

OXFAM'S APPROACH

TO

NUTRITION SURVEYS
IN EMERGENCIES

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Table of Contents

1. Introduction	1
2. Why conduct a nutrition survey?	1
2.1 Objectives of nutrition surveys in emergencies	1
2.2 When to conduct a nutrition survey	1
2.3 Conditions for doing a survey	2
3. A public nutrition approach	2
4. The causes of malnutrition	5
4.1 The immediate causes of malnutrition	5
4.2 Underlying causes of malnutrition	5
4.3 Basic causes of malnutrition	6
5. What to assess.	7
5.1 Anthropometry	7
5.2 Morbidity and mortality	8
5.3 Food security	8
5.4 The social and care environment	9
5.5 The health environment	9
5.6 Available resources	9
5.7 Political and security context	10
6. Nutritional survey methods	10
6.1 Organisation of surveys; teams and training	10
6.2 Anthropometry	10
6.2 Morbidity and mortality	12
6.3 Underlying causes	13
7. Analysis	14
7.1 Anthropometry	14
7.2 Mortality	15
7.3 Determining whether the nutritional situation is unusually severe	15
7.4 Recommending appropriate interventions	16
8. Report writing	18
8.1 Preliminary reports	18
8.2 Report structure and contents	18
Sources	20
Annex 1 - sources of bias in nutrition surveys	21
Annex 2 – Nutrition Survey form	22

Annex 3 – An example of seasonal trends in the prevalence of malnutrition.....23

Annex 4 - selection of rapid appraisal techniques useful in food security assessments.23

**Annex 5 – Examples of key informant checklists to assess underlying causes of malnutrition
.....24**

**Annex 6 – Example of results of a proportional piling exercise to determine shifts in main
sources of food. From surveys in Turkana, Kenya, 2000.26**

Annex 7 – Example of frequency distribution curve.....27

Annex 8- Decision making framework for the implementation of feeding programmes....28

1. Introduction

This document is intended for qualified nutritionists who are new to Oxfam. It describes Oxfam's approach to nutritional surveys, rather than providing detailed guidelines on how to do a nutritional survey. This document should be used in conjunction with "Food Scarcity and Famine; Assessment and Response". (Young, 1992), and the MSF Nutrition Guidelines (MSF, 1995).

Sampling and anthropometry is not covered in detail in this document. For sampling and how to weigh and measure children, the following text is recommended::

- MSF Guidelines, page 41-48 for information on weighing and measuring children and explanation of different anthropometric indices.
- MSF Guidelines pages 49-59 for sampling methods.
- Food Scarcity and Famine;...Appendix 3 for explanation of how to do cluster sampling.
- Food Scarcity and Famine... Appendix 4, for nutrition survey statistics.

In addition, "Food Scarcity and Famine;.." is recommended for information on qualitative methods to gather information on nutrition (pages 17-32), and for practical information on organising surveys (pages 33-39).

Oxfam has Food and Nutrition Advisors based in Oxford, whose role is to provide technical support to nutritionists in the field, and to country offices and Humanitarian Co-ordinators who are planning or implementing food and nutrition programmes. If in doubt about any aspect of a nutritional survey, **always** seek technical advice from a Food and Nutrition Advisor in Oxfam House.

2. Why conduct a nutrition survey?

2.1 Objectives of nutrition surveys in emergencies

There are four main reasons why Oxfam may want to do a nutritional survey

- To determine the severity of people's nutritional situation and the risk to people's lives.
- To identify appropriate interventions to address malnutrition and its underlying causes.
- To evaluate programmes; i.e. to provide a baseline from which to evaluate nutrition programmes.
- Advocacy; to highlight a nutritional problem and elicit a response.

Some agencies limit the objectives of a nutritional survey to estimating the prevalence of malnutrition to establish a baseline, and to assess the need for therapeutic and supplementary feeding programmes. Oxfam aims to identify any intervention that addresses malnutrition, not just feeding programmes.

2.2 When to conduct a nutrition survey

In most emergency situations, there is already some information indicating the risk of malnutrition. Oxfam may already have conducted a rapid assessment (using the Public Health Assessment Tool), which shows the need for an emergency intervention. Government, local authorities, or UN may have requested NGOs to respond. Humanitarian agencies usually conduct nutritional surveys when they expect the need for an emergency response. Generally, Oxfam does a survey when;

2.2.1 Available information is insufficient for decision making on emergency response

Information on the risks to nutrition may be sufficient to start an immediate life-saving response, without first conducting a nutritional survey¹. If an analysis of available information on access to food and health risks indicates a severe nutritional crisis, an immediate response is required. In this case, Oxfam starts a life-saving intervention before doing a survey. A survey is done as soon as possible, to monitor the impact of the programme and to identify the underlying causes of malnutrition.

¹ Note that Sphere nutrition analysis standard 1 (assessment) recommends an initial assessment before programme decisions are made. The initial assessment should include information on conditions which may create a risk of malnutrition, but this need not be a nutritional survey.

In some situations, the severity and extent of the malnutrition may not be sufficiently clear to determine whether an emergency response is required. Alternatively, information is insufficient to determine the type of intervention. In this case, a survey is done to confirm the severity of the nutritional situation and to identify appropriate interventions.

2.2.2 There is a lack of donor interest.

If there is a lack of donor interest, providing figures of malnourished children may elicit a response. In emergencies which are less visible, nutritional surveys are often necessary to highlight the extent of the crisis. Unfortunately, images of thin and dying children are still one of the most effective ways of bringing about a response.

2.2.3 Early on in any intervention that aims to address malnutrition

If a nutritional survey was not done to decide whether to start a nutritional intervention, a survey should be done as soon as possible after starting the intervention. Any intervention that has an aim of reducing or preventing malnutrition, should have systems in place to verify whether this aim has been achieved before the programme has ended.

2.3 Conditions for doing a survey

The following conditions have to be met:

2.3.1 Capacity to respond to the emergency, or to influence others to respond.

Nutritional surveys create expectations of an emergency response. Before starting a survey, Oxfam staff should consider whether it has the capacity to respond to the survey, or whether others are likely to do so if the survey shows high levels of malnutrition.

2.3.2 Technical expertise is available to conduct a reliable nutritional survey

Nutritional surveys require a degree of technical expertise because certain methodological criteria have to be respected. Carrying out and analysing nutritional surveys requires knowledge and experience of survey design, sampling and statistics. If the Oxfam office does not have the relevant technical expertise, this should be requested, or the survey should not be done. Wrong information is worse than no information.²

2.3.3 Adequate access and resources for a reliable nutritional survey.

There is no point in doing a nutritional survey, unless it is feasible to conduct a survey that will be reliable and valid. Reliability is a statistical measure of the precision of the results, and applies to the anthropometric (or quantitative) part of the survey. There are many possible sources of bias, for example, incomplete coverage, clinic bias and measurement error (see Annex 1).

There are also a number of confounding variables, including mortality, migration, seasonality, which can limit the validity of the findings. Oxfam **always** combines quantitative data on anthropometric status with qualitative data on food security, the social and care environment and the health environment, to maximise the validity of the survey.

3. A public nutrition approach

Oxfam takes a broad approach to nutrition; assessing nutrition within the wider socio-economic, political and public health context. This perspective is taken not only for assessments, but interventions are also recommended with

² (see "Food Scarcity and Famine" for information on the advantages and disadvantages of initial assessments, rapid assessments, and surveys; pp.17-27).

this wider context in mind. This means that in addition to anthropometry, Oxfam assesses the underlying causes of malnutrition and the health risks associated with malnutrition.

Oxfam assesses the severity of the nutritional situation by;

- An anthropometric survey
- Indicators of acute food security
- Indicators of the risk of disease and death

The anthropometric survey provides an estimate of the prevalence of malnutrition at a particular point in time. Knowledge of normal seasonal patterns of malnutrition, food security and disease, indicate whether this prevalence is unusually high for the time of the year. Food security indicators support information on the severity of the situation.

For example if people experience a major shift in their main sources of food, have limited access to alternative food sources and adopted of crisis strategies.

To identify appropriate interventions, it is necessary to know the immediate and underlying causes of malnutrition and the risks associated with malnutrition. Oxfam uses an adapted version of the UNICEF conceptual framework on causes of malnutrition, which has been adopted in the SPHERE minimum standards for nutrition (See Figure 1).

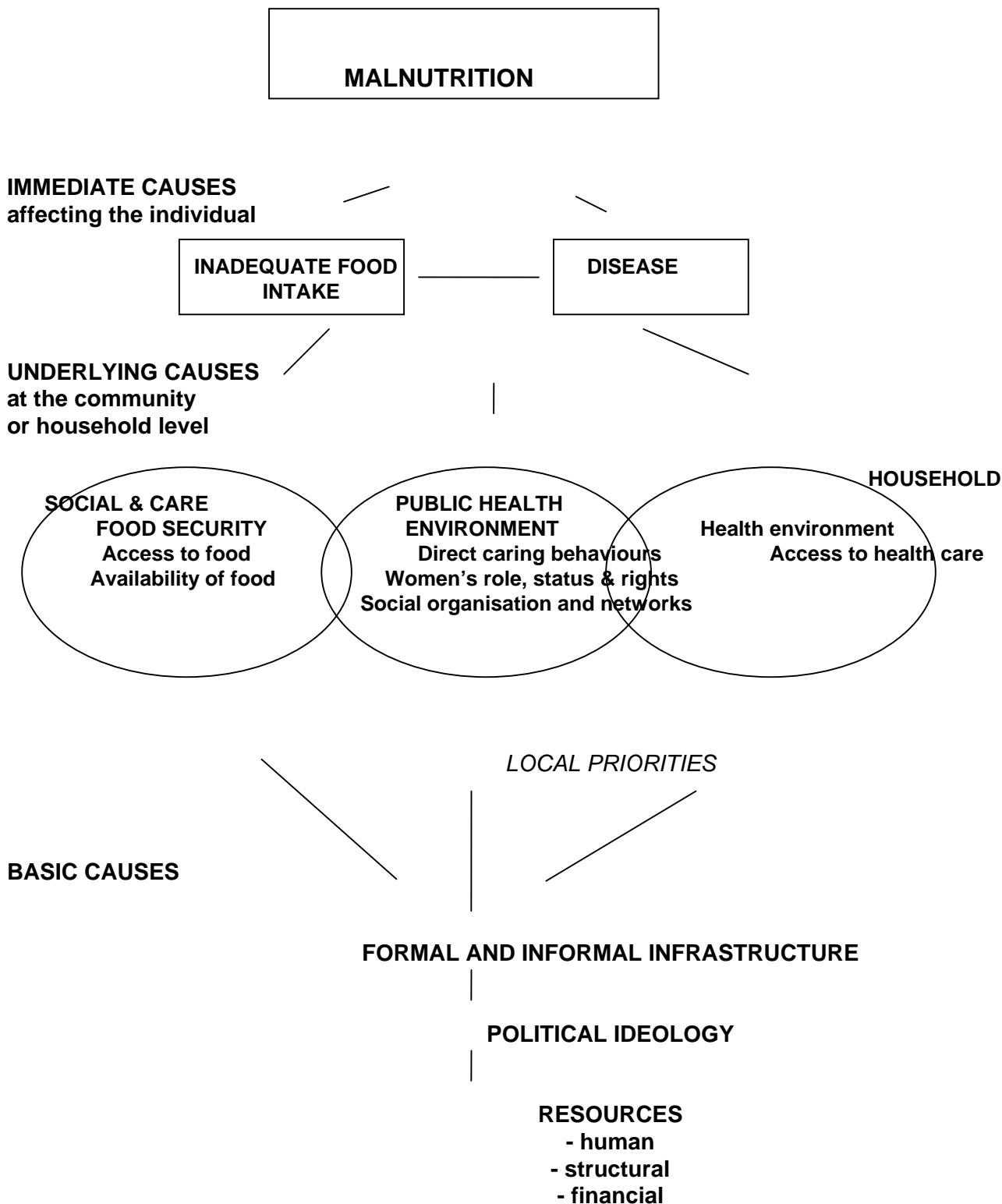
The immediate causes of malnutrition include inadequate food intake and disease. The underlying causes include; household food security, the social and care environment, and the health environment.

A public nutrition approach means that a nutrition assessment identifies any intervention that addresses the causes of, and risks associated with, malnutrition. Recommendations can therefore range from public health measures, to veterinary care or farm inputs, to employment schemes, or child care centres, as well as food distribution and feeding programmes. Feeding programmes only address one immediate cause of malnutrition, but not the underlying causes.

The wider social and political context determines not only the type of interventions that are appropriate but also the modalities of effective programme implementation. It is not sufficient to identify, e.g. wage labourers, the displaced, or the politically oppressed as the group most vulnerable to malnutrition. The assessment must lead to specific recommendations as to how the proposed interventions can effectively reach this group. This is often most difficult in a situation of internal conflict, where this may go directly against the aims of the warring parties. So, for example, recommendations for food distributions must include suggested methods for targeting and distribution for the particular context.

Figure 1 - Conceptual framework on underlying causes of malnutrition

A CONCEPTUAL MODEL OF THE CAUSES OF MALNUTRITION IN EMERGENCIES



Adapted from the UNICEF Framework of Underlying Causes of Malnutrition and Mortality.

4. The causes of malnutrition

The conceptual framework on causes of malnutrition identifies two immediate causes of malnutrition, which operate at the level of the individual, and three clusters of underlying causes, which operate at the level of the household or the community. The framework also identifies the basic causes of malnutrition which operation at the population level, possibly at regional, national or international level.³

4.1 The immediate causes of malnutrition

The two immediate causes of malnutrition are inadequate food intake and disease. Inadequate food intake refers to the quantity and quality of food, as well as the palatability and energy density.

There is a cyclical relationship between malnutrition and disease. Disease may cause malnutrition and severe malnutrition makes a child more susceptible to disease. Severe malnutrition increases the incidence, duration, and severity of infectious disease. The risk associated with moderate malnutrition depends on the health environment. There is a close relationship between malnutrition and mortality, in situations with a high prevalence of diarrhoea.

Infectious diseases such as diarrhoea, acute respiratory infections, measles, and malaria all contribute to malnutrition through loss of appetite, mal-absorption of nutrients, loss of nutrients through diarrhoea or vomiting, or through altered metabolism (which increases the body's need for nutrients).⁴

4.2 Underlying causes of malnutrition

At the level of the household or community, three underlying causes are identified;

- household food security; *access by all people at all times to the food needed for an active healthy life.*
- the social and care environment; *direct caring behaviours in the household, including child-care and the allocation of food in the household. Social and political networks within and between communities.*
- the health environment; *access to health services, water supply, sanitation and housing.*

Household food security reflects a households' ability to secure adequate food to meet the dietary needs of all members, either through their own food production or food purchases. Food production depends on a wide range of factors, including access to fertile land, availability of labour, appropriate seeds and tools, and climatic conditions. Factors affecting food purchases include household income and assets as well as food availability and price in local markets. In emergencies, direct theft and destruction of assets, security, and mobility, are important factors.

Appropriate childcare is an essential element of good nutrition and health. The major childcare activities and behaviours that influence nutrition are; feeding behaviours (breastfeeding and weaning), hygiene, and other behavioural practices. Cultural factors and resources - like income, time and knowledge – influence caring practices. In emergencies, displacement or forced migration is likely to cause social disruption which breaks links with extended family and wider social networks. The health and psychological state of the mother under such circumstances will also affect caring practices. Some coping strategies will affect child care, such as switching to a cheaper but less nutritious food. The extra work demands in responding to food insecurity, e.g., foraging for wild food and poorly paid income-earning activities, will reduce time for child care.

The welfare of the community, or certain groups within it, is determined in part by the accountability of existing

³ See also: the Sphere handbook; WFP Food and Nutrition Handbook; Nutrition Matters; People, Food and Famine.

⁴ See also: paper on "malnutrition, disease and death in times of famine".

leadership and institutions. It determines the distribution of resources within society. Whether certain groups experience famine is determined by the nature of the political contract between government and the people. A political contract has been defined as “a political commitment by government, recognition of famine as a political scandal by the people, and lines of accountability from government to people that enable this commitment to be enforced”⁵. The absence of such a contract, leads to oppression and exploitation of certain population groups.⁶

The health environment influences exposure to, and therefore incidence of, infectious disease. Important health issues are: the existing primary health infrastructure, the types of services performed at these facilities, their accessibility and affordability to vulnerable populations and, of course, the quality of these services. Inadequate or delayed treatment of disease places a child at increased risk by prolonging the disease and possibly increasing its severity. Key environmental issues include the degree of access to adequate quantities of safe drinking water, adequate sanitation systems, and adequate housing.

4.3 Basic causes of malnutrition

The basic causes of malnutrition are those that determine whether a population is food insecure, lacks a good health environment, and lack social support networks (either traditional or provided by the state). Basic causes reflect the resources available to a population (human, structural and financial), whereas the political ideology determines how these resources are allocated. Poverty is often the over-riding cause of malnutrition. Basic causes include structural re-adjustment, and government policies or development strategies that exclude or marginalise a section of the population. In natural disasters, basic causes are drought, floods, earthquakes etc. In complex emergencies, it is the nature of the war economy and the war strategies used that determines the degree of exploitation and suffering of certain groups. The existence of democratic government, or a political contract between a government/warring factions and the people, is probably the most important determinant in freedom from famine.

⁵ In: De waal (1997) *Famine Crimes; Politics and the Disaster Relief Industry*. London: James Currey.

⁶ See: report on “Solidarity and Soup Kitchens;...”

5. What to assess.

5.1 Anthropometry

5.1.1 Children

The anthropometric status of young children is taken to reflect the nutritional status of the population of interest.

In emergencies assessments, indicators of acute malnutrition are most appropriate. These are weight-for-height (WFH), and mid-upper arm circumference (MUAC). Oxfam recommends the use of weight-for-height in nutritional surveys. MUAC is not recommended for surveys, unless time is extremely limited. There is no need to measure weight-for-height **and** MUAC and in nutritional surveys.

Weight and height data is usually collected in children between 6 and 59 months; or 65 and 110 cm. MUAC data is collected on children 12-59 months. MUAC is used to screen children for admission to the feeding programme.

In addition to the weight and height, the following should be collected for each child: sex, age, pitting bilateral oedema, measles vaccination, and if there are feeding programmes, whether the child is registered for the therapeutic or supplementary feeding programme. An example of the quantitative survey form is shown in Annex 2.

It is important to gather information on normal seasonal patterns of malnutrition. Most rural populations, suffer a hungry season at a certain time of the year, (e.g. dry season or just before the harvest), where the prevalence of malnutrition can be expected to be higher than at other times. It is not possible to know whether the prevalence of malnutrition is unusually high unless seasonal patterns are known (See Annex 3 for an example of such seasonal patterns). If there is no information on seasonal patterns of malnutrition, this can usually be deduced from information on seasonal food security and health patterns (see below).

5.1.2 Adults

There are 2 main reasons why you may want to include adult anthropometry in your nutritional survey, or even just carry out a survey on adults;

First, if you have reason to believe that children do not adequately represent the population as a whole. This could be because the population has suffered very high under five mortality and therefore children represent a small proportion of the population. Alternatively, the population may preferentially feed children and therefore the nutritional status of children would be better than adults.

Second, if you have reason to believe that adults, or certain groups of adults, are suffering from a high prevalence of malnutrition. There may be reasons why certain groups of adults are more affected by malnutrition. For example, Oxfam found that during a period of acute food insecurity in Red Sea Hills (Sudan) women were severely affected by food insecurity. Their culture did not allow them to move far from their village and men were absent to look for work.

In the most acute crises, you may see a high number of very thin adults. This in itself should be sufficient to start an emergency intervention; i.e. therapeutic feeding for adults and children. A survey should be conducted once the programmes are underway.

To assess adult malnutrition in a survey, BMI (Body Mass Index) should be used for adults 20-60 years. (note: for screening of adults for therapeutic feeding MUAC is used rather than BMI).⁷

⁷ For further information on assessing adult malnutrition see: RNIS paper on assessment of adult nutritional status in emergency affected populations.

5.2 Morbidity and mortality

The key diseases to gather information on are; diarrhoea, malaria, measles, and respiratory tract infections. Information should be collected on the main diseases that are normally present in the area, and whether these are different from those in the area of origin of the emergency affected population. Emergency affected populations often suffer an exaggeration of their normal disease patterns. This means that it is important to know the normal patterns of disease, and its seasonality, to determine the risks for the population in question.

Oxfam recommends the assessment of mortality along with anthropometric status. This should include mortality in the population as a whole (to estimate Crude Mortality Rate; CMR) as well as in under fives. This is because a deteriorating nutritional situation could be masked by high mortality levels. In other words, the nutritional situation may be deteriorating, whilst the prevalence of malnutrition remains the same because malnourished children are dying.

5.3 Food security

Information to be collected depends on the particular livelihood systems of the population groups to be assessed, and the cause of the disaster.⁸

Different livelihood systems will be affected in different ways and the assessment needs to first identify the different livelihood systems within the affected population. For example, this could include: farmers (irrigated or rainfed farming), pastoralists (cattle or camels herders), or wage labourers. People's food security can also be determined by their ethnic, political, or social status. These groups should be identified and selected for interviewing. The displaced are a politically vulnerable group that often needs to be considered separately.

People's vulnerability to food insecurity depends on their normal sources of food, the type of disaster, their ability to find alternative sources of food and other strategies to cope with food insecurity.

For each livelihood system, collect information on:

- Food availability
This may include information on rainfall, agriculture, pasture, livestock condition (milk, meat), markets (access to markets, price and availability of food), access to land, farms, etc.
- Access to food
This should be considered separately for each livelihood group. Information includes normal food and income sources and changes in these as a result of the disaster.
- Gifts and loans
- Theft and other illegal acts
- Coping strategies
How are people responding to decrease in their normal sources of food and income.

Food security in rural populations shows seasonal patterns, and it is therefore necessary to investigate the seasonality in people's different sources of food.

Coping strategies have to be separated into early strategies that are not damaging to people's livelihoods in the longer term, and distress strategies which are.

Early strategies may include:

- Changes in diet; reduction in number and volume of meals, consumption of wild foods or cheaper staples.
- Migration for work by some family members
- Petty trade; e.g. collection and sale of firewood and charcoal.

⁸ For more detail on Oxfam's approach to food security assessments, see Food Security; an Oxfam perspective (Young, 1998). Theory and practice of assessment and analysis in emergencies". And: Food Security Assessments in Emergencies; Oxfam's Livelihoods Approach (Young et.al, 2001).

Distress strategies may include:

- Sale of productive assets (livestock necessary for survival of the family's way of life, sale of land or plough oxen etc).
- Distress migration of the whole family in search of charity or relief.

The term coping strategy was developed in relation to natural disasters, and implies that after a period of crisis, people can resume their previous livelihoods. In conflict, this is not always the case, but it is still useful to divide strategies into those that are reversible, and those that will cause long term damage, to physical, social, or economic well-being. In conflict situations, war strategies may be used that aim to deliberately block people's coping strategies. The risk of starvation is greatest when famines associated with violence.

5.4 The social and care environment

The social and care environment needs to be investigated at the household and the community level.

At the household level important factors are:

- breastfeeding and weaning practices
- intra-household feeding practices
- mothers workload
- the presence of carers; i.e. the child's parents
- presence of extended family for support

In emergencies, the emphasis is on the effect of the disaster on these household level caring practices. There may be cultural practices that normally affect breastfeeding and weaning practices. But in emergencies, there will be factors specifically related to the disaster. For example, psychological trauma of the mother may affect breastfeeding, and mothers may not have access to normal weaning foods.

At the community level, it is important to consider how traditional social support networks have changed. Scarce resources may restrict the assistance that people can provide to relatives, or in war, communities that previously had mutual exchange mechanisms now belong to opposing factions. Displacement also influences caring practices, as does the absence of carers through either migration or death. Information on the accountability or representativeness of leadership will determine who is likely to be excluded or marginalised.

5.5 The health environment

The health environment determines exposure to disease, and whether sick people can be treated. It is important to investigate the following:

- shelter and living conditions; overcrowding
- hygiene and sanitation
- access to good quality and sufficient quantity of water
- immunisation
- access to health care (presence of health centres, medical staff, drugs).

5.6 Available resources

Information on available resources is needed to know whether external assistance is necessary, and also to determine how to implement your intervention. Investigate the types of resources available; e.g. financial, organisational and human. If the nutrition assessment is part of a multi-sectoral assessment, the team may include a programme advisor and/or logistician to assist in this aspect of the assessment.

- Organisational resources: government services, civil institutions, transport networks, health systems.
- Human resources; presence of qualified professionals. Past experience of working in emergency interventions.
- Financial. Do local governments or institutions have sufficient financial resources to address the problem? Are they willing to?

5.7 Political and security context

The political and security context will determine who should be targeted for assistance, whether Oxfam can actually work with the particular emergency affected population, and whether aid is likely to be manipulated.

Information is needed on the main political divisions; who are the least powerful groups, who is oppressed and exploited. This may be analysed by having the following information:

- The historical pattern of social and economic exclusion
- The types of war strategies used. Are the warring parties targeting civilians? Are coping strategies deliberately blocked as a war strategy?
- What economic gains can result from the war and who gets them?
- How long has the conflict been going on? This will determine the risk of banditry and theft.
- Are violent acts likely to be punished?

If the assessment is done by a team, these aspects are likely to be investigated by the Team Leader, or Programme Manager or Humanitarian Coordinator.

6. Nutritional survey methods

6.1 Organisation of surveys; teams and training

Oxfam tries to collaborate wherever possible with existing structures, whether Government or non-government, in undertaking surveys. This is done to provide greater consensus on the results of the survey and to build up local capacity.

The fieldwork for nutritional surveys can take anything from 1 day for camp situations, to 3 weeks for dispersed populations in large rural areas. Preparation for fieldwork can take up to a week, and analysis and report writing 1 to 2 weeks.

Preparation for fieldwork includes developing survey checklists and questionnaires, sampling or selecting the clusters, training of the team in anthropometry and interviewing, and a pilot exercise.

The teams usually include 5 – 6 people. 2 – 3 people for taking weight and height measurement, 1 or 2 people for interviewing, and a driver. It is important to have a team leader who has taken part in planning the assessment and, ideally, who has previous experience with nutritional surveys.

The team should understand the purpose of the assessment and the methods used. In some circumstances, the interview checklists can be prepared together with the team leaders or team members and local Oxfam staff. The conceptual framework shown in Figure 1, can be used as the basis for developing a local framework on the causes of malnutrition. Checklists can be prepared following this exercise. The teams should be trained in weighing and measuring techniques, interview techniques, completing the survey forms, and sampling.

6.2 Anthropometry

The first aspect of an anthropometric survey is to determine the population of interest and how to take a representative sample. Oxfam generally uses two stage cluster sampling, purposive sampling, or a census.⁹

6.2.1 Cluster sampling

Oxfam generally recommends cluster samples of the population of interest. Oxfam follows WHO guidance and takes a sample size based on 30 clusters of 30 children, i.e. 900 children. The following steps are then

⁹ For details of sampling methods see the MSF Guidelines and Oxfam practical guide: "Food scarcity and famine.."

followed:

Step 1 – Choose population of interest (area, camp, etc).

Step 2 – Divide population into existing or natural groupings; e.g. e.g. villages, camp sections, councils, etc.

Step 3 – Estimate the population in each. In rural populations in stable situations, the most recent population census is usually used. In camp populations or where estimates are thought unreliable, some checks will need to be made, e.g. hut counts.

Step 4 – Choose where to take clusters by assigning probability proportional to size. Make a list of all villages or groups and the cumulative population. Calculate sampling interval by dividing total by 30. Select the first cluster by choosing a random number within this interval. The first cluster is in the village which includes this number in the cumulative population. Continue using the same sampling interval (see Appendix 3 of “Food Scarcity and Famine”).

The children within the cluster are then chosen as follows:

Step 5 - Go to the centre of the village or section.

Step 6 – Select house to start by spinning a pen and walk in direction indicated. Count houses from centre to village boundary. Choose a number between 1 and the total number of huts passed.

Step 7 – Weigh and measure **all** the children between 65 and 110 cm in first house.

Step 8 - Continue to the next nearest house, and repeat until at least the number of children for each cluster has been measured. In the last household selected, all children between 65 and 110 cm should be measured.

So if the planned cluster size was 30, then some clusters will in practice have 31 or 32 children or more. No cluster should have less than 30 children.

In some rural, or non-camp, situations, it is difficult to find the required number of children. In difficult circumstances, and especially where speed of assessment is important, the number of children per cluster may be reduced, but should be no lower than 10. It is better to have more clusters with fewer children than fewer clusters with more children in each. The number of clusters is important to ensure statistical reliability. The number of children in each cluster should be the same.

A random cluster survey only yields a single point prevalence for the population surveyed. The area or people covered by the survey depends partly on the variation in the rates of malnutrition you expect to find within the population. In emergency affected populations, large differences may exist within the population or area surveyed (for example, between displaced and resident populations, people with different livelihood systems, different ethnic groups or political affiliations, different villages within a geographical area). To detect statistical differences between each of these groups, it would be necessary to do a cluster survey on each of them.

There are many practical constraints to doing surveys in emergencies (see pages 32-33 in Food Scarcity and Famine”). People may be scattered over a large area. Access may be limited because of insecurity, denial of access by local authorities, or poor roads. Random cluster surveys in rural populations are time consuming, and take too long for an emergency response. Solutions to some of these constraints may be to sample smaller areas, reduce cluster size, or do purposive sampling instead (see below).

In many emergency prone countries, accurate population figures are not available. In addition, people may be migrating because of the emergency which makes estimating the population even more difficult. Use as many sources of information as possible to draw up a list of villages, displaced camps, or sections within one camp (e.g. local council, latest census, immunisation figures). Drawing a map will be useful. Then try to estimate the relative size of each of them to draw up your sampling frame.

Surveys in nomadic populations are particularly vulnerable to bias. Their location is often difficult to know, and

the tendency may be to survey those in settlements, which are often the poorest who have lost livestock. Using local sources, first estimate the proportion of nomads living in settlements, those partly mobile, and those completely mobile. Then make sure that the mobile are adequately represented. Visit watering points, and in each village or settlement visited, ask about the nearest nomadic settlement.

6.2.2 Purposive sampling

If large variation in rates of malnutrition in the population or area of interest is suspected, doing cluster surveys on each of the different groups may be too time consuming for an emergency assessment. In this case, it may be more efficient to take a purposive sample.

For a purposive sample, areas, villages, or population groups are selected, which are representative of different types of villages or population groups and will therefore reflect the differences between them. If possible, measure all children within this group. In this case, the data cannot be extrapolated to the population as a whole. It is essential to complement the anthropometric data with information on food security and other underlying causes, to increase the validity of the information collected.¹⁰

6.2.3 Analysing data in the field

Oxfam recommends use of the WFH percentage charts during the survey, to assess the nutritional status of the child when it is assessed. This provides a useful cross-check with visual assessment of the child (preventing many mistakes!). Each survey team, at the end of the day, can be asked to calculate, by hand, the exact % WFH of each child assessed. This means that on the day that the survey is completed, the team has an estimate of the prevalence of malnutrition. Where purposive sampling is done, and all children measured, this can provide the basis for discussion with community representatives, when you are still there. For example, if everyone says they have nothing to eat, and you find no malnutrition, this contradictory finding can then be discussed with community representatives.

6.3 Morbidity and mortality

If the existing health information system is considered reliable and adequately covers the population of interest, use this system to get information on the incidence of diarrhoea, malaria, respiratory tract infections, and measles. If the system is not judged reliable, then it will be useful to find out about the most common diseases in your survey. Ask the mothers of children selected for the survey about certain symptoms of diseases, using a recall period of 2 weeks. Ask about fever, diarrhoea or cough. For diarrhoea, use the definition of more than three loose stools over a 24 hour period. Suspected measles is any febrile illness accompanied by a rash.

Retrospective diagnosis of diseases using recall methods is notoriously difficult and unreliable. Results can often be misleading and imprecise even when a well designed survey is carried out. The reasons for this include different interpretations of symptoms of disease, poor recall by caretakers, differences in interviewer technique and the interrelation of many childhood diseases. It is important therefore to crosscheck morbidity data using other methods such as an analysis of clinic data or key informant interviews.

An assessment of mortality should always be included with a random cluster survey. This should cover a period of 1-3 months before the assessment, and the results expressed in deaths/10,000/day (choose a well known local date or event for the beginning of the period assessed, or cover the period since the last survey). The Oxfam team should be aware of possible biases. People may under-estimate or over-estimate mortality. Mortality may be underestimated, because perhaps only deaths in adults are reported, or only for children above a certain age. Others may over-estimate mortality, in the expectation of getting relief if mortality is high.

Oxfam should investigate potential bias before starting the survey, and aim to minimise this. For example, over-estimating mortality is difficult if the survey team asks the name of the deceased person. Under-estimation

¹⁰ See "Nutrition Matters; People, Food and Famine", for advantages of purposive sampling and sentinel site nutrition monitoring which also depends on purposive sampling.

can be minimised by specifically asking about deaths in different age and sex groups.

Both the Crude Mortality Rate (CMR) and the under 5 mortality rate (U5MR) should be assessed. Essentially the same method is followed as for the nutritional survey, except that if households without under fives are randomly selected, they should be included in the mortality survey, rather than moving straight on to the next household with under fives. There may have been deaths of under fives or adults in households which have no under fives now. So the number of children measured will be the same as for the random cluster nutrition survey, but the number of households seen will be increased.

6.4 Underlying causes

Information on the underlying causes of malnutrition can be collected by the following methods:

- Secondary sources
- Qualitative methods
- Household interviews

Much of the information indicated in section 2, on underlying and basic causes of malnutrition, as well as on seasonality, can be gathered from secondary sources. Indeed, some of the information may be too sensitive to go and ask households or local authorities.

In many countries, Oxfam is in an ideal situation for knowing much of the background information required, because of its existing development programmes. For example, information on the accountability of local institutions can only be gained through long term presence and knowledge of local institutions' past actions. Much of the information need not necessarily be collected by the nutritionist him/herself, but this information needs to be included in the report because it is necessary for the interpretation of the prevalence of malnutrition.

Most countries have local early warning systems, and in countries with a functioning government, the Ministry of Health, and Agriculture, may provide valuable information.

Qualitative methods include¹¹:

- Key informant and focus group interviews; local leaders, women's groups, other NGOs (local and international), representatives of different livelihood systems.
- Drawing seasonal calendars and maps
- Proportional piling.

Try to get key informants from all different livelihood groups identified. A brief description of these qualitative methods is included in Annex 4. Examples of checklists used for interviewing key informants are given in Annex 5.

Do not ask questions again to which you already know the answers from local food security information systems (unless you doubt the reliability of the local information systems).

Proportional piling is a particularly useful exercise to determine changes in people's sources of food. Ask people their sources of food in normal times. You will have to probe to get all sources of food, as most people will not tell you all of them immediately. Then ask how these have changed following the particular shock they have faced (See Annex 6 for an example of results of proportional piling exercises).

Large household surveys are not recommended as they take too much time to analyse. In emergencies, it is important to have information quickly. However, it may be useful to ask some of the mothers of children weighed and measured, information on some key indicators. Try to select a sample at set intervals, e.g. every 5th or 10th mother seen.

For a pastoral population, this could include for example questions on:

- Household size before the disaster

¹¹ See "Food Scarcity and Famine" for more information on qualitative assessment methods

- Absent family members; where are they, why?
- Consumption of: milk, wild foods.
- Sale of firewood/charcoal.
- Source of main staple (own production, market, gift, begging).

This may later provide a useful indication of the proportion of people involved in certain key strategies, and therefore the severity of food insecurity. This could also be investigated using a proportional piling exercise.

7. Analysis

7.1 Anthropometry

Analysis is normally done on the latest available Epi-Info 6.04 software, but if not available can be done by hand. Oxfam reports anthropometric findings as the prevalence of severe and moderate acute malnutrition on the basis of **WFH Z-scores and % of the Median**. WFH Z-scores are used because this is the most reliable statistical measure of malnutrition, and this the nutritional indicator recommended by WHO. Percentage of the median WFH is calculated because this is easily understood and can be done by hand by team members. Also, in most feeding programmes children are admitted on the basis of % WFH, so the prevalence of malnutrition according to % WFH will provide a better estimate of the number that can be anticipated for feeding programmes. **Mean nutritional status** is reported where this provides a useful comparison with other surveys done in the country.

Cut-off points for children:

<i>Classification:</i>	<i>Indicator</i>
Moderate malnutrition	< -2 WFH Z-scores and >-3 Z-scores < 80% WFH and >70% WFH < 12.5 cm MUAC
Severe malnutrition:	<- 3 WFH Z-scores < 70% WFH bilateral pitting oedema. < 11 cm MUAC

Cut-off points for adults:

<i>Classification of chronic underweight categories:</i>	<i>BMI (kg/meters squared)</i>
Grade 3	< 16 (or oedema)
Grade 2	16-16.9
Grade 1	17-18.4
Normal	>18.4

Work out the prevalence of malnutrition in children below <-2 and <-3 Z-scores, and for <70% and <80% WFH, and the confidence intervals to indicate the precision of the estimate obtained. This is done by the Epi Info programme but analysis of the prevalence < 80% WFH and <70% WFH can also be done by hand (for explanation of how to calculate confidence intervals by hand, see pages 84-89 in "Food Scarcity and Famine").

Frequency distribution curves for anthropometric status can be useful, and should be reported where possible. In particular, if a repeat survey is done, the change in frequency distribution curves should be shown, and any shifts interpreted. A frequency distribution curve is a plot of the percentage of children in a number of nutritional status categories. It represents the whole sample. So the percentage of children between -4 and -3.5 Z-scores, between -3.5 and -3 Z-scores, between -3 and -2.5 Z-scores etc, up to the percentage between 3.5 and 4 Z-

scores is worked out. This **must be done using Z-scores**, as percentage weight for height is age dependent. If this is plotted on the same graph as the distribution for the reference population and the previous survey, further conclusions can be drawn about changes in the nutritional situation. An example of a frequency distribution curve is shown in Annex 7.

The age and sex distribution of the population should be analysed to see whether this is abnormal. A low proportion of children in some age group could indicate either a problem with the survey method, or high mortality in one of the age groups. An unusual age distribution can influence your survey results. Except for acute emergencies, the prevalence of malnutrition is generally expected to be higher in the lower age groups. A high prevalence of malnutrition in children above 3, is usually an indicator of acute food insecurity.

A change in the proportion of children in different age groups between surveys, may also be a confounding variable. Similarly, in some countries, mortality may be higher in one of the sex groups.

7.2 Mortality

Calculate mortality rates using the following formula:

- Total the deaths for a given number of days
- Divide the total by the number of days over which the data were gathered – this gives the average number of deaths per day.
- Divide this by the size of the population surveyed at start of survey period.
- Multiply by 10,000 for a daily crude mortality rate.

For example:

In a 2 stage cluster survey, aiming to select 30 clusters of 30 children:

- In total 932 children were seen (measured), in 603 households, which included a population of 3618 in total.
- During the previous 3 months, 52 children died, and 73 adults.

The CMR is:

- 125 in 92 days
- $125/92 = 1.358$ deaths per day
- $1.358/(3618+73+52) = 0.0003628$
- $0.0003628 * 10,000 = 3.628$

The crude mortality rate is 3.62/10,000/day

The under 5 mortality rate is:

- 52 in 92 days
- $52/92 = 0.565$
- $0.565/(932+52) = 0.000574$
- $0.000574*10,000 = 5.741$

The under 5 mortality rate is 5.74/10,000/day

7.3 Determining whether the nutritional situation is unusually severe

The prevalence of malnutrition should be interpreted in relation to what you expect for that time of the year (See e.g. Annex 3). Only this will tell you whether it is unusually severe.

The Refugee Nutrition Information System (of the UN's Sub-Committee on Nutrition) provides the following guidance to interpret anthropometric data:

5-10% wasting (prevalence of acute malnutrition <-2 Z-scores or $<80\%$ WFH) is normal for most African populations.

20% wasting – may indicate a serious problem, but this depends on the context.

For example, 20% malnutrition during the hungry season in a stable, rural population, may not be cause for alarm. However, a prevalence of 20% malnutrition at a time of the year when malnutrition is normally lowest, or in a refugee camp, may well indicate a nutritional crisis.

The risk of dying associated with severe malnutrition is always high, but the risks associated with moderate malnutrition should be interpreted in relation to disease patterns and the risk of exposure to disease. Analyse the risk of dying, from information on disease patterns and the health environment.

For mortality, the following thresholds are used:

CMR of 1/10,000/day, indicates a serious situation

CMR of 2/10,000/day, indicates an emergency out of control.

A CMR of 1/10,000/day is approximately double the “normal” CMR in sub-Saharan Africa.

For under fives these rates should be doubled.

Unusually severe food insecurity is indicated by:

- **A large reduction in people’s major food source** and they are unable to make up the difference through new strategies.
- A large proportion of the population, or group, is using marginal **coping strategies**.
- People are using “coping” strategies that are damaging to their livelihoods in the longer term or incur some other unacceptable cost (such as illegal or immoral acts).

7.4 Recommending appropriate interventions

Recommendations should be directly related to the severity of the nutritional situation, its causes and associated risks. When levels of malnutrition are unusually high, interventions should both aim to alleviate malnutrition and reduce mortality, as well as to address the causes of malnutrition. These could be food related interventions, public health, or interventions that assist caring practices.

When populations experience an unusually severe nutritional situation, and/or their access to food is limited or people have been totally cut off from their normal food supply, the first response is usually to provide a free general food distribution. In such situations, the food ration provided should be based on nutritional requirements. Food needs assessments and general ration planning is covered in detail in the WFP Food and Nutrition Handbook, and the WHO handbook on “The management of nutrition in major emergencies.

Oxfam takes the MSF and WFP recommendations to determine the need for therapeutic and supplementary feeding. The decision making framework is given in Annex 8. Oxfam always promotes the provision of an adequate general ration before considering selective feeding programmes.

Recommendations for interventions to address the causes of malnutrition depends on the nature of the causes. This can include public health as well as food security interventions. Food security interventions could include: market interventions, food or cash for work, agricultural and livestock support, exchanging livestock or other resources for food or cash, or targeted food distributions (See “Food Scarcity and Famine”, “Nutrition Matters” and Food Security Assessments in Emergencies; Oxfam’s Livelihoods Approach for more information). Some examples from Oxfam programmes are given below:

Examples of food security interventions to support livelihoods

Income support programmes	Food for work Cash for Work Distribution of potters wheels and materials for rebuilding kilns. Bamboo poles for basket making households. Livestock off-take – de-stocking. Purchase of surplus food production.
Agricultural support programmes	Distribution of seeds and tools Distribution of tree saplings and fertiliser
Livestock support programmes	Re-stocking Fodder distribution Water for livestock Livestock health Borehole maintenance
Fishing support programmes	Distribution of fishing nets

Often it is difficult to recommend interventions that directly support the social and care environment. It is important to make sure that health and food interventions do not hinder normal caring practices. For example, wet supplementary feeding may take mothers away from home and therefore cannot care for other children. Similarly, if people have to walk 5 days to collect their food ration, the negative effect this may cause on child care, may outweigh the positive effect of the food provided. A food distribution that is implemented through an unaccountable local institution is unlikely to reach the most vulnerable groups.

An analysis of the social and political environment is also necessary to determine how to implement your intervention, in particular in trying to determine who to work with, and how to work with them. Local institutions can include local NGOs, village relief committees, traditional elders, or local government. Particularly in a war environment, it is important to analyse the risk of theft or diversion of relief items.

8. Report writing

8.1 Preliminary reports

Preliminary reports should be written within one week of completing the survey. This can include basic quantitative analysis of anthropometry done by hand, and its interpretation based on the qualitative information collected (See “Food Scarcity and Famine” for guidance on how to analyse anthropometric data by hand).

The only quantitative analysis necessary at this stage is:

- the prevalence of severe and moderate malnutrition, and the confidence interval. Prevalence of malnutrition is based on percentage weight-for-height, and this is calculated using the CDC/WHO/NCHS sex-averaged reference standards on the percentage chart.
- the mean percentage weight-for-height. This will give an indication whether all children are affected, or only the proportion that is malnourished.
- the coverage of the feeding programme. This information is necessary immediately, so that if the coverage is low, this can be improved immediately.

What is important in the preliminary report, is to give an interpretation of the anthropometric results, conclusions on the risks associated with this level of malnutrition, its causes, and to give recommendations.

8.2 Report structure and contents

Summary

The summary should give briefly the objective of the survey, the results, and the main conclusion and recommendation.

Background (Introduction).

Explain why the survey was done.

Background information includes: other surveys conducted in the area, who is working there, early warning information, why nutritional status was thought to be poor, etc, Government alerts, UN appeals etc. Existing interventions.

Include the objectives of doing the survey.

Methods

Describe the methods used, and why these methods were chosen.

Write any methodological problems that you faced when carrying out the survey. Problems may for example be: inaccurate population estimate and therefore sampling frame, one or more of the teams did not record the information correctly, mothers stated that they had more children under five than the ones that were present, empty houses.

Results

Outcome of nutritional stress;

- Anthropometry
- Morbidity

Other quantitative information:

Coverage of food distributions or feeding programmes.

Give the results of the survey in clear tables, with brief comments.

Underlying causes of malnutrition:

- Food security
- Social and care environment

- Health environment (including morbidity and vaccination coverage).

Qualitative findings; describe the findings regarding each of the underlying causes. If you did some household interviews, try to summarise the findings in a table.

Basic causes of malnutrition:

- Human, structural, natural and economic resources
- The political climate
- Formal and non-formal infra-structure in beneficiary and host population
- Population movements.

Describe information obtained from secondary sources and key informants.

Conclusions and recommendations:

Conclude whether you think the situation is unusually severe and why. Are people at risk of dying? Compare with other surveys. What do you expect to happen in the future.

Explain the malnutrition and mortality rate in relation to the underlying causes of malnutrition and mortality.

Take into account mortality and changes in population composition. Are results really comparable to the previous survey, they may not be if there have been significant population movements. Mortality has to be taken into account as this may mask changes in nutritional status.

Comment on coverage of the feeding programme, and give possible explanations.

Then give recommendation based on your analysis above. What can be done to alleviate malnutrition and what can be done to address the underlying causes?

This conclusion should say clearly whether (further) external assistance is needed.

Recommendations on implementation strategies should incorporate consideration of:

- The estimated number of people affected and demographic characteristics
- The social and political structure of the population (and implications for who to work with).
- Special attention to groups at risk
- Access to the affected population
- Security
- Existing policies concerning nutrition
- Local capacity and resources
- Local infra-structure and existing facilities and services
- The possible long term implications and environmental impact of the situation and interventions proposed.

(Note: the contents of the report was taken from the SPHERE minimum nutrition analysis standards).

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Annex 1 - sources of bias in nutrition surveys

Type of bias	Cause
Incomplete Coverage	Inaccurate or out-of-date sampling frame. Large scale population movements; distress migration. Sampling sub-sections of the population; famine camps, feeding centres. Lack of access to part of population because of insecurity or denial of access by local authorities
Clinic bias	Geographical bias towards the more accessible affluent or urban areas. Fluctuating attendance. Selective coverage of the local population. Varying admission criteria.
Age bias	Samples of varying age composition; younger children are more susceptible to wasting, while older children are more susceptible to stunting. All nutritional indices therefore vary according to the age structure of the sample.
Non-random Measurement error	Systematic errors because of faulty weighing equipment or incorrect measuring techniques. Manipulation of data. Inadequate training and supervision. Un-standardized measuring equipment.

Taken from: "Nutrition Matters; People, Food and Famine". By Helen Young and Susanne Jaspars

Annex 2 – Nutrition Survey form

Date: _____

Area _____ Village _____ Cluster _____ Team: _____

Oed = oedema Vac = Measles vaccination Disease: M = malaria D = Diarrhoea C = cough

Child No	HH no	Age (months)	Sex (M/F)	Height (cm)	Weight (kg)	% WFH	<70	70-80	>80	Oed	Vac	Disease	sfp	tfp
1														
2														
3														
4														
5														
6														
7														
8														
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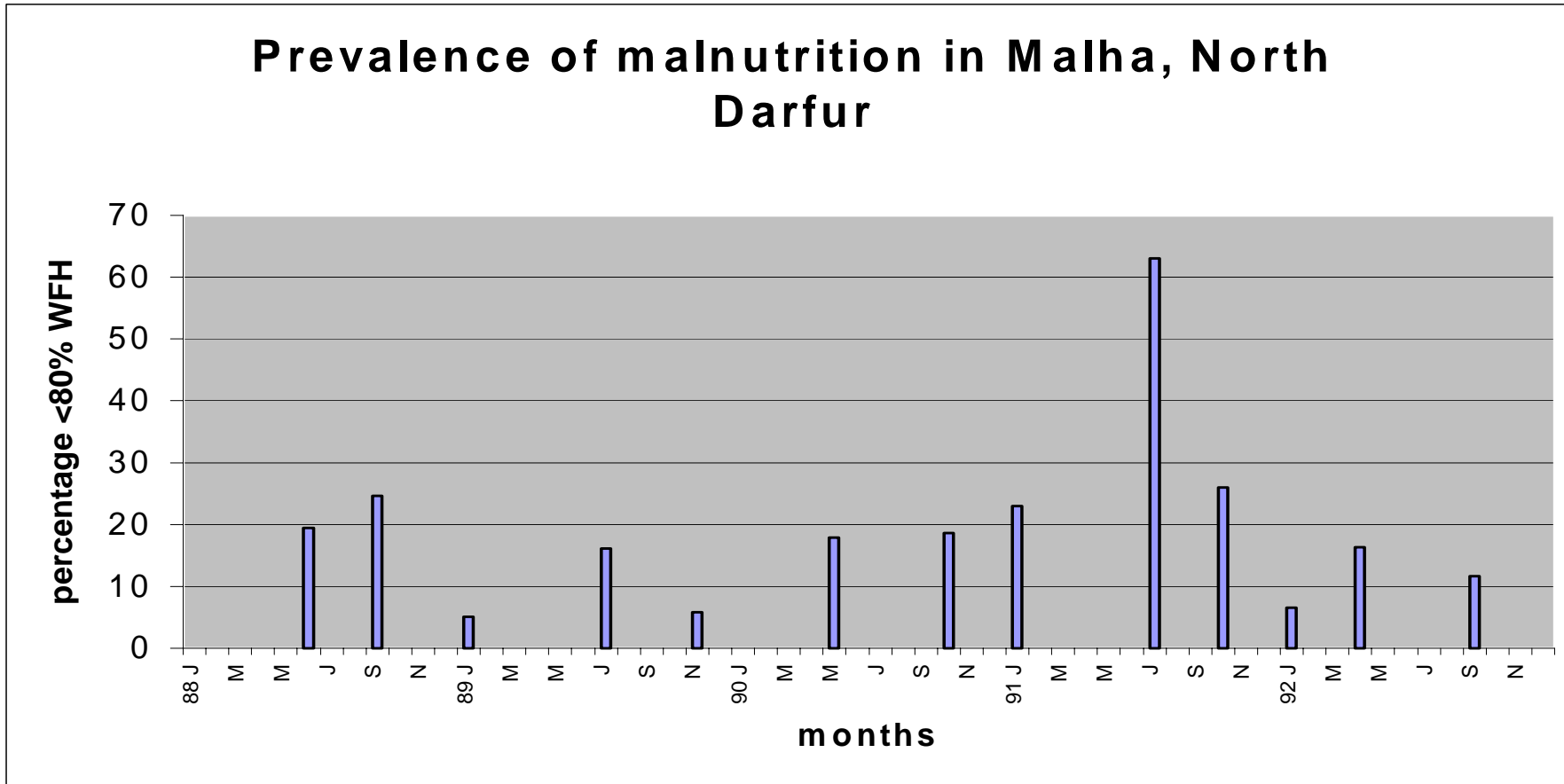
MORTALITY SURVEY FORM Date: _____

Area _____ Village _____ Cluster _____ Team: _____

HH no	People in HH	Under 5's	Total deaths	Under 5 deaths
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
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28				
29				
30				

Annex 3 – An example of seasonal trends in the prevalence of malnutrition.

A pastoral population in Malha, North Darfur, Sudan. 1988-92. In a year when rains were good (e.g. 88/89), the prevalence of malnutrition in January was 5.1%. This had increased to 16.1% in July, which is the normal hungry season. In 1991, the prevalence of malnutrition in January was 23%, indicating a period of severe acute food insecurity, if not famine. By July, the prevalence had increased to 63%.



Annex 4 - selection of rapid appraisal techniques useful in food security assessments

- **Direct observation** of the physical condition of the local surroundings, condition of crops, livestock, the physical appearance of people and their living conditions, the interactions between people etc. This is combined with a walk around the location, specifically seeking out aspects relating to food security (the mill, shops or marketplace, fields) and visits to people in their homes.
- **Semi-structured interviews** with key informants, who are purposively selected individuals, and with individuals preferably away from others. A mental or written checklist of key areas or open-ended questions is prepared in advance. Points of interest not previously considered are followed up.
- **Proportional piling** is used for finding out about the relative importance of different things. In relation to food security it can show the relative importance of different sources of food, and in particular, changes in the relative importance following a certain event. People are asked to first identify their main sources of food or ways of acquiring food. They then select symbols representing these food sources and put them on the ground or table. Against these symbols, they share out a fixed number (usually 100) of beans, beads or stones showing their relative importance, i.e. if there are 50 beans against crop production, this means it accounts for approximately 50% of their source of food. This is done to estimate changes in different sources of food due to a certain event. Differences are then discussed. The point is to show relative differences and large shifts in the importance of different food sources over time.
- **Timelines**, a chronology of events. This is particularly useful in describing events prior to a displacement, or a historical review of periods of famine and food insecurity and people's perceptions of their main features, relative severity and underlying cause. This can give an indication of the relative severity of the current period of food insecurity and differences in cause from previous periods of food insecurity.
- **Seasonal diagramming**, local people can describe the seasonal pattern of factors relating to food security, such as production of different food crops (planting, weeding, harvesting etc), production of different livestock products, labour demands, periods associated with raiding or other attacks. This is very useful in showing seasonal differences in food supply and access to food, and for identifying the 'hungry season', the period of plenty, and whether at a particular time of year the situation can be expected to improve or deteriorate further.
- **Mapping**, local people are asked to draw a rough map of their surroundings, showing things like water sources, religious meeting places, schools, shops, market, fields, areas where livestock are kept, areas accommodating particular social or ethnic groups, new arrivals, areas of restricted access. This is useful in getting an idea of scale, particularly where access is restricted. It is also useful in terms of planning visits/walks around the affected area.
- **Activity profiles**, are descriptions of people's activities throughout the day, and are useful in learning about gender differences and relationships, and the time spent acquiring food.

Annex 5 – Examples of key informant checklists to assess underlying causes of malnutrition

Key informant checklist used to ask additional questions on food security. Used as part of nutritional survey to assess impact of increase in food prices and drought on a pastoral population in Red Sea Hills, Sudan. 1997. These questions were in addition to the indicators collected on a regular basis by Oxfam's community food security information system. This information system gathered information on: rainfall, crop production, pasture, market prices of staple foods and livestock, consumption of wild foods.

INTERVIEWS WITH LEADERS OR OTHER MEN REPRESENTING COMMUNITY

1. In a normal year for an average family in this village what are their main sources of food or income?

List in order of importance.

1. _____

2. _____

3. _____

4. _____

5. _____

If possible ask the men to judge their relative importance i.e. what proportion of total food or income is available from each source.

Use 'proportional piling' if you think its appropriate. Ask them to divide up 100 beans as if it was their income from different sources (e.g. livestock 50 beans; subsistence agriculture 10 beans; charcoal 30 beans; trading mats 10 beans).

2. Which sources have become scarce as a result of the recent food insecurity? What are the reasons for this?

If you have tried proportional piling ask for each source of food or income that is now scarce, by how much it has declined.

3. How are people managing to make up the shortfall?
4. How many whole families have left or come into the area because of stress?
5. Where have they gone or from where have they come?
6. Do you expect more to follow?

Other comments related to the current food insecurity situation.

Key informant checklist for all underlying causes. Used to as part of nutritional survey to assess impact of drought on a pastoral population in Karamoja

District:
County:

Village Name:
Cluster No.:

Sub-County:
Parish:

Name of interviewer:
Date:

1. **Rainfall:**

- Describe the rainfall pattern this year compared with a normal year.
Has it been bad or good?

2. **Crops:**

- Has there been a harvest this year / is a harvest expected?
- On average, how many bags are harvested per household normally?
- How many bags this year per household?
- If there is a change from a normal year, what are the reasons?

3. **Livestock situation:**

- Are livestock kept in this village?
- What is the livestock health situation?
What are the main diseases affecting animals now?
Do households have access to animal health care?
- What is the pasture (grazing) situation for animals now?
- Have livestock been sold during the last month?
Have more been sold than at this time during a normal year? If yes, why?
- How do livestock prices compare now with normal? (Give actual examples)

4. **Other sources of food / income for households:**

- What are other **NORMAL** sources of food / income for households in this village, in addition to food / income gained through crops and livestock?

Have these been affected?

If yes, how?

What are people doing **NOW** to get income / food for the household?

5. **Migration:**

- Have any members of this village migrated in search of work in the last three months?
If yes, how many people?
Where did they go?
Why did they migrate?

6. **Water**

- What is the main source of water for this village?
How far is it?

7. **Health**

- What were the main illnesses affecting households in this village over the past two weeks?
- How far is the nearest health centre?
- Can people get treatment there when they are sick?
If no, give reasons:
- How many people died in this village over the last three months?
Under 5 years:
Above 5 years:
- What were the main causes of death?

Annex 6 – Example of results of a proportional piling exercise to determine shifts in main sources of food. From surveys in Turkana, Kenya, 2000.

Food sources for fisher folk (last column reflects Kataboi only).

Food source	Normal year	Drought before relief	March 2000	October 2000
Fish	35	20	20	17
Animal prod.	25	20	20	0
Purchase	15	20	5	10
Wild food	15	10	5	5
Gifts	10	30	5	0
Relief	0	0	45	68

The drought reduced food sources from fish and animal products and increased the purchase of food and gifts received from better off relatives (the people living along lake Turkana, are in many cases impoverished pastoralists). The impact of relief was to reduce the sale of livestock to buy food and to reduce reliance on relatives.

Food sources for pastoralists (last column reflects Kaaleng only).

Food source	Normal year	Before relief	March 00	October 00
Animal prod	35	10	10	3
Purchase	35	20	10	15
Wild food	15	25	10	2
Kinship	15	45	15	5
Relief	0	0	55	75

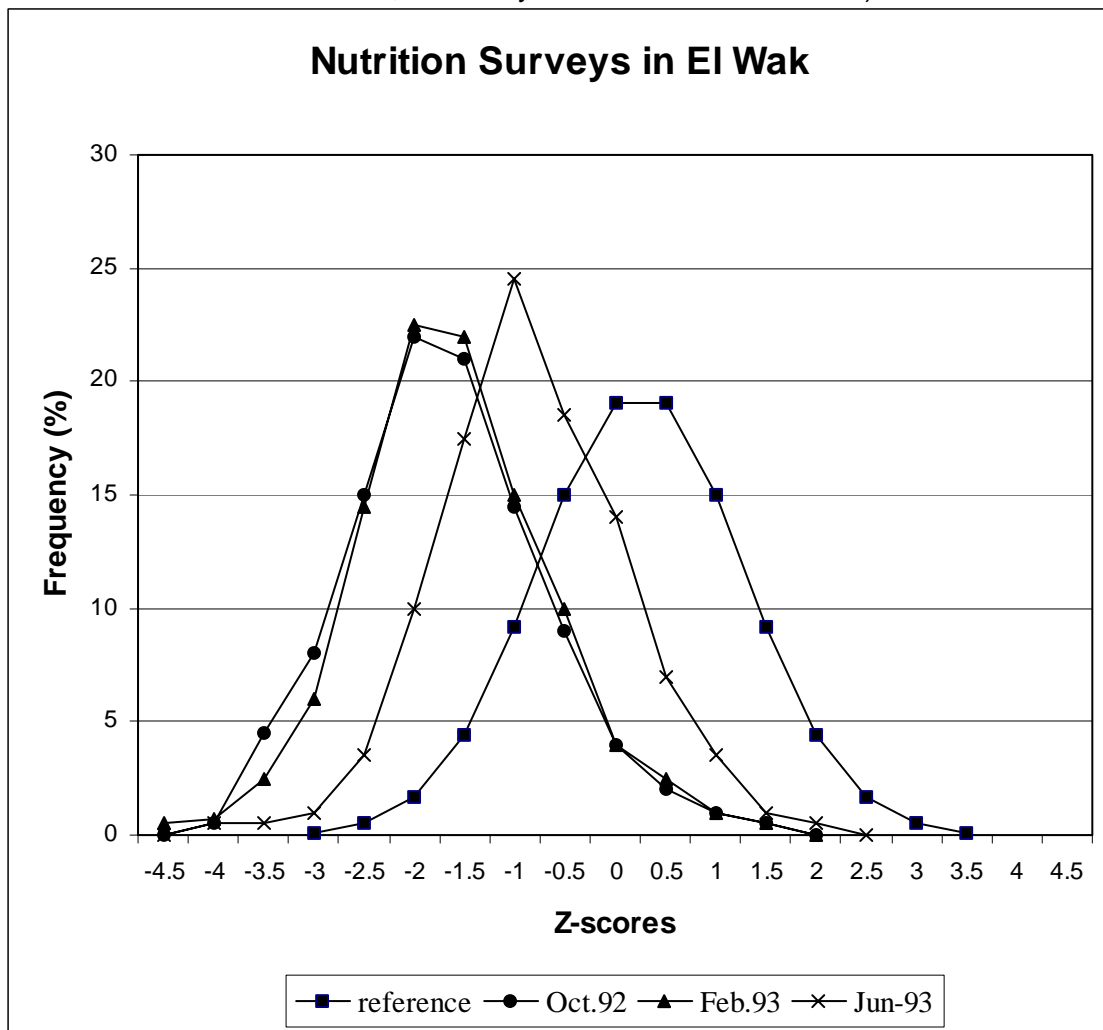
For pastoralists, the drought drastically reduced animal products as a source of food, and also purchase of food. This was because the main herds had moved far from where the women and children were settled. Wild foods and kinship ties provided the main sources of food. Following the start of relief, food purchased decreased further, and reliance on wild foods and kinship decreased (note that food purchase went up for both groups in October, this was as a result of sale of relief food and purchase of other food items).

Annex 7 – Example of frequency distribution curve

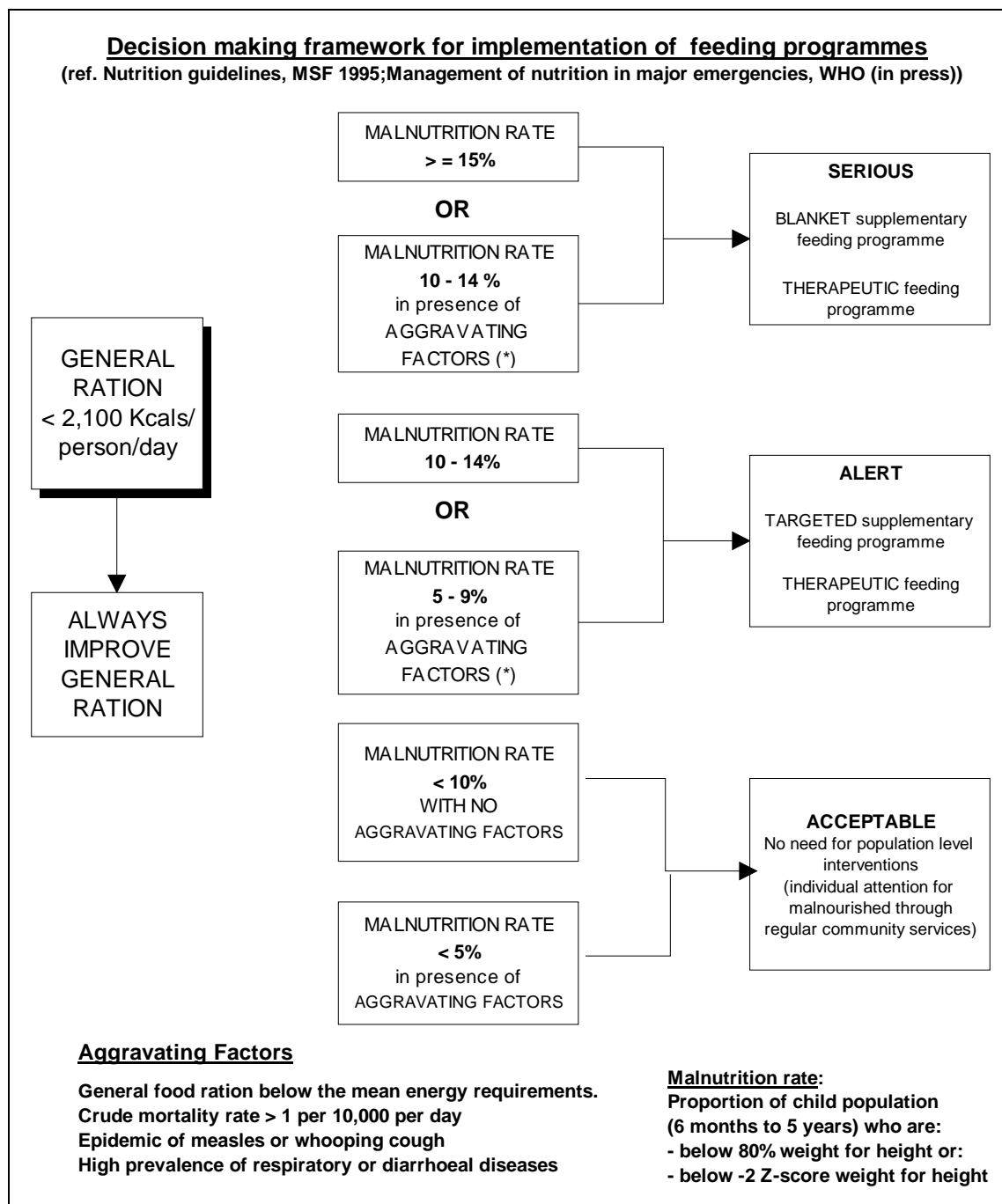
The graph below shows the frequency distribution of the reference population, and of the same a population in EI Wak, Kenya, which was surveyed 3 consecutive times. Between October '92 and February '93, the prevalence of malnutrition decreased from 39.9% to 31.5% (<80% WFH). Severe malnutrition decreased from 13.2% to 3.9%. The frequency distribution curve shows little change, except a proportion of severely malnourished “disappeared”.

Further investigations showed that the most likely reason was that the severely malnourished had died, rather than improved. Between February and June 1993, the frequency distribution shows a true improvement in the nutritional situation. The entire curve for the EI Wak population, has shifted to the right. The prevalence of malnutrition was 10.4% (< 80% WFH) in June 1993.

(Note: the nutritional surveys reported on here were carried out by MSF-B. Susanne Jaspars was UNHCR nutrition coordinator at the time, and analysed the distribution curves).



Annex 8- Decision making framework for the implementation of feeding programmes



UNHCR/WFP Guidelines on Selective Feeding Programme