admission and discharge criteria*

Fifty-seven programmes admitted children 6 to 59 months with *moderate malnutrition* defined as having a weight-for-height percentage of the median between 70 and 80% of the NCHS reference. Twenty-nine of these programmes also admitted children of the same age with a MUAC between 110 and 120 mm (for children measuring more than 75 cm). In two other programmes, a higher MUAC of up to 125 was used for admission (in one of them the cut-off for admission was further raised to 135 mm during programme implementation).

The six programmes implemented in places where there were no therapeutic feeding facilities admitted both children with moderate and severe malnutrition. The admission criteria for all children was weight-for-height below 80% of the median, or a MUAC below 120 mm, or presence of bilateral oedema.<sup>18</sup>

The Guatemala programme only admitted children below 2 years, with a weight-for-height below 80% of the median.

One programme in an insecure area of Sudan kept programme numbers low by reducing the admission cut-off point to 75% of the median weight-for-height.

Another programme admitted patients with either weight-for-height below 80% of the median or below – 2 Z-scores of the reference population as well as patients with severe malnutrition. Another programme only admitted patients with a Z-score between –3 and –2.

Finally, one programme initially admitted patients using weight-for-age and was designed more as growth monitoring than supplementary feeding. However, during the

<sup>18</sup> Unfortunately, none of these programmes reported the evolution of these severe patients separated from the other patients, in order to assess the effect of SFP protocol on them.

implementation of the programme the criteria were changed to weight-for-height and the protocols adapted.

All those programmes running in conjunction with a therapeutic feeding programme admitted children discharged from the TFC or OPD, for consolidation of their nutrition status ("TFC follow-up"). This follow up period varied between 4 weeks and 4 months depending on the programme (details on the protocols for these patients were often absent from the reports). The programmes running alongside therapeutic programmes allowed any patient who either presented themselves as severely malnourished or who became severely malnourished while in the SFP to be referred for therapeutic treatment.

Most programmes also admitted pregnant and lactating women while some admitted other age groups above 59 months, including adults and older people. Data on these beneficiaries were not systematically collected for this study.

Thirty-two programmes discharged children when they reached a weight-for-height equal to or above 85% of the median of the reference population. Nineteen of these programmes specified that this cut-off should be attained for 2 consecutive visits before discharging the child. Sixteen programmes required the children to have, in addition, a MUAC above 120 mm, and one a MUAC above 125 mm.

Exceptions to this standard protocol included: one organisation that started the programme with a discharge criteria of 85% and lowered it to 80% during implementation (the reasons for this change were not explained in the reports), one programme discharging children on reaching a weight-for-height above 80% and another programme discharging them at 90% or above  $-1$  Z-score weight-for-height. Forty-four programmes did not specify "recovery" criteria in the information provided.

Where duration of treatment exceeded a certain period without recovery (or other outcome) children would be discharged and categorised as "non-recovery" or "failure of treatment". Two organisations set a limit of 16 weeks of treatment and one at 12 weeks. Another programme set this limit at 16 weeks for children that have reached a weight-for-height of 80% and 24 weeks if the child had not reached this cut-off point.

### *Feeding protocols*

In all SFPs, beneficiaries *visit* the centres for follow up and to collect rations. These visits took place once a week in 28 programmes, and twice a week in 2. In fourteen programmes, the beneficiary was seen once every two weeks, and in 4 programmes the visits were once a month.

One programme started with a visit every second week, and then evolved to weekly visits, while another two started with weekly visits and then moved to visits every other week. In seven other programmes, it is unclear from the information provided if the visits were made every week or every second week, although it is possible that some centres worked one schedule and other centres in the programme worked another. There was no information on the frequency of the distributions for 27 programmes.

The *food distributed* followed different recipes; most of them based on the use of fortified blended foods, mainly CSB (or UNIMIX), and locally produced versions of CSB (WINIMIX, FAMIX, Likuni Phala). These recipes are usually based on corn flour, soya beans or similar foodstuffs. In most situations this was complemented with sugar and

oil, as recommended in protocols, with the exact quantities varying from one programme to the other.

On many occasions one product would be replaced temporarily, or the quantities used adjusted for different reasons. On other occasions, the complete recipe was reviewed and changed. This happened in at least 14 programmes. Although the explanations are not always available, the most frequent one was the lack of one of the products due to pipeline or delivery problems. In one instance a programme was changed from targeted to blanket feeding in order to ensure that a stock of CSB would be consumed before its expiry date.<sup>19</sup>

Two programmes, both of them implemented in Afghanistan during 2001 and 2002, changed the protocol more than 5 times in 7 months. The reasons for these changes seem to be related to pipeline and delivery problems, as well as an attempt to adapt the products in accordance with population preferences.

The recipes used in the SFPs are listed in Table 6. Except for the recipe based on rice and peas, all the others were distributed as a *premix* (i.e. rather than each commodity distributed separately) as recommended in most guidelines.

Twenty programmes reported the use of *cooking demonstrations* as part of the protocol of feeding and patient education. Only one programme specifically mentions that cooking demonstrations could not be carried out.

The protocol of 24 programmes reported included the distribution of a “protection ration” or “*family ration*”. The other 58 programmes did not provide information on protocols, or their protocols did not mention the use of a “family ration”. The objective of a family ration is to increase the probability that the supplementary food will be consumed by the beneficiary child. At least three programmes linked beneficiary families with ongoing GFDs in order to minimise sharing.

The products distributed as family rations are typically those that are being distributed in the general ration, e.g. CSB, sorghum, maize, pulses, oil, salt, etc. As with the supplement itself, the family ration appeared to change depending on commodity availability. This affected at times the ability of agencies to distribute these “family rations”.

In two cases where the “family ration” had to be interrupted, there was a significant decrease in attendance rates in the centres, and a resulting increase in the number of defaulters as well as a reduction in admission of new cases. This could indicate that the “family ration” was playing a much more important role than initially intended, or at least that the effort of attending the weekly distributions was not considered sufficiently valuable by many families if they only received small amounts of food for one of its members.

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<sup>19</sup> The period in which this happened is not included in the analysis of exit statistics for that SFP.

**Table 6: List of recipes used in the SFPs**

Recipes – TARGETED FEEDING	Kcal/p/d	# SFPs	Country
CSB, Sugar, Oil (unspecified amounts)		20	
CSB 200 g, Sugar 20 g, Oil 20 g	1011	5	
CSB 200 g, Sugar 20 g, Oil 30 g	1101	1	
CSB 200 g, Sugar 25 g, Oil 30 g	1121	1	
CSB 200 g, Sugar 30 g, Oil 30 g	1141	1	
CSB 230 g, Sugar 30 g, Oil 30 g	1254	1	
CSB 250 g, Sugar 20 g, Oil 25 g	1244	2	
CSB 250 g, Sugar 20 g, Oil 30 g	1289	5	
CSB 270 g, Sugar 20 g, Oil 50 g	1544	1	
CSB 300 g, Sugar 60 g, Oil 30 g	1637	1	
CSB 350 g, Sugar 20 g, Oil 40 g	1754	1	
UNIMIX, Sugar, Oil (unspecified amounts)	?	2	
UNIMIX 350 g, Sugar 20 g, Oil 40 g	1776	1	
Super-UNIMIX 330 g, Oil 36 g	1583	1	
CSB, Sugar, Oil, Maize meal (unspecified amounts)	?	3	
CSB 50 g, Sugar 30 g, Oil 45 g, Maize meal 100 g	1079	1	
CSB, Oil (unspecified amounts)	?	1	
CSB 240 g, Oil 30 g	1171	1	
CSB 250 g, Oil 25 g	1164	1	
CSB 333 g, Oil 67 g	1317	1	
UNIMIX, Oil (unspecified amounts) (may be Sugar too)	?	2	
UNIMIX 200 g, Enriched Oil 20 g	943	1	
CSB 416 g	1562	1	
CSB/UNIMIX (unspecified amounts)	?	1	
CSB 150 g, Sugar 30 g, Oil 42 g, FUBA <sup>20</sup> 100 g	?	1	Angola
CSB 300 g, Oil 67 g, Rice 300 g, Pinto beans 150 g <sup>21</sup>	?	1	Guatemala
WINIMIX <sup>22</sup> 215g, Sugar 14 g, Oil 30 g	?	1	Ghana
FAMIX <sup>23</sup> 167g	?	1	Ethiopia
FAMIX 300 g, Oil 30 g	?	1	Ethiopia
DMK <sup>24</sup> (unspecified amounts)	?	1	Eritrea
BP5 (unspecified amounts)	?	1	Somalia
Likuni Phala <sup>25</sup> (unspecified amounts)	?	2	Malawi (both)
Flour (product not specified) 325 g, Sugar 16 g, Oil 46 g	?	1	Tajikistan
Rice 120 g, Yellow split peas 120 g, Sugar 50 g, Oil 40 g	1407	1	Myanmar
No information	-	11	
Several protocols changing in short period of time	-	2	Afghanistan (both)

Recipes – BLANKET FEEDING	Kcal/p/d	# SFPs	Country
UNIMIX 330 g, Sugar 50 g	1459	1	Kenya (Turkana)
"Fortified Blended Food" (product not specified) 150 g	?	1	Cambodia

<sup>20</sup> Angolan name for the flour used to prepare a gruel similar to what is called "ugali" in Eastern Africa. It can be done from millet, cassava or maize (the reports did not specify which one was distributed in this programme).

<sup>21</sup> This recipe, used in Guatemala, was intended for all the family rather than for the child. See comments above on this programme.

<sup>22</sup> WINIMIX is an adaptation of CSB locally produced in Ghana. Nutrition specifications could not be found.

<sup>23</sup> FAMIX is a Ethiopian version of CSB. The exact energy content could not be found.

<sup>24</sup> DMK (Dhurra-Milk-Chickpeas) is a high-energy food rich in protein, made of peanuts, chickpeas, and cereals, used mainly in Eritrea.

<sup>25</sup> Likuni Phala is another adaptation of CSB used in Malawi. Nutrition specifications could not be found.



### *Medical protocols*

The protocols for SFPs usually include the distribution of nutrition supplements in the form of Iron and Folic Acid tablets to children above one year of age and Vitamin A. Iron and folic acid distribution was reported by 34 programmes and Vitamin A by 42 programmes. In addition, 43 programmes gave Mebendazole to all children above one year of age admitted to the programme.

Fifty-three programmes mention the presence of some sort of *nutritional education* activities. Other activities related to nutrition are mentioned in 49 of the programmes. These activities ranged from distribution of seeds and tools, to community development, cash-for-work programmes or micro-credit provision.

Fifty-two programmes incorporated screening activities at the community level. In at least one case this was implemented during the GFD. These activities were often described as “nutrition surveillance”.

Most of the programmes mention “home visiting teams”. Forty-five also used these teams for “*defaulter tracing*”, in an attempt to identify absconding patients at home and try to reintegrate them in the programme. The success/failure of this activity was not reported by any organisation. Two programmes did report causes of default as identified by the home visitors.

### **Summary of description**

This chapter has presented a description of the SFPs included in the study. As reports of SFPs were volunteered by participating agencies it cannot be assumed that the description and statistics are applicable to all emergency SFPs. However, the range of countries included appears to represent all the main crises occurring in recent years.

This description shows that most emergency SFPs are implemented in insecure areas affected by war. Beneficiaries are often displaced populations although a considerable number of programmes are also addressing resident populations, most often in rural contexts.

SFPs are invariably part of a wider intervention. They are most commonly implemented in conjunction with a therapeutic feeding programme for the treatment of children with severe malnutrition, and with general ration support through either general food distributions or other food security programmes.

The majority of SFPs are implemented with international staff, in some cases in collaboration with the local health structures or local NGOs. In a small number of cases explicit programme objectives included integrating SFP structures into the prevailing health system in order to achieve sustainability.

The implementation of the emergency SFPs reviewed did not necessarily follow an objective evaluation of the nutritional situation or the causes of malnutrition in the affected population. Few of the SFPs reported here were initiated at the height of the crisis.

Programmes varied widely, from national programme with hundreds of centres, to small programmes with just one site. Despite being classified as an emergency intervention, the duration of the programmes varied widely, e.g. some were short-term

interventions that were closed and re-opened where needs arose while others lasted for several years.

There was also a marked lack of consensus over the objectives of emergencies SFPs. The stated aim of some organisations was solely to treat moderate malnutrition while for others, prevention of severe malnutrition or reduction in population malnutrition rates were cited as goals.

Virtually all the programmes reported were targeted feeding, and all of them were implemented in the form of “dry SFPs” (take-home rations). Although the foodstuffs distributed varied from place to place, the basic principle of distributing a blended food composed of cereals and pulses, enriched and premixed with oil and sugar was generally followed. The amounts distributed varied from just below 1000 kcal/beneficiary/day to almost double this amount. This large range was probably due to the practice by some agencies of doubling the quantities distributed to allow for intra-household sharing or other uses of the food. The amounts distributed did not appear to be adapted to the measured needs of the population, i.e. theoretical adjustments were made. Indeed, despite being ‘supplementary’ programmes, few agencies assessed basic diet of the population assisted (i.e. what is being supplemented) or adapted their protocols to this basic diet.

In addition to the food distributions, most programmes included other activities like treatment with systematic drug regimes (Vitamin A, Folic Acid, Iron, Mebendazole), screening and home visiting for defaulter tracing.

## 2. SFP Efficacy (Effect on Individual Patients)

This section explores the hypothesis that “a moderately malnourished child enrolled in a SFP recovers his/her nutritional status”.

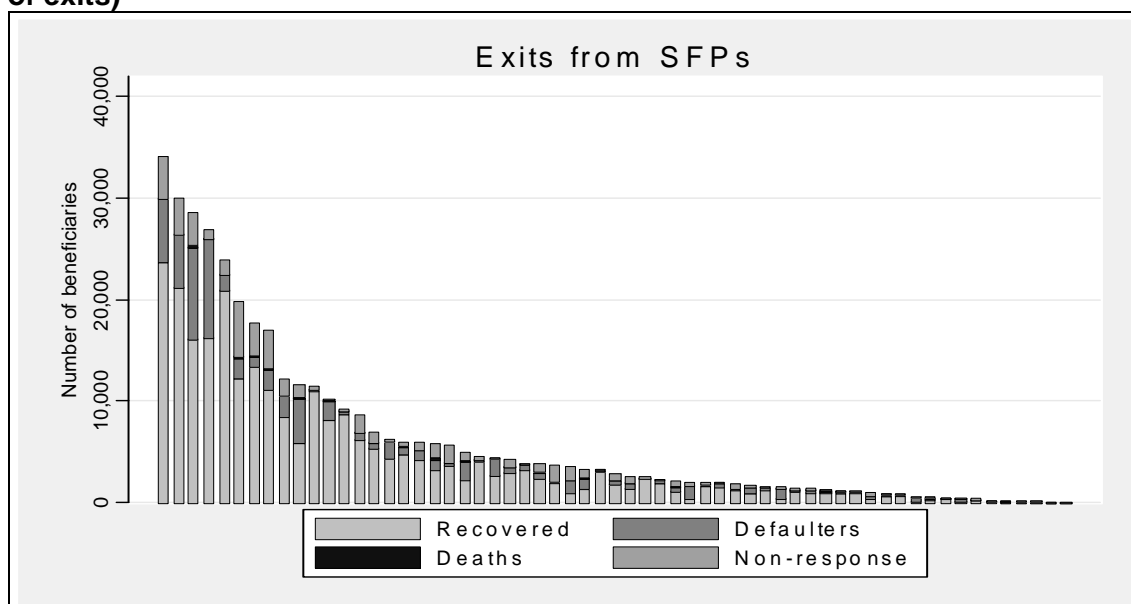
Sixty-seven of the programmes considered for this review reported the outcome of the children enrolled on the programmes for some period of their implementation.<sup>26</sup> Included among the programmes that did not report exit statistics are the two blanket feeding programmes (as this type of programmes does not monitor weight performance of beneficiaries). Amongst the other thirteen programmes were some that did not report statistics at all and others that only reported monthly percentages without absolute number of exits so that these data could not be re-calculated and compiled for this part of the analysis.

In this section, we first describe the performance of the SFPs, for the periods reported, compared to international standards. This analysis is complimented with a brief exploration of monthly exit statistics for some of the programmes. Finally, any correlations between contextual factors and programme outcomes are explored through statistical testing.

### Recovery rates: Summary for complete reported periods

Figure 1 presents the absolute numbers of beneficiaries discharged for each SFP (61 SFPs) including the four categories of exits: recovered, defaulter, death or non-response.<sup>27</sup> The total number of children discharged in each SFP varies widely, depending on the number of centres in each SFP and the duration of the intervention reported. The number of beneficiaries per SFP in this study ranges from 60 to 34072 (median 2898; iqr 1185 – 6359).

**Figure 1: Total exits for SFP (SFP columns ordered by descending total number of exits)**

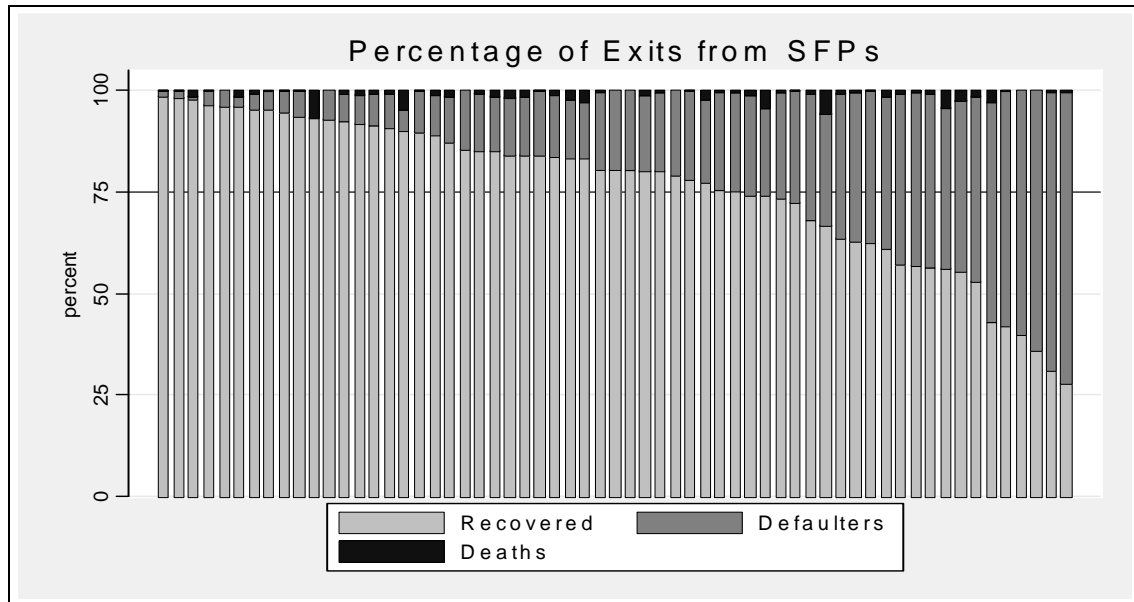


<sup>26</sup> The number of programmes considered varies between 61 and 67 depending on whether the statistics included percentages for all the period, percentages for each month and if the numerator total was provided to allow recalculation of rates.

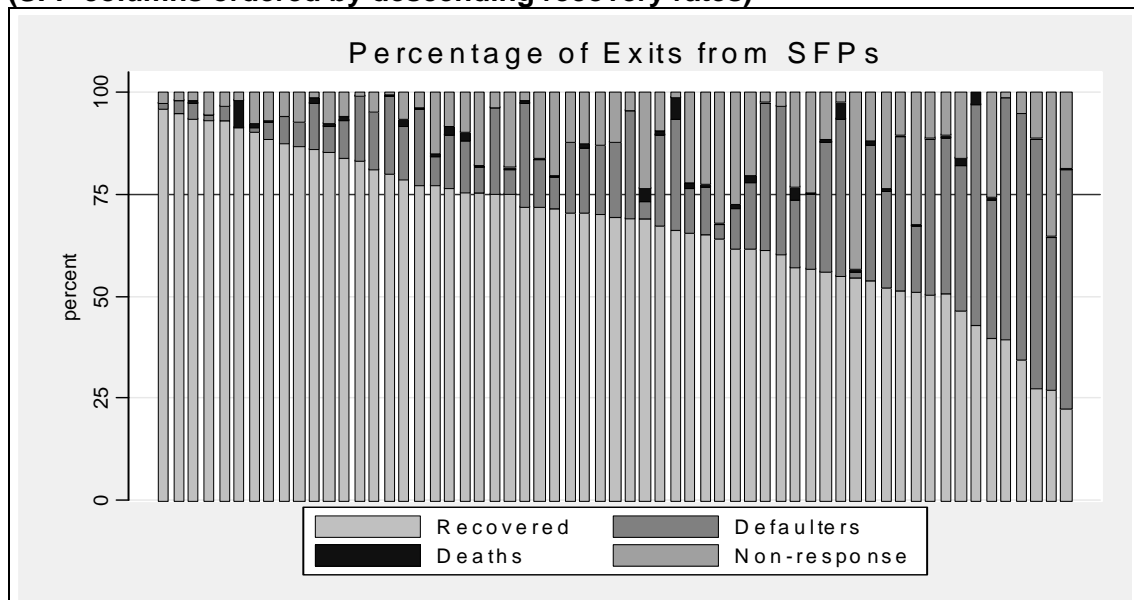
<sup>27</sup> “Non-recovery” includes children that reach the limit of treatment time without attaining the target weight for height criteria, plus children that were transferred to TFC due to a deterioration of their nutritional status. See the Methods section for explanation on how these were calculated.

Figure 2 presents the recovery statistics of all programmes, using the three categories defined in Sphere Standards recommendations (recovered, defaulters and deaths), and Figure 3 presents the recalculation of the same statistics after the addition of “non-response” (as reported by the programmes or re-calculated for the study).

**Figure 2: Percentage of exits using Sphere categories (SFP columns ordered by descending recovery rates)**



**Figure 3: Percentages of exits from SFPs, after adding “non-response” category (SFP columns ordered by descending recovery rates)**



When calculated following Sphere standards recommendations, 63.9% of the SFPs obtained a recovery rate equal to or above 75% for the whole period of operations reported. After the addition of exits defined as “non-response” only 39.3% of the SFPs reach this threshold of quality. The addition of “non-response” patients does not affect greatly the percentage of SFPs with a defaulting rate equal to or below 15% (44.4%

using Sphere Standards recommendations and 45.9% with all patients included), nor the percentage of SFPs with a death rate equal to or below 3% (91.8% of SFPs in both cases).

Overall, only 25 SFPs (41%) meet all Sphere standards, even when not including the patients classified as “non-response”. If the raw data of all the programmes is pooled together (61 SFPs, 376,179 beneficiaries), a total of 260,034 recovered (69%), 67,366 defaulted (17.9%), 1,763 died (0.46%) and 47,016 (12.5%) were classified as non-responders to treatment.

**Figure 4: Relation between total number of exits and recovery rate**

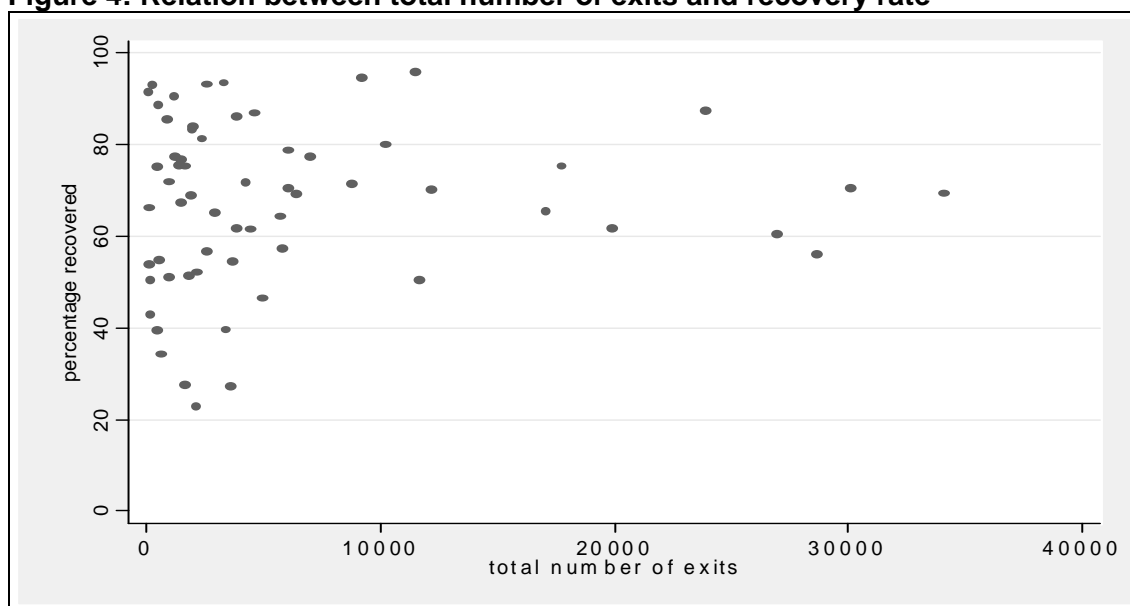


Figure 4 shows that a small number of SFPs which contributed many children to the study had good recovery rates.<sup>28</sup> Although this relationship is not statistically significant (simple linear regression,  $F = 0.32$ ,  $p = 0.57$ ), it does explain the apparent discrepancy between the low number of SFPs that attained a recovery rate equal to, or above 75% and the fact that, when pooling all the data together, 69% of children recovered.

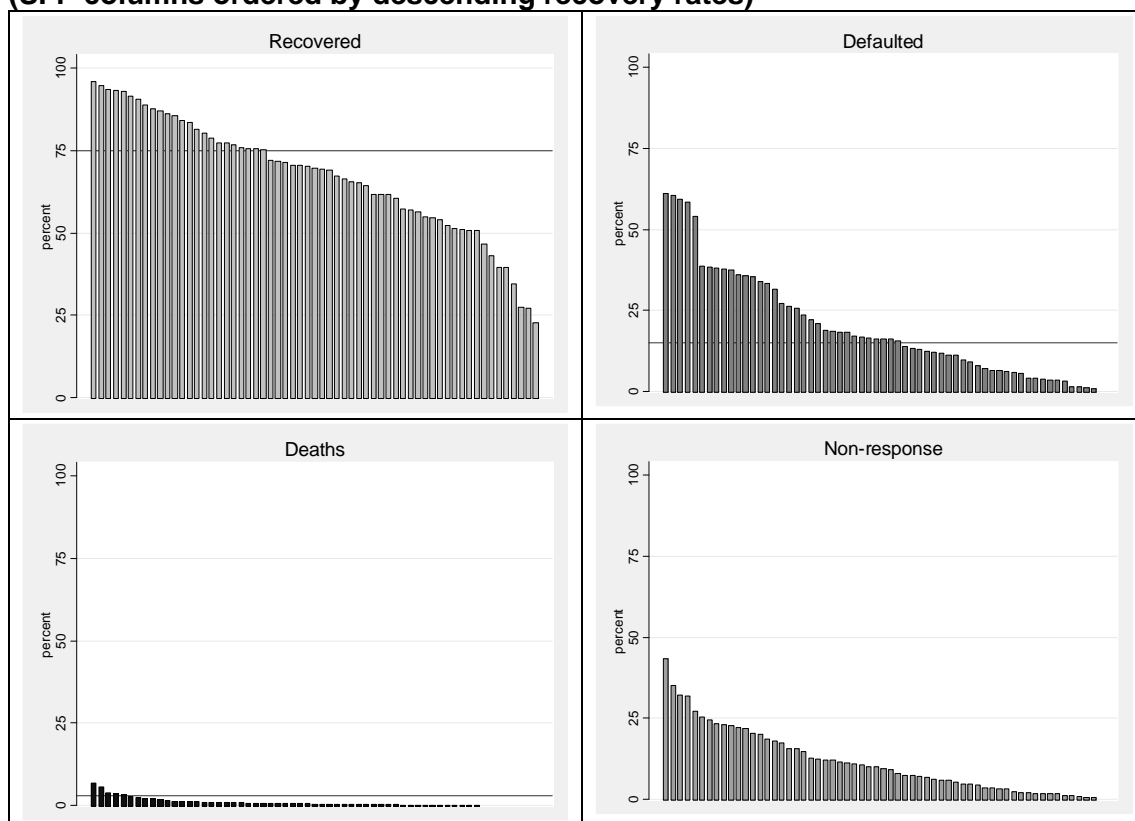
Figure 5 presents the same information as Figure 3, separated for each outcome. The same information is presented in numerical form in Table 7.

**Table 7: Distribution of exit statistics for 67 SFCs**

	Median	Inter-quartile range	Size of iq range	Range
Percent recovered	69.6	55.0–80.2	25.2	22.8–96.1
Percent defaulted	16.4	6.6–29.0	22.4	0–61.2
Percent deaths	0.4	0.05–1.1	1.05	0–6.7
Percent “non-response”	10.1	3.6–18.0	14.4	0–43.2

<sup>28</sup> Notice that the number of children contributed by a SFP is not an indicator of the size of the programme, as an SFP can contribute many children due to its large size, or due to its long duration.

**Figure 5: Percentages of exits from SFPs, after adding “non-response” category (SFP columns ordered by descending recovery rates)**



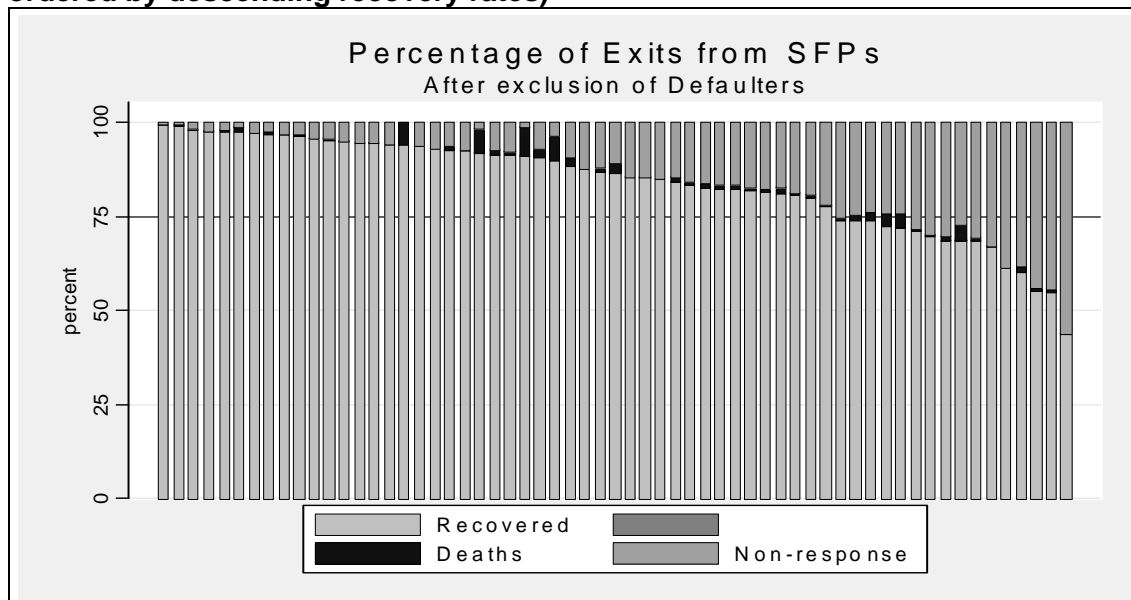
The range of performance in terms of recovery rates is wide, ranging from the very successful programmes to the extremely poor. If we consider “recovery” as a dependent variable (i.e. the final outcome of interest in this analysis), then the rates of “defaulting”, “death” and “non-response” can be seen as the independent variables that will determine the recovery rate. Most of the variation in recovery rates seems to be dependent on the rate of defaulting (as it varies more between programmes than the other rates - size of the iqr range). Rates of “non-response” also play an important, though less significant, role.

#### **Box 4: Understanding defaulting**

Defaulting is really “loss to follow-up” or “unknown outcome”. But how bad is the problem of defaulting and what is its significance? Undoubtedly, some beneficiaries stop attending the SFP because their nutritional status improves and other activities take priority. Other patients may drop out even if they are not recovering due to problems of access or the opportunity cost involved. Among this group some may have recovered spontaneously due to alternative sources of food while others may have deteriorated to become severely malnourished or die. So, how bad is the rate of defaulting? Surprisingly, despite the presence of many systems to trace defaulters and ascertain their status, almost no reports answer this question. The answer probably differs from one place to another and must fluctuate with seasons, access and competing priorities for the family. More rigorous reporting of “causes of defaulting” and the percentages of defaulters who recover versus the percentage who do not would greatly enhance understanding of the dynamics of SFP attendance, and consequently, the appropriateness and quality of programmes.

In order to explore the actual effect of the protocols and intervention on the patients that remained in the programme (non-defaulters), Figure 6 presents a recalculation of the statistics after exclusion of defaulters.

**Figure 6: Re-assessment of percentages without the defaulters (SFP columns ordered by descending recovery rates)**



Forty-five out of the 61 SFPs (73.8%) have a recovery rate equal to or above 75%, after exclusion of defaulters. The median recovery rates among patients that stayed in the programme is 86.5% (iqr 74.0 – 94.0).

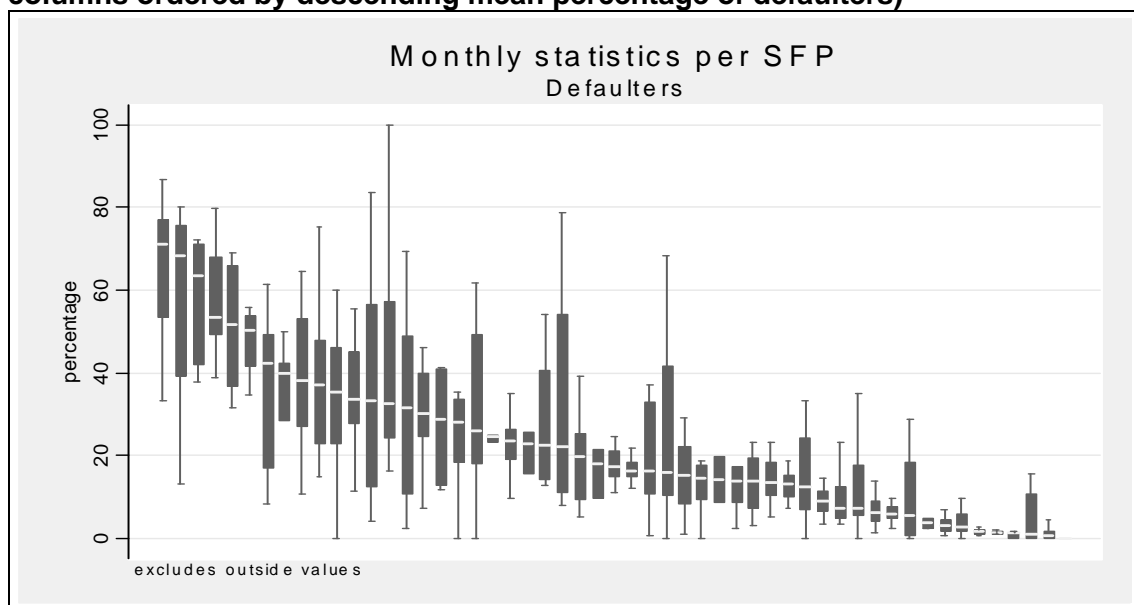
### Recovery rates: Monthly variations

The effect of variation in the rate of defaulting is better observed by analysing monthly data. Figures 7 and 8 present the distribution of the monthly percentages of defaulters and non-response, respectively, for each SFP. These graphs use the 53 SFPs that reported monthly statistics for at least part of their implementation. The statistics for the first month were excluded, as there will be no recovered children in the first month. Similarly, data from the month in which the SFP is closed were excluded as remaining children would have been transferred to other treatment centres and would have appeared as non-responders in the statistics.<sup>29</sup>

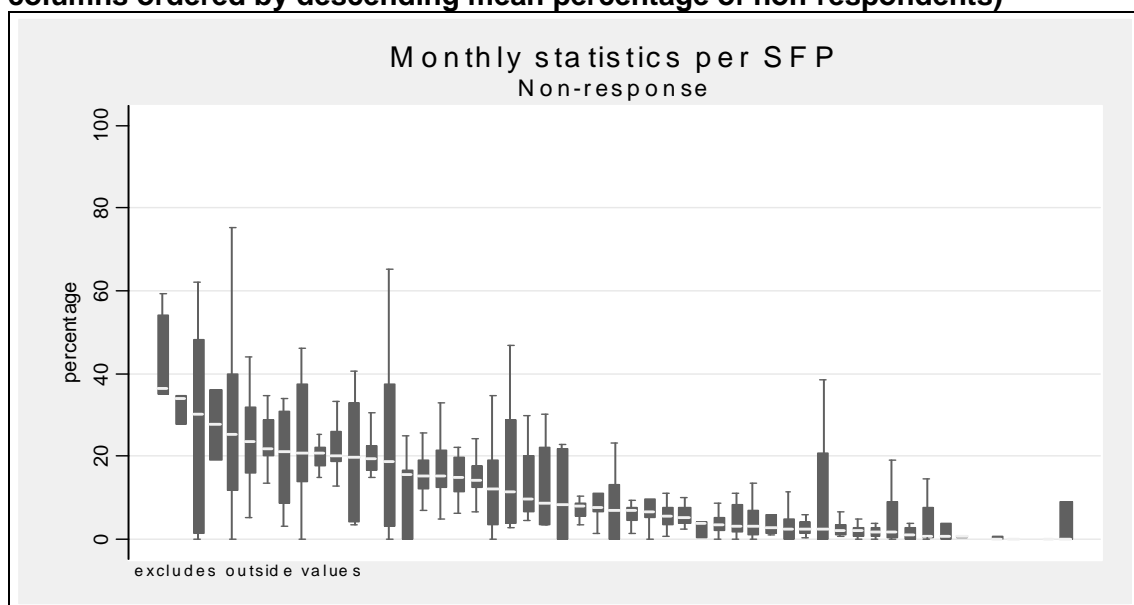
In the majority of programmes (65%), the rate of defaulting is higher and varied more from month to month than the rate of non-response. The monthly mortality rates were very low in all programmes and varied little (graph not presented). The monthly variation in defaulting rate seems to be influenced by seasonal factors according to information provided in the narrative reports. Usually, higher default rates are observed in the cultivation and harvest months, when access to programmes is reduced due to rains, flooding or snow, or where there are sudden increases in insecurity. In some exceptional months, default rates exceeded 80%.

<sup>29</sup> This correction could only be made when the information was available in narrative reports.

**Figure 7: Monthly distribution of percentages of defaulters per SFP (SFP columns ordered by descending mean percentage of defaulters)**



**Figure 8: Monthly distribution of percentage of non-response per SFP (SFP columns ordered by descending mean percentage of non-respondents)**



### Weight gain and duration of stay: Monthly statistics

Average weight gain and average duration of stay in the centre are usually calculated in SFPs among recovered children that are discharged, as a way to assess the quality of recovery and identify potential problems with the feeding protocols and their implementation. These two indicators are usually calculated each month from the total number of children that recovered during that month, or a sample of them. Several formula exist for the calculation of weight gain. The most commonly used divides the difference between the weight at the end of treatment and the weight at the beginning



(each in grams) by the weight at the beginning of treatment (in kilograms) for each child,<sup>30</sup> and then calculates the average for all the children.

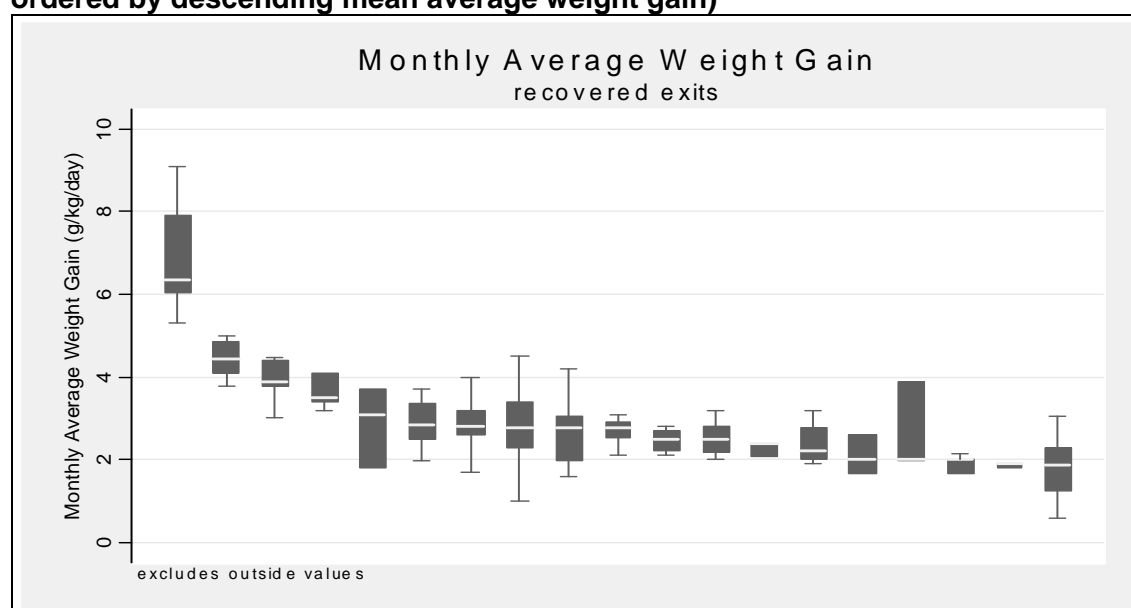
Unfortunately, few programmes reported weight gains and duration of stay. For those that did report them, the information was available for each month, but the number of children used for the calculation was not reported. As a consequence, it is not possible to calculate the actual average weight gain for the total duration of the period reported.

Table 8 presents summary statistics of weight gain and duration of stay among recovered patients for the total period reported by SFPs. Figures 9 and 10 present the monthly distributions of average weight gain and average duration of stay for recovered patients in each SFP.

**Table 8: Summary distribution of exit statistics for recovery patients<sup>31</sup>**

Recovered children	n	Median	Iq range	Range
Weight gain (g/kg/day)	19	2.7	2.3–2.9	1.8–6.8
Duration of stay (days)	17	67.5	58.4–75.1	44.9–86.7

**Figure 9: Monthly average weight gain among recovered exits (SFP columns ordered by descending mean average weight gain)**

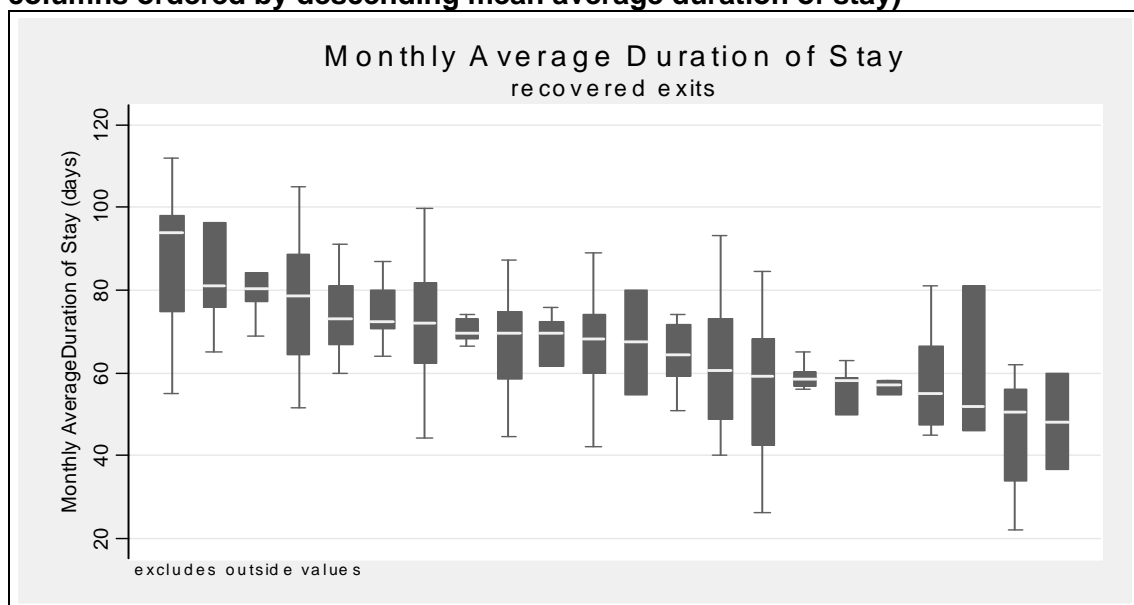


The monthly average weight gain for all SFPs that reported this information ranges from 1.9 to 4.5 g/kg/day, with one SFP consistently reporting weight gains between 5 and 9 g/kg/day. This SFP was implemented in refugee camps with standard protocols. It was not possible, from the information available, to identify any factor that could account for such a high average weight gain. With few exceptions, the rates of weight gain do not seem to vary significantly from month to month (low iqr).

<sup>30</sup> Unfortunately, the reports seldom specified if a different formula was used, nor if the calculation was done on all the discharged children or on a sample of them.

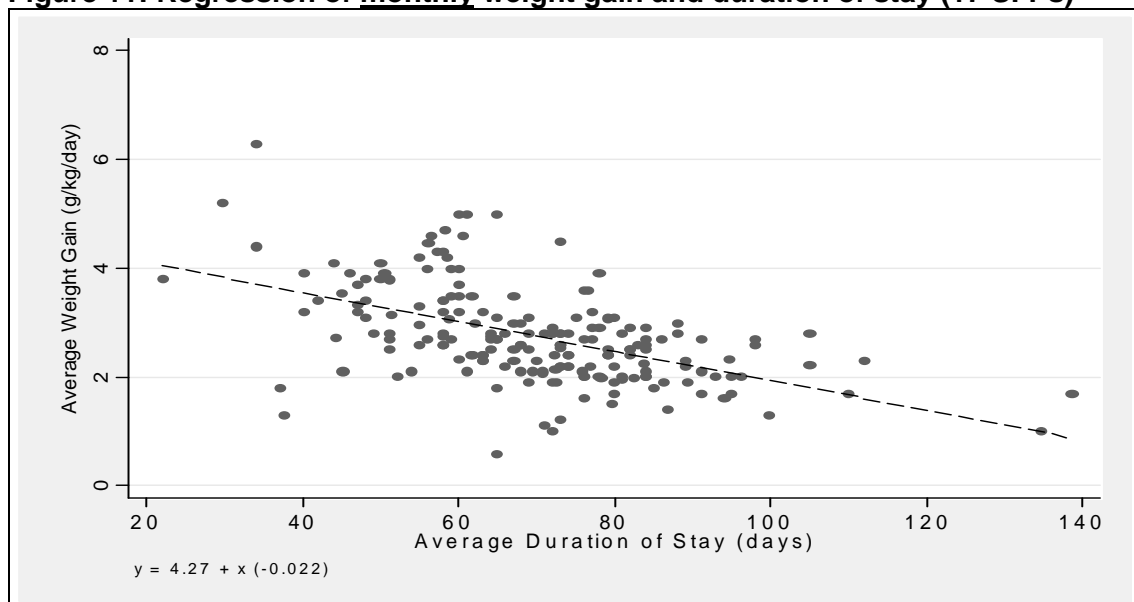
<sup>31</sup> The statistics presented in this table have been calculated assuming that the number of children discharged recovered did not change from month to month. This assumption is only an approximation for most SFPs. It is presented for illustration purposes only.

**Figure 10: Monthly average duration of stay among recovered exits (SFP columns ordered by descending mean average duration of stay)**



The monthly average duration of stay in the programme before recovery ranges from 48 to 91 days. Within each SFP, the duration of stay seems to vary more from month to month. This can be observed from the variation around the regression line in Figure 11. Possible explanations include differences in the calculation of weight gain, use of different protocols for discharge of patients (one or two weeks after reaching the target weight), and the characteristics of the patients themselves.

**Figure 11: Regression of monthly weight gain and duration of stay (17 SFPs)**



### **Box 5: The effect of using different products to treat mild and moderate malnutrition**

A controlled trial (stepped-wedge design) in Malawi in 2005 compared the use of RUTF (peanut paste) and CSB in promoting weight and height gain in children 10 to 60 months old with mild malnutrition (weight for height between 80 and 85% of NCHS standard). 58% of the children receiving RUTF attained a weight for height above 90% in 8 weeks compared to only 22% in the CSB group. Rates of weight gain were 3.1 and 1.4 g/kg/day respectively (both differences were statistically significant). Dropout rates were 2% for children receiving RUTF and 5% for those in the CSB group. All other children did not reach discharge criteria. Although the admission and discharge criteria used in this study are not those employed in standard SFPs, the results highlight the fact that although the substitution of CSB with a nutritionally 'richer' product, appears to increase efficacy this may not be sufficient to attain acceptable recovery rates and that other modifications to increase the acceptability and appropriateness of the programme may be necessary.<sup>32</sup>

In an earlier pilot study in Rwanda in 1994, Professor Golden and Dr. Grellety replaced CSB with SP450 in a wet feeding SFP (normal admission and discharge criteria were being applied). This intervention appeared to lead to a decrease in defaulting rate from 39 to 9% and an increase in recovery rate from 51% to 81% (mortality and transfer rates did not change significantly - before – after comparison). The rate of weight gain increased from a median of 1.2 to a median of 5.1 g/kg/day. Although these preliminary results could not be explored without further research, they invite consideration of the effect of nutritionally 'richer' products not only on the quality of recovery but also on the acceptability of the programme.<sup>33</sup>

Clearly there is a need for further research on the impact of different food supplements like RUTF and SP450 on recovery rates and weight gain. These studies will need to take into account the acceptability of the product, its nutritional characteristics, causes of 'non-response' (including presence of underlying disease) and opportunity costs to carers.

### **Country distribution of recovery rates**

Table 9 presents the distribution of recovery, defaulting and non-response rates by country (grouped by regions). The median defaulting rate is above 25% in Angola, Chad, Ghana, Uganda and Afghanistan. There is a statistically significant difference between the default rates within the countries ( $p = 0.041$ , Kruskal-Wallis non parametric rank test). A non-response rate above 25% was observed in Liberia. Other countries with high non-response rates were DRC and Somalia. However, if all the countries are grouped together, the difference is not statistically significant ( $p = 0.172$ ). Seven countries have a recovery rate above 75% (Niger, Sierra Leone, Eritrea, Ethiopia, Kenya, Myanmar and Tajikistan), but the differences are not significant ( $p = 0.0781$ ).

<sup>32</sup> Patel, M. P., Sandige, H. L., Ndekha, M. J., Briend, A., Ashorn, P. & Manary, M. J. 2005, 'Supplemental feeding with ready-to-use therapeutic food in Malawian children at risk of malnutrition', *Journal of Health, Population and Nutrition*, vol. 23, no. 4, pp. 351-357.

<sup>33</sup> Golden, M.H., Grellety, Y. Rwanda 1994, pers comm. 2007.

**Table 9: Distribution of exit statistics by country**

	SFPs	% Recovered		% Defaulters		% Non-response	
		Median	Iq range	Median	Iq range	Median	Iq range
Angola	10	66.9	38.7-90.6	29.5	3.8-38.4	3.4	1.9-10.1
Burundi	6	72.5	70.3-79.8	16.7	13.8-17.2	10.7	6.4-12.1
DRC	10	61.8	52.2-81.4	15.1	9.9-16.4	22.4	7.1-25.3
Malawi	2	65.9	--	19.6	19.1-20.1	13.6	13.5-13.8
Chad	2	45.1	22.8-67.5	40.4	22.3-58.5	13.9	9.3-18.5
Ghana	1	66.3	--	27.1	--	0.9	--
Guinée Conackry	1	84.0	--	9.3	--	5.8	--
Liberia	1	64.4	--	3.6	--	31.9	--
Niger	3	78.9	69.2-84.1	5.5	4.1-13.2	10.4	6.3-23.2
Sierra Leone	1	93.4	--	1.2	--	5.3	--
Eritrea	1	77.4	--	18.6	--	3.6	
Ethiopia	7	80.2	76.9-88.8	7.2	4.2-13.0	7.4	3.2-14.9
Kenya	1	96.0	--	1.5	--	2.3	--
Somalia	2	65.0	54.6-75.5	11.2	1.4-21.0	23.4	3.5-43.2
Sudan	10	61.1	39.5-70.5	22.3	12.5-37.5	14.0	9.4-22.2
Uganda	3	56.3	45-83.6	29.0	15.8-31.7	11.4	0.5-24.0
Afghanistan	4	53.2	51.1-57.8	38.0	37.0-38.5	6.7	2.7-10.5
Myanmar	1	86.2	--	11.4	--	1.1	--
Tajikistan	1	75.5	--	6.4	--	17.5	--

Despite these observations, it is important to note the wide differences in all the rates within country (large inter-quartile rates) and within region. This suggests that the country context is not necessarily the main determinant of recovery rates. The low number of SFPs per country in some instances prevents further exploration of this assertion. It is worth noting that, for the countries where there are several SFPs, the defaulting rates are consistent (narrow inter-quartile range), i.e. Afghanistan (median 38%), and Burundi (median 16.7%). The same is not true for non-response or recovery rates suggesting that the country (or the characteristics associated with it) impact defaulting but not recoveries or non-response.

Table 10 presents the average weight gain and average duration of stay for recovered patients by country. No statistically significant difference was observed between countries for any of the two variables ( $p = 0.223$  and  $p = 0.126$ , Kruskal-Wallis non parametric rank test). Lack of information prevents any concrete conclusion being drawn from this finding.

**Table 10: Weight gain and duration of stay by country**

		Weight gain (g/kg/day)		Duration of stay (days)	
	Obs	Median	Iq range	Median	Iq range
Angola	3	2.6	1.8-2.9	67.5	62.4-71.2
DRC	5	2.3	1.9-2.7	81.7	75.1-82.3
Guinée Conackry	1	4.5	--	58.4	--
Liberia	1	2.9	--	57.5	--
Sierra Leone	1	2.5	--	64.3	--
Kenya	1	6.8	--	--	--
Sudan	5	2.9	2.9-3.9	52.8	48.3-59.7
Uganda	1	2.9	--	69.1	--
Myanmar	1	2.4	--	--	--

### **Analysis of the correlation between programme performance and key context factors**

Table 11 presents findings on the correlation between five key context factors that appear to affect SFP recovery outcomes.

**Table 11: Effect of 5 factors on SFP performance**

		% Recovered		% Defaulters		% Non-response		Weight gain (g/kg/day)			Duration of stay (days)		
	SFPs	median	iq range	median	iq range	median	iq range	SFPs	median	iq range	SFPs	median	iq range
General ration													
Yes	32	68.4	69.2-84.0	16.6	6.5-28.1	9.8	4.6-17.1	10	2.9	2.9-3.9	9	59.7	52.8-67.5
No	13	57.4	51.2-65.6	21	11.2-36.2	10.8	3.5-22.7	6	2.45	2.1-2.7	6	75.9	68.2-81.7
Kruskal-Wallis Chi <sup>2</sup>		1.967		1.106		0.662			5.188			6.125	
P		0.168		0.292		0.415			0.227			0.013	
Time from main crisis													
5 months	4	41.3	25.2-65.3	48.6	29.9-59.8	7.2	2.8-14.7	--	--	--	--	--	--
1st year	12	62.9	51.1-71.0	20.3	11.9-36.0	15.3	10.5-21.2	4	2.9	2.5-3.4	4	54	46.6-68.2
2 <sup>nd</sup> year	5	65.3	50.7-81.4	20.1	13.9-37.5	10.4	10.1-13.5	2	3	1.9-4.1	2	67.5	52.8-82.3
3 <sup>rd</sup> year	5	66.5	54.0-77.4	19.1	18.6-33.3	6.8	3.6-11.5	--	--	--	--	--	--
4 <sup>th</sup> year or more	3	76.9	69.2-78.9	13	4.1-13.2	8	6.3-23.2	--	--	--	--	--	--
Kruskal-Wallis Chi <sup>2</sup>		4.459		8.499		4.927			--			--	
P		0.347		0.075		0.295			--			--	
Existence of TFP													
no TFP	5	66.4	61.7-77.4	27.1	18.6-35.9	2	1.1-2.2	2	2.6	2.5-2.9	1	67.5	--
Inpatient TFC	51	70.5	54.6-83.6	16.2	6.3-26.3	10.2	4.7-20.0	17	2.7	2.3-2.9	16	66.2	58.1-75.9
OPD	11	66.5	50.7-76.9	18.4	12.5-38.2	10.8	8.0-13.8	--	--	--	--	--	--
Kruskal-Wallis Chi <sup>2</sup>		0.791		3.167		8.424			--			--	
P		0.673		0.205		0.015			--			--	
Chronic situation													
No	40	73.7	64.6-84.1	13.1	5.7-21.6	9.7	3.5-15.7	11	2.9	2.6-3.9	10	61	57.7-67.5
Yes	27	61.8	51.2-74.2	19.1	12.5-37.5	10.2	4.3-22.9	8	2.3	1.9-2.7	7	75.1	68.2-82.3
Kruskal-Wallis Chi <sup>2</sup>		6.569		4.89		0.569			4.97			5.038	
P		0.01		0.027		0.451			0.029			0.024	
Displaced population (refugees or idps)													
No	30	76.2	66.5-84.1	13.5	5.7-20.1	7.2	3.5-13.5	4	2.2	1.9-4.7	3	75.1	64.3-82.3
Yes	37	61.9	51.2-71.9	17.2	11.4-35.6	12	4.8-22.2	15	2.9	2.4-3.0	14	64.9	57.7-71.2
Kruskal-Wallis Chi <sup>2</sup>		8.968		2.984		3.577			0.81			1.587	
P		0.003		0.084		0.059			0.368			0.207	

The presence of a *general ration* in addition to the SFP seems to have a significant impact on recovery rates, including rates of weight gain and duration of stay, although this is only statistically significant for duration of stay. The lack of quality of some of the general food distributions described in the reports may explain this lack of statistical significance. Furthermore, in some cases the lack of general food ration distribution may simply reflect the fact that it was not considered necessary, as other sources of food were available. Rigorous analysis of the effect of presence or absence of a general food ration on SFP efficacy would require accurate assessment of the baseline food availability for each of the populations (i.e. what the supplementary feeding centres are supplementing).

There is an observable trend between *the time from the onset of the crisis* and the performance of the centres, particularly in relation to number of defaulters (higher when the crisis is recent) and the recovery rate (lower when the onset of crisis is recent). Although this relationship is not statistically significant, it could indicate improvements in SFP design and management over time as well as improvements in the baseline condition of the population assisted (e.g. more food at the household level). If this observation is correct, reduction of defaulting over time could be a strong indicator of the difficulty of attending weekly distributions for carers especially during the first months of the crisis (when competing demands may be more important).

The existence of a *therapeutic feeding programme* for treatment of severe malnutrition only has a significant effect on the rate of “non-response”. This is probably explained by the fact that when a TFC or an OTP is at hand many children will be transferred to these facilities. The higher incidence of defaulting in the programmes where there is no therapeutic feeding programme probably reflects the fact that children performing badly have no referral facility and will therefore be lost to the programme. Such children would therefore be better classified as non-respondents as their outcome would very probably have been negative. It is interesting to note that the type of therapeutic feeding programme (TFC or OTP) does not appear to greatly influence the recovery, defaulting or non-response rates of the SFP, despite OTPs being integrated with the SFP and usually accompanied by a higher level of community education and mobilisation.

The *chronicity* of the crisis (as defined in the SFP reports) seems to have a significant negative effect on the performance of the programmes. Chronicity appears to be defined in terms of length of period of crisis or whether the crisis affects the population periodically. This finding may reflect the fact that coping strategies of the population are exhausted thereby affecting the nutrition recovery of children as well as the ability of carers to attend. However, further exploration of this would require a more objective (external) means of classifying chronicity of the crisis.

Finally, and probably for similar reasons, *displaced populations* appear to have higher defaulter rates compared to resident populations, with a significant impact on recovery rates.

We also studied the effect of all the variables below on the efficacy of the programmes. The results were negative or unreliable, due to lack of information on many variables, problems with the classification of the categories of the variables and due to homogeneity of some of the variables (notably in relation to programme design). The main variables analysed in relation to efficacy and which did not show a significant relationship or a meaningful trend were:

- Number of centres in the SFP.
- Total number of exits,

- Total duration of the period reported.
- Context defined as insecure in reports
- Lack of access to population in some areas or during some periods,
- Causes of malnutrition as defined in reports: problem of access to food, problem of care and knowledge, problem of health, etc.,
- Setting; urban, rural, camps,
- Economic background: agro-pastoralist, pastoralist, food aid dependent, etc.

Other context and programme characteristics that could not be analysed due to problems like data homogeneity, lack of information or classification difficulties were;

- Presence of drought, food insecurity or lack of access to markets
- Presence of food security programme assisting the same population,
- Presence of a home visiting component in the SFP,
- Direct implementation by NGO versus implementation with local partner (government or private),
- The foodstuffs distributed
- Estimated amount of kcal in the diet
- Frequency of distributions: weekly, fortnightly, monthly,
- Distribution of family ration,
- Average number of patients per month,
- Average number of patients per centre,

#### **Box 6: “Food for the child” versus “Food for the family”?**

The impact of “family rations” (sometimes called “protection rations”) on SFP efficacy could not be studied due to lack of information in most reported programmes. However, an interesting observation was made by two different NGOs in two very different settings.

In these two cases, family rations were abruptly interrupted due to problems in the food pipeline, while SFP distributions to children continued. In both cases the number of admissions markedly decreased in the weeks following this interruption while the number of defaulters increased.

This effect invites a number of questions: Was the perceived benefit of attending distributions so small that a loss of a family ration made participation appear un-worthwhile? Were some beneficiaries more interested in the food for the family rather than the food for the child? In situations where *all* the family suffers the consequences of a food crisis, should we be feeding families, rather than just individuals?

## **Conclusion**

This section has highlighted the scale and variability of defaulting between and within programmes and resulting impact on programme performance. The SFPs that fail to attain good recovery rates do so mainly because of excessive defaulting. Defaulting appears to be concentrated in specific months and is therefore highly seasonal. Although not statistically tested the biggest impediment to SFP performance appears to be their inability to retain the patients in the centre for long enough to recover. The reasons for default in all probability relate to *appropriateness* of the design of the programmes (walking distances, distribution of centres in geographical area, conflict with seasonal work demands, etc.) and *acceptability*, as well as issues related to the *design* of the programmes.



At the same time, we have observed that some centres obtain high recovery rates using a standard protocol (distribution of blended foods), and that when defaulters are excluded from the analysis, the results for those patients that remained in treatment for as long as possible were very positive. However, given the scale of non-response observed in some SFPs, it is likely that these protocols can be further improved. In most cases, it is not known if the limited recovery of non-responders was due to a high number of transfers to SFPs from TFCs/OTPs due to lack of weight gain, a high prevalence of disease interfering with the recovery or inadequacy of the foods distributed.

While the impact of disease and the potential of new foods with higher micronutrient composition need to be explored further, it is clear that given the significance of defaulting large improvements to efficacy can only be achieved by addressing the factors leading to default.

Analysis of contextual factors appears to show a negative effect of four major variables on programme performance; chronicity of the crisis, population displacement, existence of TFP, and adequacy of general ration appear. The effect of different protocols and presence of other programme components (home visiting, etc.) could not be studied in more depth, due to problems with the data.

### 3. Effectiveness at population level

In this section, we will explore evidence for impact of SFPs at population level (effectiveness).

Currently, there is no standard approach to evaluate the effectiveness of nutrition programmes implemented in the field. The only rigorous means of assessing programme effectiveness is through the implementation of large controlled studies in a research setting, using techniques derived from randomised clinical trials (originally used for assessment of the effect of a new treatment on individuals).

The impact of programmes at the population level in real life settings is sometimes assessed indirectly through the evaluation of changes in population level mortality and malnutrition rates. However, such an approach is undermined both by the difficulty of surveying the same population twice and also of attributing observed changes to the programme being evaluated rather than the effects of other programmes and seasonal or secular trends.

This section will therefore explore several approaches to evaluating programme effectiveness based on the data produced by SFPs. These approaches will include the evaluation of the coverage of programmes, study of population changes in malnutrition rates and an exploration of the ratio of severe to moderate malnourished children identified in programmes and in surveys.

#### Coverage of programmes

Programme coverage was evaluated in forty nutrition surveys, pertaining to 19 programmes. The coverage of these programmes was estimated to range from 1% to 71.7%, with a median of 20.5% (iqr 10.8–35.3%).

However, these results should be interpreted with caution, as it is well known that the methodology to assess coverage from the data obtained in nutrition surveys lacks accuracy and suffers from several potential biases that can lead to gross underestimates or overestimates of the actual programme coverage.

In order to get a 'rough impression' of the potential effectiveness of a programme with the median coverage rates observed in this study, a simple example can be hypothesised.<sup>34</sup>

In a hypothetical population of 10,000 children, and assuming a GAM rate of 10% at a point in time, there would be 1,000 malnourished children. With a coverage of 20.5%, only 205 children would be identified by the programme. Assuming a recovery rate of 75% (Sphere target), 153 of them would recover leading to a reduction in the rate of malnutrition from 10% to 8.5% (a reduction of 1.5 percentage points or a 15% reduction).

Using the same approach, if we aimed for a reduction of GAM of 50% (5 percentage points in this example), at least 500 children would need to recover. In order to achieve this with the same 75% recovery rate, at least 667 children should be recruited by the programme. This is a coverage rate of 66.7%. Table 12 uses the same reasoning to

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<sup>34</sup> This hypothetical example does not account for the mortality rate (which is usually low), or for new children developing moderate malnutrition (incidence).

extrapolate the expected reductions in population malnutrition rate as a function of the coverage rate (always assuming a recovery rate of 75%).

**Table 12: Expected hypothetical reductions in population malnutrition rate as a function of coverage rate**

GAM reduction aimed	Minimum coverage needed
100%	Not possible with a recovery rate of 75%
75%	100%
50%	66.7%
25%	33.3%

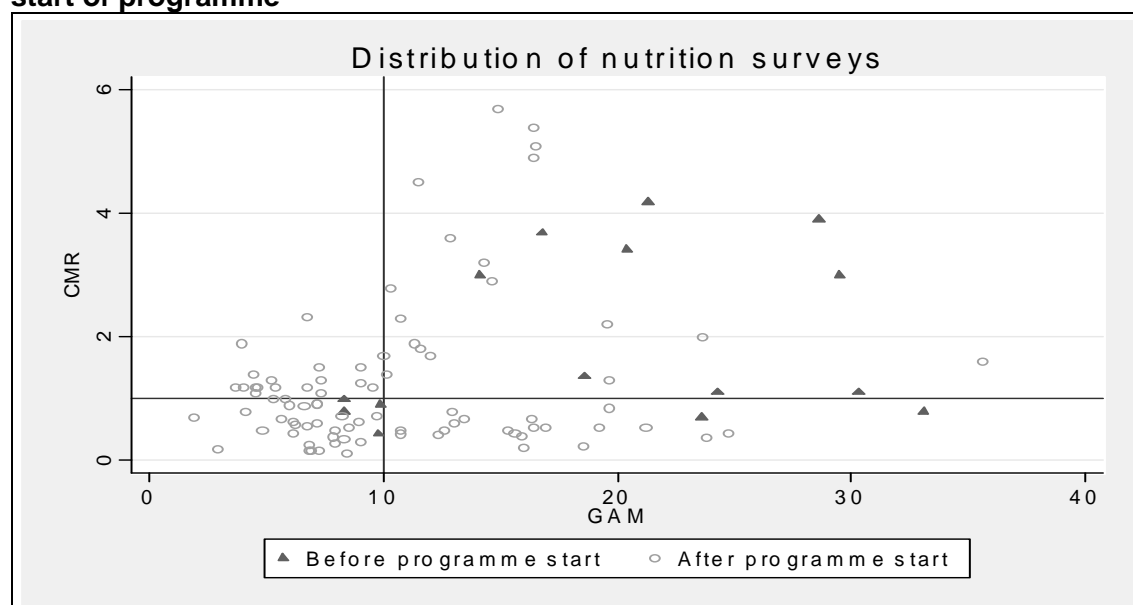
Clearly, with recovery rates below 75% the coverage needed to attain an equivalent reduction of malnutrition rates in the population would be proportionally higher.

With the median coverage rates observed in the surveys reported, (assuming their validity), it is not possible to attribute any major impact of SFPs in the reduction of GAM or in the prevention of SAM at the population level.

### Change of malnutrition rate at the population level

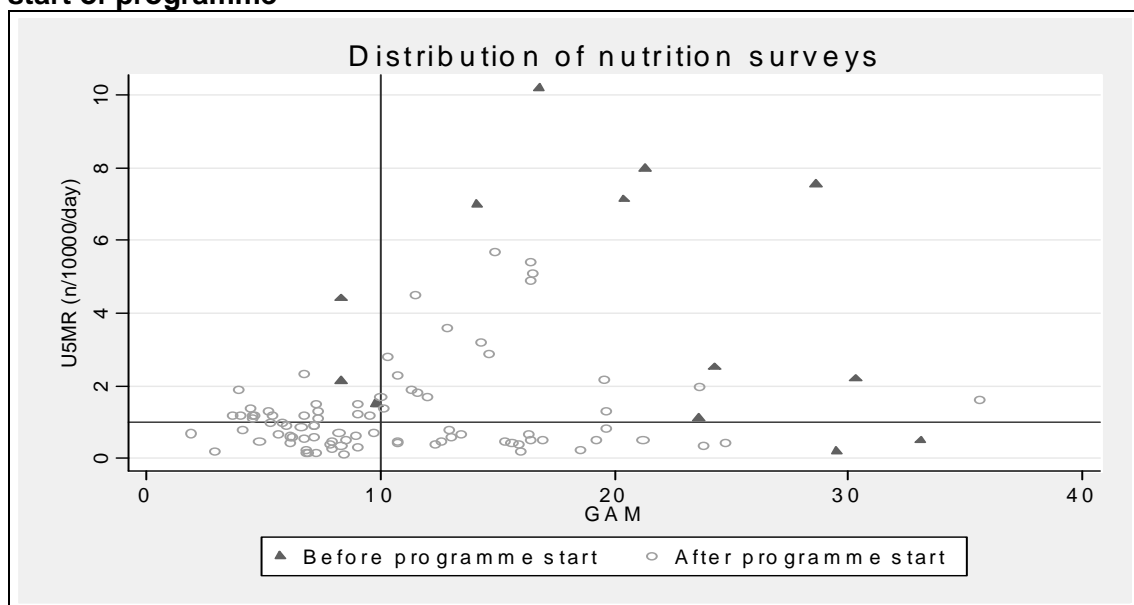
Theoretically, mortality and malnutrition rate changes at population level would provide the most direct indication of effectiveness of SFPs. Figure 12 and 13 present a scatter of mortality rates (CMR and U5MR, respectively) and global acute malnutrition (GAM) rates (GAM)<sup>35</sup> for the 105 surveys made available to the study (these surveys represent 31 SFPs, 23 of them with more than one survey).

**Figure 12: Distribution of CMR and GAM in nutrition surveys before and after start of programme**



<sup>35</sup> GAM rate is defined here as percentage of children with a weight for height below -2 Z-scores of the NCHS reference; SAM rate defined as percentage of children with a weight for height below -3 Z-scores of the NCHS reference.

**Figure 13: Distribution of U5MR and GAM in nutrition surveys before and after start of programme**



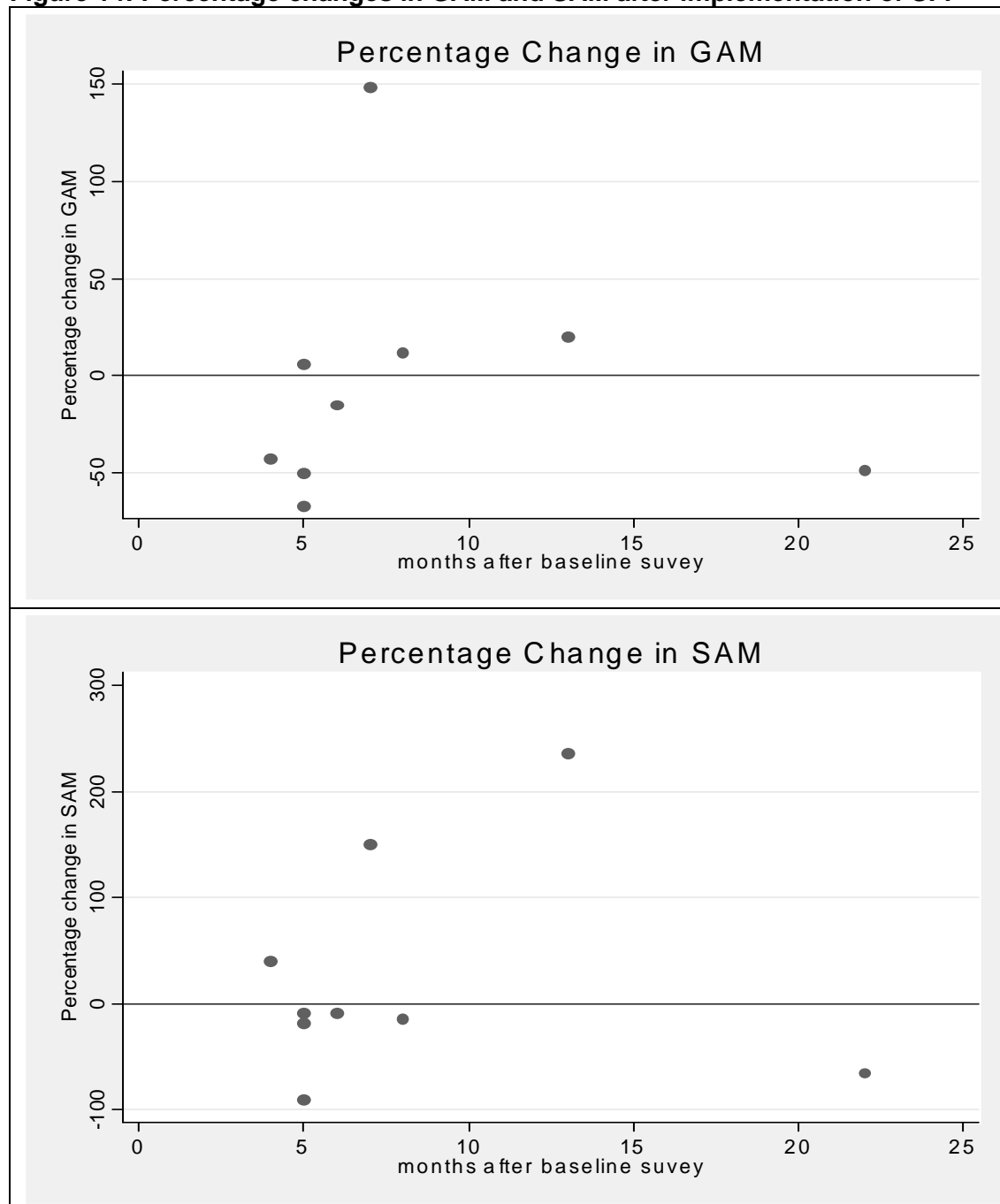
Surveys implemented before the start of the programmes demonstrate overall, a higher CMR and GAM than those implemented once the programme had started. This could simply reflect the fact that baseline surveys are generally conducted at the height of the crises so that the situation will tend to improve subsequently independently of the interventions implemented. It could also reflect the effect of the programmes themselves or regression to the mean, which is a statistical effect, which leads to overestimation of an effect in repeated measures with a random component.

This is further explored in Figure 14. Each of the graphs represents the percentage change in GAM and SAM, respectively, between the baseline survey (a nutrition survey implemented in the 3 months before the start of the programme) and the next survey implemented in the same geographical area (such data were only available for 9 programmes).

The GAM rate appears to increase after several months of SFP implementation (points above the zero line) in four programmes, and to decrease in five others (points below the zero line). In the same surveys, the rate of SAM seems to increase in 3 programmes and decrease in 6.

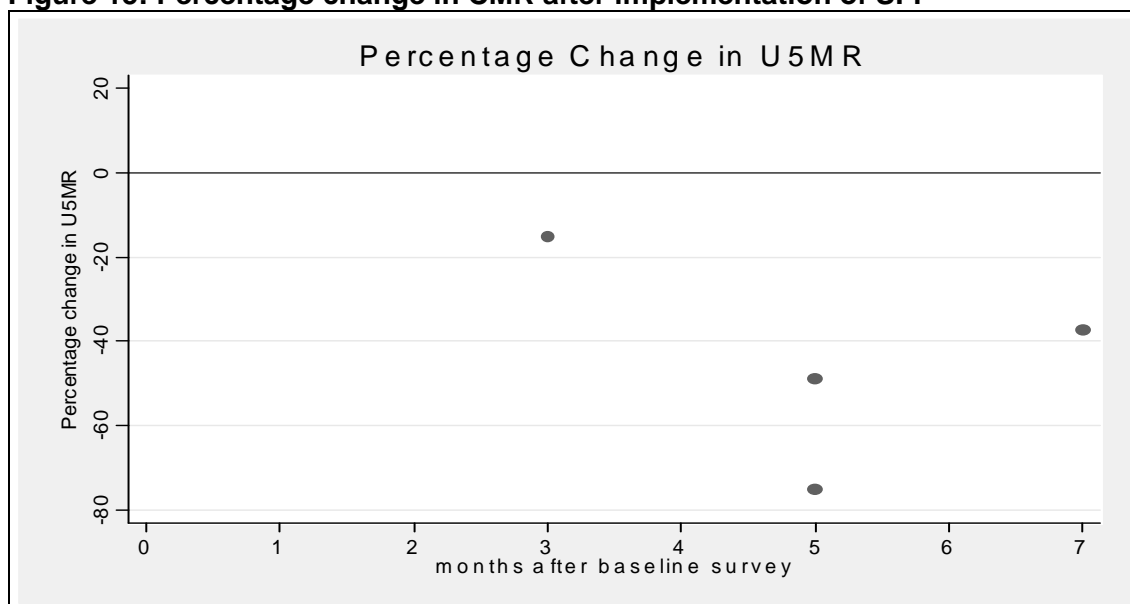
The reductions in GAM and SAM rate observed here do not provide any conclusive information about the effectiveness of SFPs, due to the phenomena of regression to the mean and the difficulty in attributing causality to a specific type of programme in the presence of other programmes as well as secular and seasonal trends. However, there is no doubt that the SFPs did not prevent increases in GAM and SAM in a significant number of programmes.

**Figure 14: Percentage changes in GAM and SAM after implementation of SFP**



Similar analysis is conducted for the under-five mortality rate (U5MR) in Figure 15. Unfortunately, very few surveys were provided that contained complete information on mortality rates. After selection of those with a baseline survey plus a follow-up survey implemented in the following months in the same geographical area and with full information on U5MR for both surveys, only four could be included. All of these demonstrate a reduction in U5MR. In addition, three of these had GAM and SAM improvements in the same period.

**Figure 15: Percentage change in CMR after implementation of SFP**



The effect of SFPs on the mean weight for height of the child population cannot be explored using these data, as most surveys did not report this indicator. Furthermore, it is questionable whether this indicator is sufficiently sensitive given the percentage changes that a SFP is expected to achieve in the lower tail of the weight for height distribution (below  $-2$  and  $-3$  Z-scores).

Overall, the analysis of the nutrition and mortality surveys implemented in those locations where SFPs were implemented, and their comparison to baseline surveys when these were available, does not provide evidence for the effectiveness of SFPs at the population level. The main obstacles to reaching any firm conclusions are:

- the fact that baseline surveys are usually implemented at the height of the crisis, and therefore subsequent surveys tend to reflect an apparent improvement in the situation
- the fact that it is impossible to check whether the two surveys (before and after intervention) represents the same population,
- the possible presence of bias in data collection, and regression to the mean effect,
- the fact that it is not possible to attribute causality of observed changes to SFPs rather than to other interventions or to seasonal or secular trends.

### Ratio of global to severe malnutrition (GAM/SAM)

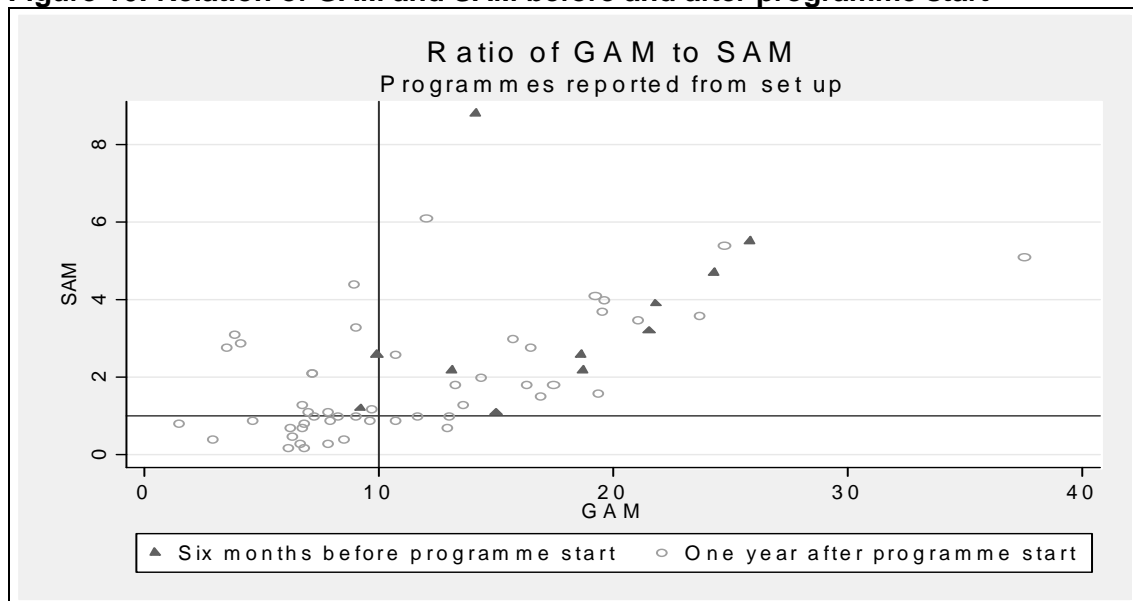
A third strategy for evaluating programme effectiveness can be explored with the available data. In principle, in an effective SFP (high recovery rate and high coverage), most children with moderate malnutrition should recover, and therefore would not develop severe malnutrition. Meanwhile, other children in the community would still develop moderate malnutrition, as the SFP has no direct effect on them. In other words, SFPs can theoretically change the *incidence rate*<sup>36</sup> of SAM but not that of GAM. On the other hand, as cases are treated, both the *prevalence* of GAM and SAM could be affected, though probably in different ways.

<sup>36</sup> New cases per time period.

If these assertions are true, this could provide a field tool to evaluate the effectiveness of programmes that would have the advantage of being specific for programmes addressing moderate malnutrition. In this way, it may be possible to separate out the potential effect of SFPs from that of other interventions. The question then becomes: can the ratio of the incidence rates of GAM and SAM reflect the effectiveness of SFPs, and if so, is it possible to monitor these easily in the field?

In order to explore this possibility, Figure 16 presents the relationship of GAM and SAM prevalence in the surveys available, during the six months before and the 12 months after the beginning of the programmes.

**Figure 16: Relation of GAM and SAM before and after programme start**



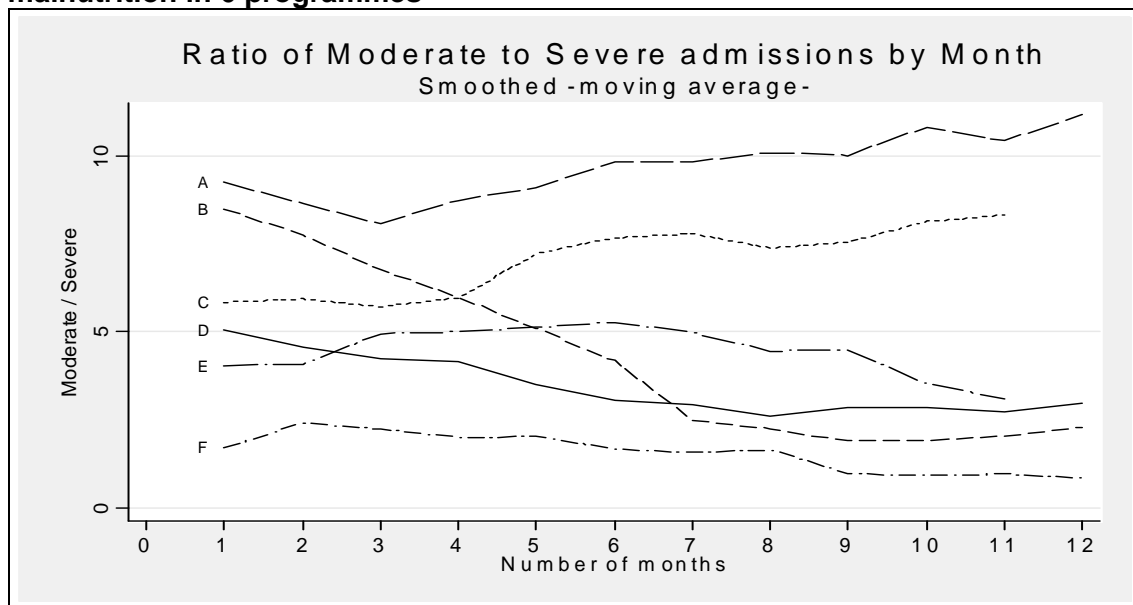
Overall, the median ratio of GAM to SAM in this sample of surveys is 6.7, meaning that for each child identified with severe malnutrition, 6.7 other children were identified with moderate malnutrition. The inter-quartile range for this distribution extended between 4.2 and 9.6. There is no statistically significant difference between the ratio of GAM to SAM of the surveys implemented before the start of programmes and that of surveys implemented after programme start (Kruskal-Wallis,  $p=0.392$ ). Despite a number of outliers in the top of the figure, this graph suggests a positive correlation between points with a regression that could be linear or curvilinear.

As there is currently no guidance or understanding of what the changes in the GAM–SAM ratio should be, if any, it is not possible to assert if the lack of difference between the ratio before and after the start of the programmes is due to a lack of effectiveness of the SFPs, or rather lack of sensitivity of this methodological approach.

Evaluation of changes in incidence rates would require information on the development of new cases. Ideally, this information could be obtained from surveillance systems. An approximation of the incidence rates could be made using information on admissions to the SFP (moderately malnourished) and those of the TFP working in parallel (severely malnourished). With this information, one can calculate the ratio of global (moderate plus severe) to severe admissions. The minimum condition for this would be that both SFP and TFP have a similar geographical coverage (i.e. if they shared the same screening system), and that this is more or less constant over time.

We selected the programmes that reported number of admissions to TFP (TFC or OTP) for the same periods as those for SFPs, and that appeared to work in coordination (managed by the same teams) and have similar coverage areas (same screening system). The observed number of admissions of severe and moderately malnourished children were used to calculate the ratio, and the results smoothed using moving averages for ease of reading and interpretation. Figure 17 presents an example for programmes that reported this information for approximately one year.

**Figure 17: One-year monthly evolution of ratio of moderate to severe malnutrition in 6 programmes**



Line C demonstrates a gradually increasing ratio of moderate to severe admissions each month, i.e. there are proportionally less severely malnourished children. The programme represented by curve B shows a very negative evolution, with the number of severe cases increasing rapidly month after month. However, this could be as a consequence of the opening of new therapeutic facilities (OTPs), or reflect screening efforts to identify cases of severe malnutrition (an increase in coverage).

Analysis of these curves supports further examination of this approach in order to determine its value in evaluating effectiveness and for informing field operations about the treatment of moderate malnutrition. Using this approach it may be possible for an agency with knowledge of the distribution of GAM and SAM in the population (through a nutrition survey) to evaluate if the “population profile” of beneficiaries being admitted to their SFP and TFPs corresponds to the one expected. In other words, if in the weeks after a nutrition survey the ratio of moderate to severe malnutrition admissions in the centre is very different to the ratio of GAM to SAM observed in the population this may provide a good indication of success or failure of the SFP particularly with regard to coverage and access. Further evaluation of the ratio over time could help evaluate efficacy and effectiveness that could then be confirmed in a subsequent nutrition survey.<sup>37</sup>

<sup>37</sup> The underlying idea is that if the SFPs objective is to prevent severe malnutrition, then each case of severe malnutrition arriving at a TFP originating from an area that is meant to be covered by screening or SFP, reveals a failure of the SFP. In this sense, a good evaluation of the coverage and effectiveness of a SFP should start by a visit to the TFP.



## **Conclusion**

### **Programme reporting**

This retrospective study has identified a series of problems in the way emergency SFPs are reported - most importantly with regard to programme statistics (exit data). This means that many programmes were unable to adequately monitor programme efficacy. Clearly, reporting of programme outcomes needs to be strengthened as a matter of urgency. We propose the development of a standardised reporting system with recommendations on the way to collect, present and analyse a minimum set of information for emergency SFPs (Appendix 2). Adoption of this standard reporting system by implementing agencies and donors should contribute to much needed lesson learning from the field as compilation of data from different organisations and comparison of the results of different protocols and strategies would become feasible.

In addition, programme reporting should be promoted for full programme periods rather than by budgetary periods in order to obtain a more comprehensive understanding of programme quality. These reports should also include information on other programmes being implemented amongst the beneficiary population as well as significant events affecting implementation.

The analysis of exits from SFPs revealed the magnitude and variability of “non-response” exits in some programmes. For this reason, it seems advisable to include this group in standard reporting recommendations such as Sphere Minimum Standards as a separate group.

### **Characteristics of the programmes**

Programmes included in this study were based in 22 countries and a variety of contexts and reflect the main areas of nutrition crisis and interventions of the past 5 years. It is perhaps surprising that only a small number of blanket feeding programmes or on-site feeding programmes were reported for the study. Almost 90% of the SFPs were associated with therapeutic feeding programmes, providing a more holistic care package and allowing for referrals. However, while a number of programmes highlighted community participation as an objective only a small number of programmes were able to actively involve the community in decision-making and programme design.

The reports submitted to the study showed that many programmes were implemented without a prior assessment of the situation and that more often than not, there was no explanation of the reasons why a SFP was appropriate, nor an investigation into the baseline situation of the population in terms of food availability, etc. As a consequence, the set up and protocols often followed standard recommendations, with no adaptation to the characteristics of the crisis or the population assisted.

### **Programme efficacy: Impact on individuals**

Programme statistics at the individual level (efficacy) showed that, despite 69% of children recovering overall, less than 40% of the centres attained acceptable recovery rates (if non-response is included). The main factor undermining the rate of recovery was defaulting which also showed more variation than other exit statistics both between and within SFPs. Defaulting is most often associated with seasonal and

secular trends that are not usually taken into account in the design of the programmes, or to lack of acceptability or adaptation of the SFP design to local circumstances.

The study also showed that certain contextual factors may play a significant role in determining recovery rates, notably the presence of a general ration distribution, the length of time since the start of the crisis, chronicity of the emergency and whether beneficiaries are displaced populations (as opposed to resident populations).

If considered together these factors would appear to demonstrate that default is directly related to opportunity costs for carers, i.e. when carers need to make up for lack of a general ration, at the beginning of the crisis, when coping mechanisms are more likely to be exhausted following extended and chronic crises, during the planting and harvesting seasons, etc. The current design of SFPs may be creating a dilemma for beneficiaries, having to choose between attending the SFP to obtain food for a member of the family, and other activities related to the economic or food security of the rest of the family. These findings demonstrate a need for further study to determine the reasons for defaulting and exploration of ways to use this information to adapt programmes.

However, for those patients that remained under treatment (non-defaulters), 3 out of 4 centres attained recovery levels above 75% with 84% of the children in the sample recovering. This still suggests that there is a margin to improve the design of the programme and management provided at the centres (i.e. nutrition protocols and associated disease management).

Such findings also feed into the current debate on the need for improving supplementary foods distributed in that while better products may well improve recovery rates it may be over-optimistic to expect that they will dramatically increase recovery rates if the design of programmes is not addressed at the same time.

This study must force us to reflect more on the strategies used to deliver food during emergencies, and whether this should be through new SFPs better designed to account for population opportunity costs or through other strategies like expanded general rations where targeting and monitoring of malnourished individuals may not be as effective.

Prospective cohort studies to compare outcome, costs and ultimately cost-effectiveness of different approaches to treating those with mild and moderate malnutrition in nutritional emergencies are long overdue.

#### **Box 7: Should we be trying to reduce defaulting?**

In most programmes, defaulting increases during the planting and harvesting seasons when labour is at a premium. Attending SFPs (or other distributions) at such times clearly creates conflicts with securing future household food security. The dichotomy for beneficiaries may well be “relief food for one child today” versus “our own food for all the family tomorrow”. In such contexts shouldn’t we be supporting the latter strategy rather than trying to prevent defaulting? Strategies for encouraging attendance at centres like the distribution of non-food items to recovered patients are common but are they appropriate? Sensitive programme design should take into account the dilemmas that families face during food crises. The objective should not be to influence choice about whether to attend centres or not (and improve our statistics), but rather to eliminate the need to make such difficult choices. Are there imaginative programme designs that allow people to care for the moderately malnourished child and at the same time cater for current and future family needs?

## **Effectiveness – impact at population level**

The data collected by agencies on coverage and prevalence of malnutrition and made available to this study do not demonstrate any impact of emergency SFPs at population level. Indeed, a significant number of nutrition surveys showed a decline in nutritional status following a period of implementation of the SFP.

Given the methodological difficulties of population level impact assessment (need for control groups to account for other factors or interventions which may impact prevalence of malnutrition at population level), a new approach was considered based on the estimation of the ratio of children with moderate malnutrition to severe malnutrition. This approach takes into account that SFPs can be expected to reduce the incidence of severe malnutrition, but not that of moderate malnutrition. Proper monitoring of these variables, through repeated surveys, analysis of the admissions to SFPs and TFPs, or through surveillance, could provide an easy way to evaluate impact and to consider the quality and coverage of SFPs during field operations, without the need to select a control group. This approach needs further testing and critical appraisal.

## **Realisable programme objectives**

In conclusion, there is no doubt that a large number of children have significantly benefited from implementation of the programmes in this study. If the objective of SFPs is to *treat* individuals with moderate malnutrition, then many of the SFPs succeeded. Whether Sphere standards for recovery are set too high or whether programme design and management can be strengthened so that a greater proportion of programmes meet Sphere recovery standards is another matter. If on the other hand the objectives of emergency SFPs include a reduction in prevalence of mild and moderate malnutrition and *prevention* of severe malnutrition and associated mortality at the population level then data on coverage and prevalence of malnutrition from nutrition surveys suggest little if any impact. This study has shown that agencies cite different objectives for emergency SFPs and that many (25) cited no objectives at all. Lack of clarity around objectives allows a degree of unaccountability with regard to programme performance that in turn may underpin poor reporting standards. What is clear from the data in this study is that given current levels of coverage and recovery population level impact may be negligible and unrealisable and that alternative interventions addressed to the wider population may be more appropriate in order to secure such impact.

## **Institutional implications**

One of the main successes of this study has been the cooperation and political will shown by agencies in sharing information in order to provide an overview of emergency SFP performance. It is hoped that this study will lead to further work in understanding SFP performance. The process involved in carrying out the study and the initial findings of this study does highlight a set of institutional issues regarding the capacity of the current humanitarian system to evaluate collective agency experiences and outcomes of specific types of intervention or to answer specific programmatic questions in order to improve practice.

Recent history of treatment of SAM with the rapid roll out of community based treatment in order to address poor coverage of centre based treatment has demonstrated how urgent it is to have an overview of programme performance across

the multiplicity of actors in the NIE sector. Arguably, had an agency or body taken an overview of TFC performance and coverage during the thirty or so years that such interventions have been rolled out then the impetus to find a community-based approach would have been generated far earlier than has been the case.

It may now be time to start advocating for a body or organisation to take responsibility for assessing the relative impacts and cost effectiveness of the various types of intervention carried out during nutritional crises. At the very least this will ensure that interventions are not simply rolled out on the basis of existing humanitarian agency capacity and mandate and the willingness of donors to pour resources into what in some cases are relatively unproven activities but rather because interventions are known to be effective.

## Recommendations

These recommendations are addressed to implementing agencies, donors and research institutions alike. It is envisaged that they will soon be complemented and followed by specific research proposals and the organisation of workshops to discuss the findings of this study and explore future avenues for the improvement of programmes addressed to mild and moderate malnutrition in nutritional emergencies.

## Reporting

1. Redefine and standardise “minimum reporting requirements” for SFPs (see Appendix 2 for suggestions). This should include:
  - Clear and common definitions of outcome categories
  - Clear and common statistical treatment of age groups and special groups of patients (e.g. those being followed up from TFC/OTP)
  - Standard presentation of outcome statistics
2. Specify comprehensive reporting of programmes to inform lesson learning from the field. Comprehensive reporting should include reporting for the total duration of the programme (rather than just budget periods) and consideration of other relevant activities implemented amongst the beneficiary population, e.g. general rations, livelihood programmes, etc.
3. Develop specific guidelines for the preparation of these reports including data analysis (eg formulae for basic calculations), presentation and interpretation of data (preliminary suggestions are presented in Appendix 2).
4. Revise Sphere Minimum Standards reporting outcome statistics – specifically, to account for patients that have not recovered.
5. Donors and agencies implementing emergency SFPs should adhere to these “minimum reporting requirements” and adopt standardised reporting formats, to facilitate compilation of data, comparison of results and improve accountability.

## Efficacy of programmes

In order to address problems of defaulting and non-response in emergency supplementary feeding, it will be necessary to implement a combination of research studies and adapted programme monitoring. Research findings may eventually lead to new monitoring protocols for all programmes in order to assess where and why defaulting and non-response is occurring, so that programmes can be adapted accordingly. In the short term, the key goals of research and adapted monitoring will be to:

6. Explore the main reasons for defaulting and develop programme designs that minimise it, e.g. adaptations of SFPs or alternative interventions such as expanded general ration programmes
7. Assess the final outcome of defaulters from SFPs (through surveys or defaulter tracing) in order to determine the ‘actual’ mortality and recovery rates of programmes.
8. Evaluate the opportunity costs of attending SFPs and its impact on programme efficacy, particularly during harvest periods, and develop alternative programme designs that minimise these costs.
9. Evaluate the real outcomes of patients classified as non-respondents and adapt programme design to reduce non-response.
10. Evaluate the effect of different foodstuffs on the number of defaulters and non-respondents, as well as on the quality of recovery.

## Effectiveness of programmes

11. Develop and promote the implementation of situation assessments that help determine whether emergency SFPs are appropriate for any given situation or whether there are better alternatives. Such assessments should consider likelihood and magnitude of default and non-response and also coverage. Where the implementation of emergency SFPs takes priority over assessment, the need for, and appropriateness of, an emergency SFP, should be re-evaluated at the first opportunity.
12. Ensure that coverage surveys are always undertaken both to assess the quality of screening and to evaluate the potential impact of programmes at population level.
13. Investigate the development of methodological tools to assess programme impact at the population level by isolating the change in mortality and malnutrition rates attributable to SFPs (e.g. evaluating ratio of GAM to SAM).

## Overall design

14. Re-evaluate and clarify the roles and objectives of emergency SFPs.

There are two key objectives to consider;

- i) the treatment of individuals with moderate malnutrition and preventing the development of severe malnutrition in such individuals, and
- ii) reducing the prevalence of GAM at population level

Whether one or both objectives are valid for a given situation will depend on a number of factors which must be considered, e.g. defaulting, non-response, coverage, types of food stuff allocated, general food security in population, etc.

In situations where impact at population level is likely to be minimal (e.g. absence of general ration, low coverage, etc) and where it is necessary to reduce population level malnutrition and mortality, it may be appropriate to explore alternative interventions aimed at the general population.

In order to inform decisions about programme objectives and best means of attaining such objectives:

15. Establish an operational research programme to compare emergency SFPs with alternative strategies to treat mild and moderate malnutrition and reduce prevalence of GAM at population level, e.g. expanded general rations, cash transfers, etc, and promote the development of an evidence base to support one strategy over another.
16. Implement prospective cohort studies to compare outcome, costs and ultimately cost-effectiveness of different approaches to treating those with mild and moderate malnutrition in nutritional emergencies.
17. Advocate for a body or organisation to take responsibility for assessing the relative impacts and cost effectiveness of the various types of intervention carried out during nutritional crises.

Finally, it is imperative that this study is just the beginning of a collaborative move forward to improve our work in this area. A steering group needs to be set up to define, and find funding for, a research programme encompassing the recommendations made above. The main task of this group will be to ensure that well-defined evidence-based interventions that have real impact will in future dominate our policy and practice.

## Appendix 1: Template to Summarise Information from Reports

SFP Review: Data summary sheet			
Agency:		Code:	
Country:		Region:	Location(s):
Summary:			
Implementation dates:		Number of SFCs:	
Information provided:			
General description:			
Characteristics of the population/Context of the emergency:			
General comment:			
Area:		Total pop:	U5 pop:
Population type:		Setting:	
Soc-economy:		Dependent?	War affected?
Climate:		Lands:	
Type of emergency:		Date of onset:	
Insecurity:		Access:	Coordination:
Main causes of malnutrition:			
Food security:			
Comments:			
Mortality and malnutrition rates/Epidemics:			
General comment:			

Country	Location	Date	Pop.	GAM	SAM	CMR	U5MR	Coverage	
				Z -score				SFP	TFC
<b>Survey methods and reliability of information from surveys:</b>									
<b>Micronutrient deficiencies: endemic? outbreaks?</b> <b>Infectious diseases: major endemic? outbreaks?</b>									
<b>Basic description of relief operation:</b>									
<b>General comment:</b>									
<i>Underlined when present:</i> <b>GFD – SFP – TFP – OPD – CTC – Food sec:</b>  <b>Preventive Med - Health centres – Hospital – Nut surveillance – Nut education</b>  <b>Other:</b>									
<b>GFD: Pop targeted:</b>				<b>Distribution dates:</b>					
<b>Kcal/person/day:</b>				<b>Food distributed:</b>			<b>Freq:</b>		
<b>Type of targeting:</b>				<b>Monitoring results?</b>					
<b>Comments:</b>									
<b>TFC: Location/name:</b>				<b>Strategy:</b>			<b>Report?</b>		
<b>Comments:</b>									
<b>SFP: Programme description:</b>									
<b>General comment:</b>									
<b>Objectives:</b>									
<b>Number of centres:</b>				<b>Names of centres:</b>			<b>Staff/benef ratio:</b>		
<b>Staff in each centre:</b>				<b>Implementing partner?</b>					
<b>Items/comments:</b> Uses existing structures: Integrated into other activity (ex. Health post): Specific training? External supervision? Participation of community in design/management? Phasing out plans stated at planning stage? Phasing out plans carried out? Results of phasing out:									



<b>Comments:</b>		
<b>SFP protocol (children):</b>		
<b>General comment:</b>		
<b>Admission criteria:</b>		
<b>Recovery criteria:</b>		
<b>Distribution type:</b>	<b>Freq. Distributions:</b>	<b>Kcal aimed:</b>
<b>Foodstuffs and amounts:</b>		<b>Premixed? Source?</b>
<b>Medical protocol:</b>	Cooking demonstrations? Health/nut education? "Protection" or "Family" ration?	
<b>Active screening?</b>	<b>Defaulter tracing?</b>	
<b>Comments:</b>		
<b>Results SFP activity:</b>		
<b>Summary of results:</b>		
<b>Comments:</b>		
<b>Programme costs:</b>		
<b>Donor(s):</b>	<b>Total budget:</b>	<b>Actual expenses:</b>
<b>Breakdown of expenses</b> (main categories):		
<b>Beneficiary costs:</b>	Time to travel to centre: Time in the centre:	
<b>Comments:</b>		
<b>Other comments:</b>		
<b>GENERAL APPRAISAL by CNC:</b>		

## Appendix 2: Suggestions for Minimum Reporting Requirements

Identify the SFP and describe context and characteristics:

1. Provide clear identification of place and dates of implementation, and a brief history of the reasons for starting the programme and its evolution.
2. When more than one centre is present explain how centres are connected, e.g. referral system, staff, etc.
3. Describe the programme context including the presence of other programmes (SFP or other) that may be addressing the same objectives amongst the same population (in particular, if there is a general food distribution). If present, describe the main characteristics of GFDs, e.g. food distributed, targeted population, etc.
4. Describe main programme characteristics including; food distributed, medicines, admission and discharge criteria, definitions of outcomes (if not standard), etc.

Reporting population data:

5. When citing population malnutrition rates, indicate:
  - anthropometric indicator used (weight for height, MUAC, other),
  - the type of measurement (Z-score, percentage of the median),
  - reference population used (NCHS, new WHO standard, other),
  - the method of data collection (survey, purposive sampling, screening, surveillance...) and
  - the date it was collected.
6. Whenever possible, present malnutrition AND mortality rates from surveys.
7. If possible, report separately the percentage of patients with marasmus and kwashiorkor.

Separate statistics for age groups and special groups:

8. Separate pregnant and lactating women from other adults.
9. Separate children from follow up after "TFC recovery" in the admissions and discharge data. Do not include them in the calculations of outcomes.
10. Never aggregate different age groups in statistics.

Level of aggregation of information presented:

11. A general report should include statistics for the complete period although in order to understand programme performance monthly data are required which can demonstrate seasonal trends and the effects of extraordinary events.
12. If there is more than one centre in the SFP, decide whether data can be aggregated to provide information on all programmes together (i.e. if their characteristics and results are similar), or if they are better represented by separate statistics.
13. If there is a different agency implementing SFPs in the same area, include their data as well to provide a more comprehensive picture of programme performance.

Reporting statistics:

14. Report total numbers of beneficiaries as well as percentages, to allow for aggregation at different levels and proper interpretation of results.
15. Include the "denominator" total: for outcome statistics, this is the total number of children discharged from the centre (i.e. not the number of admissions).
16. Even if the report only makes reference to a defined period (e.g.. a quarter), include data and information from previous periods to allow for interpretation of trends.

17. For data on SFP outcomes, include as a minimum the following groups: “recovered”, “defaulting or loss-to-follow-up”, “deaths”, “non-response”. The latter can be further disaggregated to include “transfer to TFC”, “transfer to medical facility” and “non-recovery or failure of treatment”.
18. When reporting Average Weight Gain, specify in which group of patients this was calculated, if all patients were used or only a sample. Also, include the formula used for the calculation.

Data manipulation and interpretation:

19. When calculating recovery rates for a period of months, DO NOT calculate an average monthly percentage rather calculate percentages from the sum of outcomes for the period.
20. If you present percentage information in a graph also provide the actual figures in an annex.
21. If admission or exit criteria were not standard (for example, lower discharge thresholds) state this clearly. Furthermore, take this into account in the interpretation (for example, with lower thresholds defaulting and non-response tend to be lower while recovery and weight gain usually appear much improved).
22. Be consistent in using the same level of aggregation and same definitions throughout reporting of statistics in reports.
23. Be honest in the interpretation of results. When a possible explanation is only a hypothesis, state this clearly. If it was verified, explain how and present the appropriate data.

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