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Nutritional Assessment Guide

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CONTENT

FOREWORD

Professionals, who are not necessarily nutrition specialists, often have to make decisions or advise decision-makers on the nature, choice, location, target-groups, etc. of interventions aimed at combating malnutrition. They also formulate, or advise on the formulation of, nutrition policies. This guide is aimed primarily at such people.

It is a practical guide on how to proceed in order to appraise the nutritional status of population groups, to select priority areas or groups for action, to assess policy objectives, or to set the basis for nutritional surveillance and for monitoring and evaluation of interventions, using exclusively data which are already existing. The manual explicitly acknowledges that constraints of time, funds, and qualified personnel are facts of life, and it therefore attempts to address itself to the assessment of nutritional status without resorting to the generation of new data through surveys or special studies.

It is a guide, and not a manual, in the sense that it provides a broad approach, illustrated with examples, but it does not instruct precisely how to proceed. It suggests a sequence of steps as being generally the most appropriate, but it allows for a wide margin of adaptation to the diversity of situations and objectives.

The guide can be used for nutritional assessment at the national, regional, district or project level. It can also be used within a given sector, at any one of these levels. While it is not intended for use in very small communities, many aspects of it still will prove applicable to specific village situations.

The guide has a clear operational function : nutritional assessment, as it is understood here, is justified only inasmuch as it is a preliminary step to further action. Therefore the study of the nutritional status of the population or of selected groups for other purposes (such as research, validation of indicators, confirmation of the existence of suspected problems, precise quantification of specific problems, etc.) is not covered by this manual. In other words, a nutritional assessment as seen here is necessarily a step in the planning process and cannot be taken in isolation from neither decisions previously made about eventual action, nor from subsequent steps in the planning cycle.

Because health is the major concern of WHO, this guide addresses itself mainly to the health sector. It has however broader applications, as the authors' experience shows, and it will be useful not only to health workers, but also to officers in the planning ministry or commission, to development programme and project managers, and of course to the nutritionists who advise the former. It can and should be used, in addition, to strengthen the capacity of the users in assessing nutrition and

more generally in understanding more clearly nutrition problems, their causes, their implications, and their possible solutions. It is with the hope that the users of this text, individuals and institutions, will develop in a durable manner their capacity to deal with nutrition and related matters, that the guide has been designed.

In writing this document, the authors drew heavily on their own field experience, as well as on the experience of others who guided them or provided them with suggestions and criticism. The authors are particularly grateful to Alberto Pradilla who, in the mid-seventies, was a pioneer in developing assessment procedures, to Christiane and Jean Dricot d'Ans, to Carlos Montoya, and lastly to the team of the Nutrition Unit at WHO Headquarters, for their substantial contribution to both the concepts and the methodology.

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1. INTRODUCTION

1. General

To make rational decisions regarding the formulation of policies or the choice of interventions for combating or preventing malnutrition, the policy-maker, the planner, the manager, and of course the nutritionist who advises them, need first of all to have a sufficiently precise knowledge of the nutritional situation and of its causes. Such knowledge will be based on statistics, reports, direct observation, expert advice, and if necessary on special surveys.

A common situation (maybe an increasingly common one) is that situation in which decisions must be made within a short time : a rural development project wishes to add nutritional considerations to its activities; a national planning agency requests assistance for including a chapter on nutrition in the forthcoming development plan; a health ministry decides to develop its nutrition activities; a primary health care programme is offered funds to incorporate a strong nutrition component; a financial agency is ready to provide a loan or a grant for nutrition interventions; etc. In such cases an in-depth diagnosis of the nutritional situation is often not possible and, as we shall see, in many instances it is not even necessary. A compromise must then be found between a legitimate respect for accuracy and scientific rigour on the one hand, and the obligation to provide all the relevant answers before the established

deadline, on the other hand. Time being short, and ressources being generally scarce, the nutritional situation has to be assessed rather than studied in great detail.

"Nutritional assessments" have been conducted in recent years in a wide variety of situations, at different levels (nation, region, project area), and by people with extremely diverse backgrounds and experiences. Each of the latter, facing a new situation, had to a large extent to improvise an ad hoc methodology. As a result, needless to say, the range of both relevance and quality of the assessment reports is extremely broad.

The time seems to have come to build on the best among such experiences, to prune out what was learned to be irrelevant, impractical or costly, and to summarize in one practical document the present state of the art in assessing the nutritional situation of population groups through using existing data.

The context in which the assessment will have to be performed is sometimes extremely limited. The nature and type of the assessment will vary, according to such factors as the objectives of the assessment, the amount and reliability of the existing information, the ressources available (mainly funds and time of qualified personnel), and the length of time given to complete it.

The purpose of the guide, therefore, is basically to assist the decision maker and his advisors in rationalizing the gathering and interpretation of nutritional and associated information. More specifically it provides a methodology to (1) more objectively select the data to be used, (2) give a global view of nutritional and related problems, (3) organize the work in a practical way, (4) utilize the information more efficiently and, (5) identify the mutual responsibilities of each sector or institution involved in the assessment process.

2. Introducing the Guide

The guide is intended for use by people such as :

- Policy makers and planners in central government : planning offices or ministries; planners in ministries of health, agriculture, education, rural development, social welfare, etc.; national food and nutrition councils; etc.
- Nutritionists at the central or regional level
- Programme planners and managers at the regional level as well as planners and managers of projects, such as health projects or rural development projects (including on-going programmes and projects)
- Officers in international and bilateral agencies, private and public, who may be invited to advise or assist the former.

The guide is to be used for assessing the nutritional situation of population groups, not of individuals or single families. "Population groups" is understood here very broadly. It can be the total population of a nation, a region or a province; a given stratum, defined by age, occupation, socio-economic status or other criteria; the expected beneficiaries of a project; a group of villages; a borough in a city, etc. The level of application of the guide, therefore, can be either national (global or sectoral), or regional, or local.

A nutritional assessment has a clear operational function. It is justified only inasmuch as it is a preliminary step to further action. Its objectives therefore ought to be precisely defined at onset. Such objectives can be, for example :

- Selecting priority areas or groups for action
- Formulation or analysis of the objectives of a nutrition policy (or of the nutritional component of a development or sectoral policy)
- Contribution to selecting interventions or major project components
- Setting the basis for surveillance, monitoring and/or evaluation
- Information of policy-makers, politicians and public opinion in order to motivate them (the assessment as an "eye-opener")

deciding whether to undertake a survey, and in that case with what purpose and of what kind

The assessment is, of necessity, performed with a given purpose : it is intentional. In that sense it is quite different from surveys or studies which just collect data ("fishing" information) or are performed as part of a research.

By definition, the kind of assessment for which the present guide is proposed, is generally conducted with severe constraints of ressources, available time of qualified personnel, and a very short period of time to complete it. It has to rely mainly, or even exclusively, on existing data. The latter can be readily available (published statistics or survey reports, articles and studies, books, etc.), or they may require a certain degree of "hunting", i.e. of active search in government offices, in forgotten files, in the regional offices, etc. Such data, as well as the information that can be derived from them, need to be complemented by information collected by listening to the people (the usefulness of the latter for this kind of assessment is easily being overlooked). Existing data may be of poor quality, not representative, and often not complete. There are even cases where part of the needed data do not exist at all. In such cases, however, it is still possible to reach a decision. As said before, the assessment will have to be a compromise between quality and accuracy vs. speed and relevance. There is therefore, in any assessment, a strong component of judgment on the part of the authors, and therefore of subjectivity. Subjectivity is not desirable, but

it is inevitable. It should be reduced to the minimum, and all possible efforts should be made to make value judgments and assumptions clear. This, as we shall see, is why the preparatory phase to the assessment is of so capital importance.

3. Brief Historical Account

The first studies of nutritional status and of food intake in developing countries were conducted before the Second World War. But it is only after the war, in the 50's and the 60's that the first large and comprehensive nutrition surveys appeared. During that period a considerable amount of work was done to study the nutritional problems of the people who lived in the Third World.

At the end of the sixties, however, the serious limitations and drawbacks of the large surveys became progressively to be realized. In the first place they were expensive and time-consuming, and they tended to divert qualified people's time and energy away from finding solutions to the problem. The results were generally available only after considerable delay, often years after the field work had been completed, and much of the information that was collected was never fully analyzed. The patterns became repetitive : it was shown again and again that malnutrition was associated with poverty. The same major causal factors were found to be present almost everywhere, without however disclosing clearly the mechanisms that lead to malnutrition. But basically, with respect to our purpose here, such

surveys did not prove very useful neither when corrective or preventive action was being envisaged, nor in planning.

Since the early 70's - maybe even the late 60's - a new and more pragmatic approach has evolved, basically as a response to short-term concerns of governments and funding agencies (international or bilateral, most particularly the USAID and the World Bank). Sophisticated and time-consuming surveys would give way to less precise, but also less costly and much quicker procedures for "assessing" the nutritional situation, its causes, and its trends. In addition it was felt that such assessments were to be designed in such a way as to quickly identify priority areas and priority groups (on which eventually a more in-depth diagnosis would be performed, if necessary).

Dozens of nutritional assessments of whole nations (or states or provinces) have been performed during the last 10-15 years by governments of developing countries- generally assisted by WHO, FAO or other UN agencies, by USAID, by the World Bank, or in a few cases by the governments of industrialized countries. The overwhelming majority of the assessments of this kind were produced over a short period of time (a few months for most of them) imposed generally by the budgetary cycle of the funding institution. Although the documents which were produced as output of the assessment exercises are not easily accessible, and although those who are available vary considerably in length, in presentation, in quality, or in focus, they possess a few common

features which strike the reviewer :

- They do not obey to any standardized method, but reflect a pragmatic approach improvised, partly at least, by the person or the team in charge of the assessment (Some agencies do provide guidelines which are more or less followed).

- Authors are sometimes nutritionists, more commonly economists, a few calling themselves "nutrition planners". They belong to governments, or UN agencies, or they are programme officers in funding agencies or consultants. The range of competence, of ideology, or of previous experience in the same country, is extremely wide.

- Reports reflect a widespread tendency to put all the information that could be assembled during the short assessment period, without clear criteria of selection, as if quantity would compensate for quality or relevance. As a result many reports are lengthy and heavy, and the needed information is sometimes diluted in a wealth of largely irrelevant data.

- Consistency between a) the information which is presented and discussed, b) the conclusions put forward, and c) the proposals for action, is often not total, as one would expect, or at least it is not satisfactory.

- Presumably because the authors do not use a manual, or because the existing manuals are too mechanical and not enough conceptual, many authors do not make their basic assumptions clear.

existing manuals, whenever they could be consulted, seem to describe more the stepwise procedures, including pitfalls, than to explain to the reader the rationale behind the method or the concepts on which it is based. As a result, one often observes difficulties in interpreting, as well as misunderstanding of some the major implications of the assessment's conclusions. If the reader is a government authority with Power of decision, the outcome may be unfortunate for the project indeed !

- There is an almost universal lack of appreciation that a nutritional diagnosis cannot be independant from the ideology of its authors and its users. This essential point is discussed in greater detail below. It seems to these writers that here is one of the reasons why quite a number of assessments seem to miss the real problem; to provide an unintentionally distorted picture; or to suggest weakly relevant - not to say irrelevant - solutions.

It must be added that the few existing manuals or guidelines used by authors of assessment are not easily accessible - and in the case of the World Bank it is kept confidential for reasons unknown to the writers. Similarly the access to assessment reports is difficult : one needs first to know that such document exists, few copies are circulating because few are printed, and in some cases the government prefers to classify the report. Under such circumstances there seems to be a good case in favour of publishing a practical guide on how to conduct a nutritional assessment, hence a justification for the present attempt.

4. Basic Assumptions

When designing the guide, a number of assumptions were made which need to be clearly spelled out in order to avoid misuse of the instructions, to permit the maximum degree of rationalization in the planning and implementation of the assessment, and to dispel possible misunderstandings related to the use of the guide. The underlying assumptions made explicit below refer to both concepts and methods.

4.1. Conceptual Assumptions

It has been repeatedly shown in the literature that malnutrition is caused by the combined action of such factors as low income, illiteracy, unhealthy environment, unsatisfactory health services, inadequate food habits, low agricultural productivity, etc., and that all those factors are affecting each other in a manner which differs widely from one situation to another. It is also clear, from the observation of countries where nutrition has indeed improved, as well as from the results, good or bad, of intervention programmes, that correcting any one of those factors in isolation is not going to have any significantly favourable impact on nutrition. Merely raising income, for example, or providing clean water, or raising agriculture output are generally not enough to improve nutrition.

The therefore well-established fact that malnutrition is due to a multiplicity of causes, and that its solution will necessarily come from action in a variety of sectors, is the basis

for a few conceptual assumptions which are essential for understanding the approach defended in this guide.

(1) The health sector (or, for that matter, any sector) is not going to solve alone the nutritional problems of the population

But the health sector definitely has a role to play in such solution. Furthermore the improvement of the nutritional status is not the only purpose of the health sector, and most of the time it is not even one of its major purposes. Good nutrition is one among other objectives, and its priority varies between places. The health services will play their role, small or big (sometimes big in terms of the activities performed), and the sector as such will encourage and push the other sectors to do their part.

(2) Causal analysis is of utmost importance as a prerequisite to any decision making

A thorough understanding of the causes of, and of the mechanisms leading to, malnutrition is a prerequisite to the choice of relevant interventions and, as far as we are concerned here, to the selection of the information needed to conduct a meaningful nutritional assessment. The assumption adopted here is that the analysis of causes and mechanisms needs to be performed in depth, intersectorally, and prior to data collecting.

Experience shows that merely establishing an association between malnutrition and causal factors such as income, education

geographical location, etc. is not enough to provide an explanation which would have practical implications. A much deeper understanding is necessary, which should be the result of a joint effort in which the major interested sectors would participate (such as agriculture, health, education, rural development, social affairs, etc., depending upon the circumstances). Furthermore such causal analysis should be completed prior to data collection. It is indeed impossible to determine the relevance of an indicator (or the suitability of an intervention) without formulating hypotheses linking logically the indicator or the intervention to the nutritional situation of the group under consideration.

The fact the causal analysis is performed before the data are selected, and not the reverse order, is a departure from the quite common practice of collecting as much information as possible first, and then attempting to provide an explanation for the observed facts. The importance of the formulation of causal hypotheses at an early stage will appear more clearly as the methodology is presented and discussed in Parts II and III.

The building of a hypothetical causal model adapted to each situation is suggested as one of the possible methods of satisfying this fundamental and often neglected assumption. The term "model" is used here in the sense of a "simplified representation of a system or a process", and by no means as an example to be followed (some people would prefer an alternative term

such as conceptual framework or analytical diagram). Regardless of the name it receives or the formalisation it is given, the hypothetical causal model is nothing more than an orderly set of causal hypotheses which are linked together in a rational, hierachized manner. There is a specific model for each situation, and therefore a new model should be built for each assessment. The model has nothing definitive about it : after data have been collected and analyzed not all hypotheses will be confirmed, and new ones may be formulated. In such cases the model - or rather the results of the causal analysis - may have to be amended. Formulation of causal hypotheses is an iterative process that has to be adapted as new information become available, or when the situation is changed as a result of interventions.

The advantages of the causal approach, from a conceptual view point are;(1) it provides a coherent explanation of a complex phenomenon (even if some of the causal relationships are only hypotheses), and (2) it gives a global view of nutrition and its determinants.

But it also has considerable practical advantages, such as rationalisation of the choice of indicators and of interventions, helping in the analysis and interpretation, guiding the distribution of tasks, and fostering a common understanding among participants from widely diverse horizonts.

(3) Globality does not mean totality

Even if the causal analysis is comprehensive, and includes consideration of factors well beyond the scope of the sector, or the size of the project, or the intentions of the planning in process, this does not at all imply that data should be collected about all factors, or that action should be designed to combat all causes. The view must be broad, encompass as much as possible the context, but then focus on what is feasible and effective, i.e. in our case, focus on those relevant data which can be assembled, given the constraints.

(4) A nutritional assessment is not independant from the ideology of its authors and its users

Malnutrition cannot be viewed separately from a context which is largely determined by cultural factors, type of social organization, distribution of power, and dominant values among those who hold the power. The same statistical figures and the same survey results will lead to different courses of action, hence to different problem formulations, in different contexts. This appears clearly during the building of the causal model. The choice of chains which are considered to be the most important ones, the discarding of others, and the depth into which the analysis is allowed to dig, reflect the political context and the values of the participants. Similarly the final selection of the areas of the model which are going to be analyzed, i.e. the choice of the variables that will be collected will

influence the interpretation, hence the type of action eventually taken.

4.2. Methodological Assumptions

(1) The objectives of the assessment must be clearly defined at start

The assessment is justified only inasmuch as it is a preliminary step to further action. Its objectives can vary widely, as we saw in the Introduction (section 2). Experience shows that, as preliminary data are being assembled and a reconnoissance of the situation is being performed, or as discussions are held with decision-makers and representatives of different sectors, the initial objectives sometimes have to be amended. In a few cases they even have to be markedly changed. The more precise and clear they are to all parties involved, and the easier the joint work will prove to be.

(2) An assessment is not only collecting data and describing a situation. It is also an explanation, and a identification of trends

It is not enough just to describe : an explanation needs to be provided, from which solutions could be found. Such an explanation must be consistent and it must take into account the evolution of the situation over time.

The implications, for the assessment, are three :

(a) The data to be collected (and the indicators to be used) will relate not only to the nutritional state, but also to its causes

(b) The causes of malnutrition need to be analyzed, both for providing an explanation and for identifying the major determinants

(c) Trends should be identified : a dynamic, not a static image of the nutritional situation and its causes should be provided, i.e. a film rather than a snapshot.

This last point stresses the importance of collecting retrospective data and time series. It is of particular importance for the pronostic aspect of the assessment (What is likely to happen if things continue as they do ?).

(3) Time and money constraints restrict the choice of data to be collected to the minimum which is possible

The data to be collected and used must be kept to a strict minimum, i.e. be limited to data that are clearly relevant (and to such data only). The implications are :

(a) That the assessment will have to rely mainly or exclusively on existing data

(b) That the relevance of each information must be assessed, hence the importance of the causal analysis (performed prior to data gathering, as mentioned earlier).

(4) Maximum use of existing data is the rule : large surveys are often unnecessary

Large surveys are costly and time-consuming; they tend to divert resources (particularly qualified manpower) away from more relevant tasks; the data they provide may be partly obsolete at the time they are published; and often such data are not relevant

On the other hand there are, almost everywhere, as a rule, existing but underutilized information which is relevant for a nutritional assessment. There is no country anymore without information (although such information may be difficult to reach - but that is another problem). Surveys have been conducted almost everywhere and are, of course, a primary source of information. But, as experience shows, a thorough "hunting" of properly selected existing information allows in many cases to meet the assessment objectives in a more cost-effective manner.

(5) Construction of a causal model as a key component of the assessment procedure

The building up of a causal model of malnutrition in the particular situation under consideration, for which simple and readily applicable methods are available - (see Annex I) is an essential step, for two reasons :

- it gives a global (holistic) view
- it helps substantially in the choice and interpretation of the data. More particularly, the use of such a model
  - discriminates relevant from non-relevant data, therefore eliminates useless data, and saves time in collecting and processing
  - guides and facilitates analysis and interpretation of the data, hence accelerates the availability of the data and makes interpretation clearer
  - assists in distributing tasks
  - can be adapted to a wide variety of situations and levels
  - facilitates interdisciplinary work and as such serves as a working methodology which can be pursued even after the assessment is completed.

(6) Importance of disaggregating the data

Aggregate data often do not adequately reflect reality, and even distort the picture. The authors of the assessment should therefore make the assumption that malnutrition and its factors are distributed in a very heterogenous manner, according to factors such as :

- region, geographical location, urban versus rural
- socio-economic, ethnic or occupational categories
- age groups, etc.

The data will be disaggregated according to one or more of such criteria, depending on the needs - they can always easily be reaggregated later if it appears there was no need for disaggregation, or if overdisaggregation leads to empty cells or very small cells.

(7) A nutritional assessment is the responsibility of an interdisciplinary team

And not of one or two individuals, even if they are specialists. The team should include members of various disciplines and representatives from each of the main sectors involved in present or future nutrition-related work.

This basic methodological assumption rests on two observations. The first is that the causes of malnutrition, being multiple and complex, cannot be fully understood by one individual, at least when time is short. Hence the need to share a common understanding, deeper in some respects for one team member, and in other aspects for another. Secondly, the action which will eventually be taken, will be multisectoral, i.e. will involve two or more sectors. Even in the case it would be unisectoral, it still will have to be taken within a global context that needs to be clearly understood by the authors of the assessment as well as by the decision-makers and the implementors.

(8) Decisions will have to be made in all cases

Even if data are not valid, or their validity is not known, decisions will be made. A certain degree of subjectivity is inevitable since judgment will have in part to replace facts. It is better to make a decision based on the personal opinion of a multidisciplinary team than on unreliable data. In other words it is essential that the reliability and validity of the data be explicitly analyzed and appraised. Since the reader of the assessment report will almost never have direct access to the primary sources of information, the assessment authors must make a judgment on the representativeness, reliability and quality of the information they use, and inform the reader in the assessment document itself.

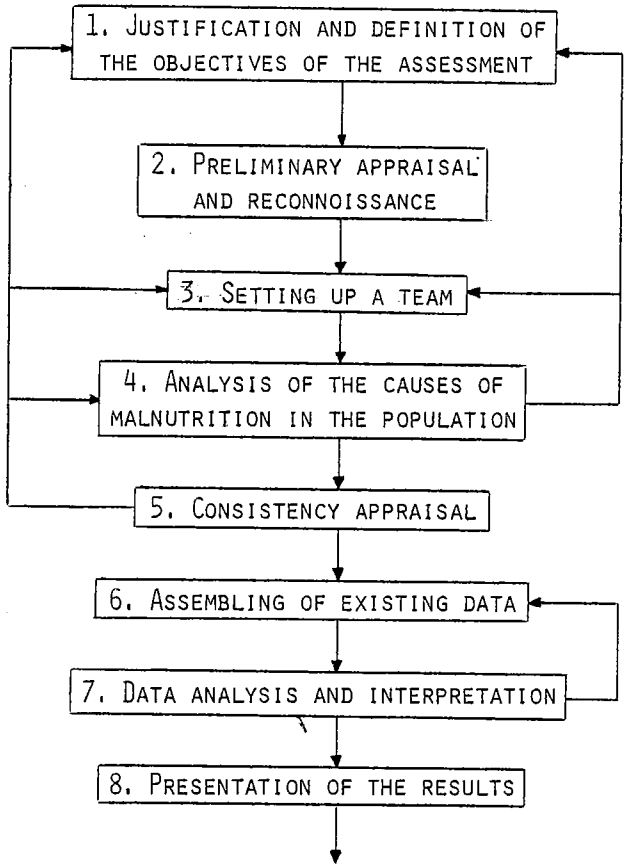
II. STEPS TO BE FOLLOWED

The reader (government officer, planner, nutrition advisor, etc.) takes - or is given - the responsibility of conducting a nutritional assessment, or of assisting in such an assessment. How does he proceed ?

The proposed procedure, which should be taken neither strictly nor literally, is divided in eight steps, represented in the flow diagram in Figure no. 1. Although the eight steps are listed

FIGURE 1

FLOW DIAGRAM OF THE STEPS TO BE FOLLOWED IN CONDUCTING A NUTRITIONAL ASSESSMENT



in a sequence, the process is actually more iterative and circular than linear. Step 6 for example (data gathering) can only be performed after all previous steps have been completed, if necessary repeated, and made totally consistent with each other. Such consistency, in turn, may require the assessment team coming back on earlier steps : for instance the causal analysis (step 4) may lead to changing the composition of the team, or to redefining the objectives. Similarly, the analysis and interpretation of the results (step 7) may indicate the need for new data, or for other kinds of analysis. The major loops which are encountered in practice are indicated on the flow diagram of Figure 1.

In addition, the division of the whole procedure in eight steps is acknowledged as being arbitrary. Some may prefer a breakdown in more steps, other would group steps in a fewer number, in order to emphasize the iterative links between the arbitrarily selected steps. Each operator should adapt the sequence to his own perception and logics. The present proposal is reasonable and has proven useful : it does not claim to be the best.

Step 1. Justification and definition of the assessment's objectives

The rationale scope, and precise objectives of the assessment need to be clearly defined, and preferably put in writing, so as to avoid any misunderstanding with the sponsors, within the assessment team, or with the future providers of data.

The first aspect to be considered is the justification of the assessment. The people in charge of conducting the assessment

need to know the background, i.e. the reasons why it was decided to make an assessment and who decided it (government, local authority or community, lending or granting agency, international organisation, etc.). They also need to know what decisions will be affected by the assessment's findings, who is going to use the results and in which manner, at what level the assessment is going to be performed (national, regional, provincial, project), and which is the population and/or area to be covered.

The answers to the majority of such questions are generally ready at the time the assessment procedure starts : most decisions about the assessment have already been made. Still such decisions and their implications must be clear, and to that effect it will often be necessary to put a few additional questions, and to get answers through interviews, meetings, active search for opinions and reliable information on such points.

The level and scope of the assessment are other aspects about which decisions should have been made prior to initiating the assessment, as well as a general idea of the resources available to perform it, the persons and institutions in charge, the time available, and the additional funds that will be needed. Institutional arrangements, potential conflicts of competence, gross distribution of responsibilities, also deserve consideration at this stage. The existance of - or need for, written agreements (particularly when funding comes from specialized national or external agencies) need to be ascertained.

A first and general overview of the kind and source of information that will be required is another part of this preliminary step. Is there free access to such information ? Is there any limitation in its use ? Are the institutions expected to sincerely collaborate in supplying data ?

Ideally, the precise objectives of the assessment should have been formulated when the decision to make the assessment was taken. Experience shows that this is not always the case. It does indeed happen that the policy-making level would request an assessment, the relevance of which is not immediately clear. Such situations obviously create a difficult problem for the technical level. The role of the latter will then be to try to assume as best as it can what the underlying interest of the policy-making level probably is, assess the degree of political interest there is in the assessment, and attempt to formulate precise objectives consistent with the policy-makers ill-expressed wishes. Let us not forget, however, that the assessment is sometimes initiated with a motivating purpose, i.e. as an "eye opener", and without any specific goal other than information.

A final consideration in this first step is a synthetical appraisal of the feasibility of the assessment and the identification of the major predictable constraints. (See Part III, section 2 : common constraints).

With such elements of information, the assessment maker will now move into a preliminary appraisal of the nutritional situation

and reconnoissance, in order to select the team and start designing the plan of work.

Step 2. Preliminary appraisal and reconnoissance

This is a brief but essential step, in which the technical elements needed for organizing the assessment and setting up a team, are assembled. It includes a quick review of articles, books, and reports on the nutritional problems in the country or area, interviews of supposedly knowledgeable persons, and a short reconnoissance of the area(s). Questions to be answered refer to:

a) The nature and extent of the nutritional problem : - How does one know there is malnutrition ? On what kind of information is such knowledge based (reports, data, opinion of informed people)? How reliable is such information ? What are the possible biases ?

b) The target group that comes into consideration, the kind of action, if any, which is envisaged by the policy makers, the kind of improvement which would seem to be desirable.

c) The causes of the problem, its most probable explanations, the evidence on which such explanations is based.

d) The perception of the problem by technical people, by public opinion, and by the population concerned.

e) The programmes already undertaken, and whether they are still going on or are abandoned.

The reconnoissance, i.e. a quick visit to selected sites and institutions, is a part of this step. It is indispensable to provide the person(s) in charge of the assessment with an insight in, or a "feel" for the problem; with an idea of whether data

exist and of the manner in which they are collected at the periphery; and with an appraisal of their reliability.

At the end of this step 2, it will sometimes be necessary to reevaluate the objectives of the assessment, and in some cases even renegociate them with the sponsoring agency or ministry. In any case, complete agreement must exist on the terms of reference of the assessment team before the latter is assembled.

Step 3. Setting up of a team

Individuals and institutions which should participate in the assessment were identified during step 1 and 2. The assessment team can now be assembled. From this moment on, the responsibility of conducting the assessment becomes a collective one, to be taken by the team. Except for the data gathering and the initial analysis of the data, for which the work will be distributed among the team members, all subsequent steps are implemented by the whole team working together.

The team should be small and made of a few permanent members, i.e. participants who are present throughout the assessment. They do not necessarily need all to work full-time on the assessment, but ought to be sufficiently free from their routine obligations to meet almost daily. If the core group does not have this flexibility, it might be impossible to meet the deadline.

If the amount of work requires the involvement of a larger number of people, the latter should report their findings and

[illegible] to the small core team. Commissions on special topics, or within determined sectors, will often have to be created on an *ad hoc* basis, but they all will report to the small central management group.

The assessment team will be made of :

(1) Technical representatives of the major sectors which are (or will be) involved : almost always health and agriculture workers, most often economists, planners, social scientists, educators, geographers, statisticians, etc.

(2) Local staff, particularly in the case of regional or project level assessment : people who are or will be implementing the project, or people with equivalent qualification *and* general knowledge of the local situation

(3) Whenever possible, representatives of the beneficiaries of any course of action under consideration. This will apply mainly to assessments conducted at the local level (project, village or groups of villages) and the regional level. It does apply to the national level only when local people are represented at the center, as for example by mass organizations in socialist countries.

The contribution of specialists (national or international) who are not full-time members of the team, must be defined. In some cases they will have to be paid a honorarium, in other cases permission should be requested from their organization. In any case the timing and nature of their participation should be

specified, as well as their relationship with the assessment team and team coordinator.

Step 4. Analysis of the causes of malnutrition in the population

The purpose of this essential - and often neglected step, is to understand the mechanisms that lead to malnutrition in the groups identified as probable targets, in order to :

- identify the major "determinants" (factors which play a causal role) of malnutrition
- select relevant information, i.e. the minimum amount and type of information needed
- identify links in the causal chains leading to malnutrition against which, hopefully, action can be taken
- distribute tasks among the team members
- insure cohesion of the team, and
- facilitate analysis and interpretation.

Experience shows that in any multidisciplinary group of workers who are knowledgeable about the development problems of their country or area of activity, there is generally a good broad understanding of the main causes of malnutrition, and that in most cases this understanding is sufficient for implementing step no. 4 without major difficulty.

Step no. 4 is itself divided into six substeps, preferably to be followed in the suggested sequence :

4.1. Identification and characterization of each target group

The target groups have generally been identified earlier. This stage consists in defining them clearly, i.e. in providing their major characteristics. Examples : rural children 6 months - 5 years; pregnant women from low-income groups; primary school children; families of landless labourers; preschool children from slums areas; etc.

4.2. Construction of a simple and functional hypothetical causal model of malnutrition (insist on simplicity)

This is a crucial step, since it will determine the whole rationale behind the choice of data and their eventual interpretation. It also is, generally, the step that most often deters a number of people who have not yet gone through a model-building exercise : they may be afraid by the word "model", or be unwilling to go through what is viewed as a straining mental effort, or simply they are skeptical about the usefulness of an apparently overcomplicated procedure. Such an impression must be squarely dispelled since it does not stand the experience. Simplicity, however, is the rule, and since the assessment is often performed in a limited context, too big models or unbalanced models are to be avoided.

The technique for constructing a causal model is described in detail in Annex no. I.

4.3. From the model, identification of the indicators which are both relevant and feasible to collect, with their desired characteristics, and identification of sources of data and of institutions responsible to provide the data

The procedure to be followed is described in Annex no.II, A table, in this same Annex presents a selection of commonly used indicators.

Notes :

a) The comparative value of indicators is an important aspect : an indicator may not be very good by itself, but may prove useful if it allows to compare groups or regions, or to build trends, particularly if it has practical and operational use, and if other indicators go the same way

b) The importance of health sector indicators will be determined by the model. Other indicators also must be well selected. The degree of detail will be determined by the model, the purpose of the assessment, the time available, etc.

c) Similarly, a certain amount of administrative, operational and institutional indicators may have to be collected

d) Remember that cost and time-constraints require that only a minimum number of indicators have to be utilized.

The outcome of this step should be an inventory of

- data available, with source and institution
- data that are likely to become available through further

analysis, interviews, questionnaires, punctual surveys, field visits, visits to institutions, etc. (See Part III, Section 4. Existing data vs. new data).

4.4. Identification of special studies that may be needed to complete the data and can be conducted with available ressources within the permitted time-span

The need for special studies on a specific topic, problem or category of people will sometimes be justified. In view of the time they usually take, and of the risk of diverting competent personnel from the main assessment task, such studies should be kept to a minimum, and undertaken only if their results are deemed indispensable for meeting the operational objectives of the assessment. Better be too conservative than overly generous in approving such studies.

4.5. Designing of a plan for data analysis and interpretation, based on the model

The model is a convenient guide for organizing the analysis : it points to key associations, and by simply following "upstream" the major causal chains, one can easily summarize the major findings. A tentative format for analysis and presentation can be established before data collection starts. The collecting - or gathering - of data is made easier when one already has in mind a preliminary scheme for analyzing them.

4.6. Distribution of tasks

Tasks will now be distributed among the members of the assessment team (among which, hopefully, there will be representatives of the people). The tasks to be performed are both data gathering (including visits, interviews, application of questionnaires, etc.) and initial processing of the same. The model will prove helpful in the sense that broad areas in the model will clearly come under the responsibility of one sector or institution (see the graphic example in Annex II). More specifically, the outcome of the previous sub-step should have identified the sources, and therefore suggested who would be expected to collect what information.

When the assessment is sizeable, involving a great number of people and institutions, it will be useful to appoint individuals with specific responsibilities of data collecting and/or analysing (hopefully full-time), and get formalization of such appointments by the authority.

The role of outsiders, i.e. specialists not belonging to the team, consultants, ad hoc subgroups created to assemble or interpret part of the data, field staff, communities themselves, need to be defined at this stage.

Step 5. Consistency appraisal

Although this step is listed as the last one, prior to the actual collecting of data, consistency should be checked all along the implementation of steps 1 through 4, and reappraised at the end. After completing step no. 4, the team will therefore go back to steps 1 through 4, and insure consistency between the first four steps. Some or all of the steps may have to be modified.

For example, the justification or the objectives of the assessment may need to be reformulated. But in such case, steps 2 through 4 should be made consistent with the newly expressed objectives, and therefore amended. The situation may have to be reappraised; changes in, or additions to, the team may be needed.

Similarly improvements may be required in the causal model; or the target group may be defined differently.

Two optional components of this step 5 ought to be considered, because of their usefulness in the authors' practical experience :

- a new discussion of the assessment's objectives. This is by now easier, after model building and choice of indicators. Also the relevance of the whole exercise appears more clearly, and participants in the next phase, data assembling, see more clearly their role
- a preliminary and rather superficial exchange of views on major entry points for interventions aimed at breaking some of the causal chains. In other words a preliminary consideration of potentially relevant interventions. The benefit are the same as those mentioned in the preceding paragraph.

Experience shows that such discussions, even if taken informally, help each participant understand better where the assessment is aiming at, sees the usefulness of his (her) own participation, and works more efficiently and with greater satisfaction.

Step 6. Assembling of existing data

This step consists more in gathering data than in data collection, since basically existing information is going to be used. Actually data hunting will prove to be a more appropriate term in a number of situations.

The type and sources of data to be assembled and the institutions responsible for providing the data were identified at the outcome of step 4. However, as already stressed, this new phase can only be approached after completing steps 1 through 4, and having insured consistency among those steps (in step 5).

The very first thing to do is to organize data gathering : set a plan of work and a calendar, define procedures, and distribute tasks.

The plan of work should be brief, informal, and flexible. Its thrust will be on the organization of data gathering, which should be prepared with particular care. The advantages of a good preparation are many :

- better distribution of tasks : responsibilities of each individual or sector is clear; everyone understands where his data will fit the overall picture, and what the other fellow's contribution will be as well. The causal model proves invaluable in determining which is everybody's share of work
- greater consistency as well as easier solution of contradictions when data from different sources or categories are confronted
- above all time-saving : experience shows that considerable wastage of time is avoided after good preparation (fewer data to be collected; collection quicker since location and person in charge previously identified and no overlapping; faster interpretation thanks to the causal model; etc.). This is very important since data gathering is the most

time-consuming phase of the whole assessment process.

All this can be done with a wide variety of operational set ups, from the small team working on a local project, to a sophisticated national food and nutrition committee assisted by a set of specialized commissions.

Experience shows that the following recommendations deserve consideration :

a) Operational organization

- All data collected should be kept at one central place and copies made whenever a team member needs access to the information : hence the importance of having free and generous access to a photocopying machine throughout the assessment period .
- Organize the material according to the boxes of the causal model.
- Design provisional graphs and tables early in the period

b) Respect for established time-tables

- There is no need for going as far as drawing a PERT diagram, but the concept that there are critical pathways and steps must be kept in mind, and everyone should produce his part of information on time - even at the risk of some loss of accuracy. Periodical reviews would then decide whether to dig further to improve such data or not, depending on alternative urgent tasks
- Hold periodical meetings to discuss progress (clearly define frequency and precise purpose of the meeting; write explicit

[illegible] to arrive at decisions; implement decisions).

The calendar of operations, once established, will have to be strictly respected, and it therefore needs to be set with great care and realism. A particular important decision to be made is the rythm of team meetings for reviewing the progress of data gathering and for proceeding to preliminary analysis and interpretation.

c) Advantages of preliminary analysis

- Mainly to insure consistency and completeness of the data and to start organizing the following step (analysis and interpretation)

- Check that the basic assumptions are respected

- Appraise the quality of the data. An estimate (at least) of the validity of the proposed correlations or of the stated differences between regions or groups needs to be attempted if statistical significance cannot be established. A judgment must be emitted by the authors of the assessment, and not left to the reader. If some data don't look too good, but appear to have a comparison value (between periods, between places, between groups) it should be mentioned. An intuitive judgment is better than none.

- Identify gaps where the information is lacking

- Make sure that the assessment will fulfill its objectives. Introduce any necessary change in the plan of work, the model, the calendar, the choice of the data etc.

Step 7. Analysis and interpretation of the data

It starts from the causal model and follows the order suggested by the model. The boxes in the upper part of the model (i.e. nutritional status and its most immediate determinants) are discussed first, then major chains are analyzed and data put together to support (or reject) the relationships represented in the model. The same order will profitably be used in writing the report.

Experience shows that the simpler the model is, the easier and the quicker the analysis progresses.

Analysis and interpretation of the data is a responsibility of the whole team, and not of the sectors involved, although the sectors will often be invited to process or reprocess part of their own data.

Analysis and interpretation should be short (in time, and in the space they occupy in the report).

As already mentioned, preliminary graphs and tables, as well as maps when appropriate, prove useful when the time constraint is harsh, and early tentative conclusions will help save time. Step 6 (data assembling) and the present step 7 are part of an iterative process : analysis and interpretation start while data gathering is still moving on.

The situation should not only be described, but i must be accompanied with an explanation, i.e. a consideration of the causes and mechanisms.

Time trends should receive much attention, and an attempt must always be made at projecting the past and present situation in the future.

The team will constantly keep the objectives of the assessment in mind, and discard any data which are not relevant (in other words which are not consistent with both the objectives and the causal analysis) That will avoid complicating the analysis and arriving at inconsistent conclusions.

Note on the supporting equipment

Microcomputers. Most of the assessments which were reviewed for the preparation of this guide were conducted before microcomputers became widely used, and more recent reports do not mention

them specifically. Their advantages over manual processing are obvious. Their advantages over classic computers (sectoral computers, or a centralized data processing centre with terminals) are probable, but still not documented. There would indeed seem to be many reasons why microcomputers should become an essential tool for an assessment team. Besides the speed in providing the necessary information, they should provide better and more relevant information (for example through offering alternative ways of processing and presenting data, and therefore allowing a more appropriate choice from a wide range of possible presentations, or by making maps). Another valuable advantage is their use in processing texts, and therefore in saving time in the drafting, reviewing, and editing of a report that must be approved by various people. The danger of overprocessing and generating confusion will be avoided if the team sticks to the model.

Photocopying. The usefulness of having unrestricted access to photocopying facilities throughout the assessment has already been stressed.

Overhead projector. An overhead projector and transparencies prove to be very convenient, particularly for discussing preliminary data within the group. One of their advantages over either the blackboard or paper sheets, is that the transparencies can be photocopied and then used simultaneously by various persons for further analysis and interpretation.

Transparent maps. Transparent maps, drawn all at the same scale, and therefore easy to overlap, prove to be very useful to compare

[illegible] distribution of various indicators between geographical areas [illegible] administrative subdivisions. With a judicious choice of colours, combinations of indicators allow for identification of problem areas. Still, as a tool, they do not seem to be used as often as their usefulness would suggest.

Step 8. Presentation of the findings and of the conclusions

a) General remarks

- The presentation of the results should be rehearsed within the complete team in the first place, then (if time permits) tried on selected reference persons (specialists) prior to final drafting and formal presentation to the authorities or the public.

- The presentation of the results should be absolutely consistent with the objectives of the assessment. Among the latter, three are common and deserve a particular mention : (1) assisting in selecting priority areas or groups; (2) helping identify the type of action to be eventually considered; and (3) deciding upon the appropriateness of studying the nutritional situation through a more sophisticated diagnosis. The assessment should be presented in such a way as to clearly meet such objectives.

b) Format of the final report

The written report might contain

(1) A summary of 1 to 1 1/2 page, intended to be read by the politician (similar to the "executive summaries" used by many agencies).

(2) A rather detailed table of content, broken down far enough to assist the reader in finding the specific information he needs, without having necessarily to read the whole document

(3) A short text presenting the conclusions and based on a small number of selected tables and figures (small = the minimum needed to support the conclusions). The text needs to be brief for three basic reasons : a short text

- is read more carefully and by more people
- costs less money, takes less time to be published, can be printed in a larger number of copies, and therefore will be circulated wider and faster
- is better proof-corrected and edited, and therefore less likely to contain errors.

The text would briefly describe the nutritional situation; provide an explanation of its causes, and whenever possible supply projections into the future. It would follow the logical order of presentation of the problem that derives from the model, which should be included.

The text should be kept as brief as possible, It will use only that information which is necessary to support the findings and the conclusions. All other relevant information is presented in an annex. All non-relevant information is discarded, regardless of intrinsic merits.

(b) A separate volume of annexes. This is optional, but proves generally useful. The advantages of putting the annexes in a separate volume are

- that the first volume (i.e. the text itself) can be printed and circulated without being delayed by the production of the second one
- that anyhow it does not need to be reproduced in as many copies as the report itself.

The volume of annexes would contain, as deemed relevant, sections such as :

- the data used to build up the consolidated tables, figures, and maps used in the report itself, properly and clearly disaggregated (tables, graphs, maps, diagrams)
- a choice of relevant information used in part or totally for arriving at the conclusions
- a description of the methodology which was followed, including the time spent, the cost, the number of people involved, the constraints, etc.
- a review of the sources of data and an appraisal of their reliability, for assisting any reader who would wish to arrive at a personal judgement
- the list and full addresses of the participating institutions
- the names and jobs of the people who participated in the assessment
- a comprehensive list with full and accurate reference of the documents consulted

(c) Common mistakes made in presenting nutritional assessment reports

A review of about 20 assessment reports shows that a few mistakes are repeatedly made. They will be discussed below (Part III, section 3 : Mistakes most commonly made in the presentation of assessment reports).

III. REMARKS

1. Approximate Timing

The following elements may help establishing an approximative time frame for the assessment. Tentative durations are suggested for a typical national or regional assessment.

- Step 1. Justification and definition of the objectives of the assessment

Needs only answering a certain number of questions about which all decisions will generally have been made before. Should not last more than a few days (if more, then the assessment cannot really be considered as having started).

- Step 2. Preliminary appraisal and reconnoissance

Should not take more than one or two weeks, often less. If the territory is very extended or particularly unfamiliar, it may take a little more time.

- Step 3. Setting up a team

Can, at least in part, run parallel to steps 1 and 2. In itself, it does not take much time. The major delay will be that people have to free themselves from their current obligations. Allow one additional week.

- Step 4. Building of a causal model and choice of indicators

With good tutoring, can be achieved in 6 to 9 hours of intensive work, at the maximum dose of 2.30 to 3.00 hours in the same day. This in practice means something like 3 to 5 half-days spread over

a period of one or two weeks.

Sometimes it lasts longer, since it is indispensable that all team members participate in all model building sessions, and therefore dates must be agreed upon which are convenient for everybody. On the other hand, a certain amount of basic data gathering can already take place in the meantime, and time will be saved from the following stages.

The preparation phase, viz. steps 1 through 4 therefore will last from 3 to 5 weeks. It is generally difficult to make it shorter, since its duration will depend on a number of external factors. If however the assessment is backed by a strong political will and support, if relevant preparatory work has already been done in the sectors, and if abundant manpower and resources are made available, then this period can be substantially shortened.

- Step 5. Consistency appraisal

Consistency should be a permanent concern, and its appraisal can run parallel to the earlier steps, so that it should be completed almost simultaneously with step 4. Still, allow for a couple of days in the calendar.

- Step 6. Data gathering

It is impossible to define objectively an optional duration for this essential step. Allowance should be made for periods going from 6 to 9 weeks.

The actual period will be established depending on the total time available to meet the deadline - after making allowance for the preparation period (steps 1-4) and for the expected duration of analysis and reporting.

- Step 7. Analysis and interpretation

As stated before, as much preliminary analysis as possible should be performed during the period of data gathering. Still, a period of a few weeks needs to be reserved for the final analysis (if more than 4 weeks, then the work goes beyond what is called here an "assessment").

- Step 8. Presentation of the results

If the instructions are followed, this step can be completed in a couple of weeks. A few weeks should be added for typing and reproducing : total 3-4 weeks.

Admitting such very rough durations, the total time necessary would be in the order of 16 to 25 weeks, broken down as follows :

Step	Duration in weeks	
	Minimum	Maximum
1	1/2	1
2	1	2
3	1	2
4	1	2
5	1/2	1
6	6	9
7	3	4
8	3	4
Total	16	25

Since some of the steps can overlap, it might be possible to go even below the estimated minimum of 16 weeks, although to conduct an assessment in less than 3 to 3 1/2 months seems difficult indeed. Beyond 6 months, it could reasonably be asked whether the exercise is still an "assessment". Anyhow, the timing indicated above, it should be emphasized, is to be taken only as a broad guide, to be improved in the light of further experience. Examples of a strict deadline are cases where USAID requests a national assessment to be completed in 4 months as in the Honduras case, (see Annex III). A case with a more flexible time-frame would be that in which a government starts preparing the forthcoming five-year plan.

There is one specific situation in which the assessment can be performed in much less time : this is when the assessment is part of a project, where all the decisions and answers covered here under step 1 and 2 are already clear; a team already is operational; and much information can easily be collected because it is part of the project anyhow.

2. Common Constraints

The approach adopted in this guide recognizes at starting point four main constraints : time, funds, available time of qualified personnel, and the need to rely primarily on existing information. Use of the guide is likely to make additional difficulties appear, about which the reader should be warned and against which he should prepare himself.

A fairly thorough review of assessment documents, as well as the authors' own experience, tend to show that almost every step in the proposed procedure is sensitive to particular constraints.

The major constraints which were observed are related to :

2.1. Incomplete or unsatisfactory prior decisions with regard to the objectives, the scope and the distribution of responsibilities (step 1), and the organization of the assessment.

Not uncommonly the decision is made to conduct an assessment with only a vague purpose in mind; or the terms of reference are in contradiction with the stated (or unstated) policy; or the manner in which the decision was made reflects a poor understanding of the nutritional problems on the part of the policy and/or decision makers.

In such situations the planner or the nutritionist will have to make his own assumptions regarding the intentions of his sponsors, at the risk of making mistakes. But on the other hand he might chose the opportunity to force at least a more rational and better informed consideration of the problem.

2.2. The setting up of a team (step 3)

Difficulties will depend on questions such as who is in charge of the setting up of the team; What his/her authority or responsabilities are; How will the choice of the persons who will participate in the assessment be made (official decision?) and on which criteria ; How is the assessment presented to the potential participants, and which importance is it given; On the time that selected participants will actually be able and willing to spend on the assessment; On whether there are precedents of joint work involving

various agencies and ministries, etc. Has there already been an effective collaboration in the elaboration of projects or in joint field work regarding nutritional problems?

2.3. The analysis of the causes of malnutrition in the population (step 4)

Two objections are commonly raised when this step is reached: identification of the causes of malnutrition is claimed to be complex and difficult; and such an analysis is considered unlikely to come out on practical decisions.

Experience actually shows that in practice these objections are much less serious than generally believed. Firstly, qualified and experienced persons who are familiar with the area quite easily identify the major causal chains leading to malnutrition, provided the proper dynamics is encouraged within the group. Secondly, the usefulness of the causal model for identifying major points of intervention aimed at breaking some of the causal chains, and for selecting relevant indicators, has by now been well established under a variety of circumstances.

2.4. The assembling of existing data (step 6)

An important constraint, often explicitly refered to in the assessments which were reviewed, concerns the information which is available. It was observed by the reviewers that the data can be :

- incomplete
- unreliable
- insufficiently or inadequatly disaggregated with respect to the objectives of the assessment

not representative of the population group studied
- not valid, i.e. they don't measure what they are expected to measure (because of methods for collecting data, the characteristics of the indicators, etc.)
- too old, obsolete
- restricted, classified

2.5. The analysis, interpretation, and presentation of the results (steps 7 and 8)

Implementation of steps 7 and 8 rely in part on :

- a secretariat service which is available, competent, reliable, flexible, and working fast
- the free utilisation by the team members of key support (ex. : generous access to photocopying, data processing, overhead projector, etc.).

Although the constraints just reviewed may seem obvious, still the fact is that if they are not adequately appraised by the team at the planning stage, they may create important delays in the completion of the assessment, delays which could indeed have been better used in going more deeply into the study itself !

3. Mistakes most commonly made in the presentation of assessment reports

The following list of common mistakes was established after reviewing about 20 nutritional assessment and survey reports. It refers to shortcomings of the assessment document itself, and not necessarily to the manner in which the assessment was conducted. Common mistakes refer to

Objectives. They are often too vague or too general, or in a few cases they are not defined at all.

Organization of the assessment. In many reports little information is provided regarding the cost of the assessment, the time spent, the number of persons involved, or the constraints that were faced at different moments throughout the assessment process. In a few cases, there seems to be disproportion between the considerable amount of work done and the rather meager results obtained.

Data. Some or all of the following shortcomings are not uncommon :

- no explicit basic assumption is made that would justify the choice of the data
- a great many data are presented, without clear selection. Unreliable or unrepresentative data are presented without their relevance and validity being commented upon
- data inadequately or insufficiently disaggregated according to population group, age groups, location , etc.
- trends not considered

Causality. The nutritional situation is described, but without an explanation of its causes. When an analysis of the causes is attempted

- it is very descriptive and general
- no clear hypotheses are formulated regarding the choice of causal factors
- a statistical measure of the correlation between nutritional status and presumed causes is not provided
- the significance of observed differences between regions or groups is not estimated or calculated

Analysis, interpretation and conclusions

- very often, many data provided in the report are not taken into account in the analysis
- inconsistencies are frequent between the assessment objectives and the conclusions, or between the conclusions and the recommendations. Recommendations sometimes reflect the prejudices of the authors and are clearly not derived from the data
- proposals for action are not ranked by order of importance and/or the nature of the sector which should be involved in the intervention

Format of the report itself. Reports are generally lengthy and heavy, loaded with only partly useful (or frankly useless) information, while on the other hand a good summary of the work done and of the conclusions is missing. Readability suffers from insufficient editing of chapters written by different people, from poor proofreading, and from inadequate presentation of tables.

4. Existing data vs. new data

From a pragmatic point of view, three categories of assessment data can be considered

(1) Existing data, readily available (published reports or articles, official government or international agencies statistics, books, etc.)

(2) Data that do exist, but require a certain amount of "hunting" or "digging" i.e. active search in files, regional offices, private libraries, sectors, etc. The same category would include the information

one collects by listening to people and by recording their impressions, their opinions, and the facts they report about.

(3) "New" data, that is data that need to be collected prospectively through surveys and special studies.

The present guide uses almost exclusively categories 1 and 2. The generation of new data is amply covered in the literature and is not our concern here (see ICNND, 1963; Jelliffe, 1969; Casley and Lury, 1981). One of the basic assumptions made in the present document is that it is necessary, and possible, to conduct an assessment through using only that information which is both absolutely necessary and easily available.

There are, however, intermediary situations in which time and/or resources' constraints are not as severe as assumed here. In such cases a certain amount of data-generating is possible, i.e. the assessment team may use a combination of existing data and of newly collected data. The latter may include short surveys and special studies.

If the time constraint is less strict, or if time is short but financial resources and qualified manpower are generously available, then a quick survey can bring highly efficient returns.

There is, furthermore, a very specific, but common situation, where a combination of old and new data is particularly desirable: that is when the assessment exercise is part of the preparation of a project. Because of its potential interest, it is taken in a special section, below.

5. The nutritional assessment as part of the project preparation process

For example a Primary Health Care project or a Rural Development project is being prepared, and its promotors wish to incorporate a nutrition component into it. They require a nutritional assessment which, ideally, should be performed during the project identification* stage, and be a part of the overall diagnosis generally performed at this stage. Presumably, by that time a preliminary appraisal will have been conducted during the earlier period, when the idea of the project was born and nutrition was taken into consideration.

*Investment agencies commonly distinguish four stages in the process of project preparation : (1) idea of project, (2) project identification, (3) project formulation, and (4) evaluation (i.e. evaluating the project as designed).

Not uncommonly, however, the decision to make a nutritional assessment is made during or after the identification period. In such cases, the assessment has to run parallel to - or as a part of, the project formulation itself, and the best combination of assessment procedures with new data generating will have to be found on an adhoc basis. The collecting of additional data, including surveys when needed, may be incorporated into the general intense data collection which is part of the project diagnosis, and which usually brings together more refined and disaggregated data (both for setting up targets and for establishing a baseline for future monitoring and evaluation of the project as a whole).

6. Analysis of ongoing programmes

Since a nutritional assessment is justified only inasmuch as it represents a preliminary step towards action, it is important to know and appraise the context in which such action is going to take place.

The depth of such an appraisal will depend on the objectives of the assessment. It seems to be particularly justified when the latter is aiming at

- formulating or analysing the objectives of a nutrition policy (or of the nutritional component of a development or sectoral policy)
- contributing in selecting interventions or major project components.

Consideration of the context can be done in two ways

- simple inventory of government options and ongoing programmes
- in depth analysis of expected and observed outcome.

In spite of its interest, the second alternative needs too much time and does not seem to be feasible within the limits of an assessment.

It seems therefore preferable to compare, on the one hand those interventions that were identified as a result of the causal analysis with, on the other hand the interventions which are already being implemented and the general government policy. This would avoid duplication or even contradictions. Quite often, one will find that certain interventions were implemented in the past, and then later abandoned. It might be interesting to know why they were abandoned.

Linked to this point, and very much within the scope of an assessment, is an appraisal of the constraints (mainly in personnel and infrastructure) which did in the past - or may in the foreseeable future, hinder the successful implementation of relevant interventions.

Annex I

Method for Building a Hypothetical Causal Model of Nutrition in a Given Situation

1. General

For assessing and understanding a particular nutritional situation, a certain number of variables must be studied. Such variables are chosen because they are presumed to influence, directly or indirectly, the nutritional status of the population under scrutiny. We will call such variables factors or causal factors to avoid problems of terminology (and not use terms such a cause, partial cause, principal factor, determinant, etc.). A causal factor here - represented in the figures by a box - is a variable which does influence or may influence the nutritional status of the target group in the population under study. To rationally select a variable, one needs to formulate a hypothesis about its role as a causal factor, i.e. a causal hypothesis.

A variable can influence nutrition directly or indirectly. In the latter case it acts through one or more other factors. Each of them is a link in a causal chain leading to the nutritional status.

Let us insist on the fact that such chains are merely sets of hypotheses. Even if a statistically significant association was to be found between two factors, such an observation would in no way establish causality. Causality can only be established through individual observations, which can seldom be made under the usual conditions of an assessment.

When formulating hypotheses prior to selecting the variables to be studied, a number of methods can be adopted. The method which is adopted here assumes that causal hypotheses can be organized into a "hypothetical causal model"*. The latter is a set of organized and hierachized causal chains which link together the factors which play, or are supposed to play a role in that particular nutrition situation.

The method proposed in this guide proceeds through successive decompositions of those factors which are presumed to play a causal role, starting from the dependent variable on. In theory, of course, a causal model can be built two ways. One way would be to start from the most fundamental social, economical, and even political causes, and progress downstream towards the final outcome, seen as the result of converging influences. The other, which is adopted here, starts from the dependant variable and builds the model stepwise upstream, in somewhat the same manner as a genealogical tree would be constructed. Experience shows the latter technique to be more practical.

That all, or most, of the relations cannot be demonstrated during an assessment, does preclude neither the fact that the whole is consistent nor that it helps in identifying important variables,

*There are innumerable definitions of the term model. As understood here a model is "a simplified representation of a process or a system" (Robert). Another definition is given by Thines and Lempereur : "... Any formal and simplified theoretical representation of a complex reality aimed at facilitating its reproduction and understanding".

in understanding their possible place and role, and therefore in justifying that they be studied. The purpose is not only to provide a tentative explanation, but basically to increase rationality in the choice of variables to be collected or gathered. The method avoids a hasty choice of variables, allows to reduce the amount of data to the minimum which is both relevant and feasible, and, particularly, it prevents omitting important intermediary links.

In actual practice the model is custom-made to the needs of the assessment team. It is built progressively, and it is based on the experience and the knowledge of the multidisciplinary group. More than generating new knowledge, the model-building exercise is a process of organizing and sharing the sum of understanding and knowledge of the participants. Experience shows that if the few conditions and rules described below are respected, the exercise is easily and progressively performed, and that participants are almost invariably satisfied both by their involvement and by the outcome.

2. Conditions

The whole team is assembled. It is essential that all parties involved in the assessment procedure be present throughout the process of model building.

The number of participants should not exceed 12-15 people, although later on more specialized portions of the model (such as health services, agriculture, etc.) can be worked out further by subgroups.

Model building sessions should not last more than 2.30-3.00 hours in a row, and there should preferably be only one session per day. This kind of exercise, which is new for a number of people, may be straining to a few of them, and lead them to disconnect themselves from the discussion, a situation which must be avoided. It is therefore appropriate to spread the exercise over a few days. As a rule, ideas are much clearer the following day.

The total duration varies widely, depending upon the level of analysis, the complexity of the situation, and the purpose of the exercise. Broadly speaking, the organizers should allow for 3 to 5 sessions, spread over an equal number of days. The time between the sessions can be put to profitable use by assembling documents and data, completing the reconnoissance period if necessary, etc. In a few cases, when the time-constraint is very tight, two sessions per day can be held, but at the expense of efficiency.

The room must be comfortable, and the work may not be interrupted. No people should be allowed to come in and out : participants ought to be fully involved. A blackboard is necessary (or alternatively paper sheets - in generous supply - and markers). If there is a person available who already possesses experience in building such models, he/she should lead the exercise. If not, then a moderator is elected and will stand at the blackboard. A secretary is to be appointed to note down comments and remarks, and draw the model in a clean form after each session. Rotation of such roles may be desirable, since it is difficult to both

contribute to the discussion and record at the same time.

3. Preliminary discussion

The exercise starts with a general unguided and free discussion on the presumed causes of malnutrition in the population under consideration. Attention should be paid, however, to restricting the debate to factors which are acknowledged as being important or highly probable causes of malnutrition, and to avoiding generalities. The discussion leader will usually have to remind this rather often to the group. Also, the discussion should preferably run around the most immediate factors, since more fundamental factors will come up anyhow as model building progresses.

The factors suggested by the participants are written on the board in the order they are mentioned, and on the only condition that the group agrees. No attempt is made yet to rank them. The following example comes from a rural situation :

Poverty	No potable water
Poor feeding practices	Price of fertilzer
Lack of land	Drought
Insufficient food production	Measles
Ignorance of the mother	Too many children to feed
Food losses	Credit too expensive
Exploitation	Health centre too far
Diarrhea	

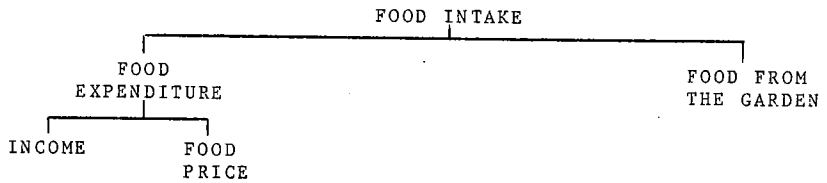
When listing factors, efforts should be made for statements to be as specific as possible. Terms such as "poverty", "poor sanitation", "socio-economic conditions", "low production", are too general, and should be broken down into specific factors, themselves recognized as contributing significantly to malnutrition in that population.

If the moderator is familiar with this type of model, or if he has been preparing himself for moderating the discussion, he will be able to point out that many of the factors proposed by the group members are actually linked to each other. Some of them are influenced by one factor (food expenditure is influenced by income) or may be influencing another (food expenditure influences food intake). Such factors can be connected sequentially, as the links of a chain.

Example :

INCOME ⟶ FOOD EXPENDITURE ⟶ FOOD INTAKE

But food intake can be influenced by many other factors, such as the amount of food coming from the garden, or the price of food (which affects food expenditure). This can be represented graphically in the following manner



In this new representation the dependent variable is at the top. It is decomposed into two variables which are one line below. The box "food expenditure" is then further decomposed. Arrows are not necessary once the convention is established that causality flows upwards. (Actually the use of arrows should be avoided, because it may create confusion). Thus, causal chains are series of causal hypotheses, ranked in a logical succession, and branching when needed. Causality is represented as flowing from the most remote

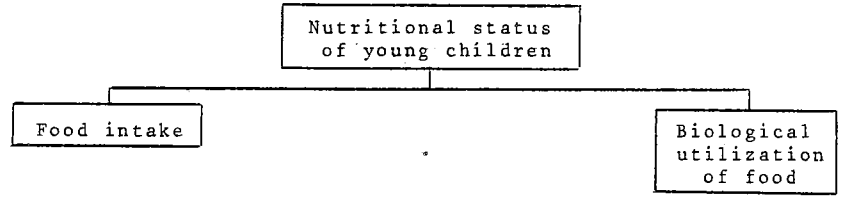
and basic causes, which are at the bottom of the complete model, upwards to more immediate causes, and finally to the dependant variable. Each hypothesis can be expressed as a simple sentence ("food expenditure is one of the factors that affect food intake", or its equivalent "food intake is affected, among other factors, by food expenditure"). The model is a set of hypotheses linking probable and proven causal factors of malnutrition with each other, in a consistent, logical, and easily understandable manner.

Since for both building the model and for representing it it is easier to use a graphic procedure, the latter is widely utilized.

4. Starting to build the model

Building the model starts with considering the dependant variable, for example, the nutritional status of young children. Malnutrition in young children can be explained - so the first hypothesis goes - by two factors : the amount of food they eat, and the proportion of the latter their bodies actually utilize.

This can be represented graphically in the following manner



This is a very simple model of malnutrition. It provides more information than just stating the prevalence of malnutrition, because it does offer the beginning of an explanation. It shows that malnutrition can be caused by factors that eventually lead to inadequate intake of food, or to poor utilization of the food, or to both.

Both food intake and utilization can actually be measured (at least in experimental situations) and the double hypothesis could therefore in theory be tested. Each of the three boxes can be expressed through the use of indicators which are specific to that box.

Examples :

Nutritional status :	- % of children with weight/age below 75% of standard - mortality 1-4
Food intake :	- % of children with energy intake below 90 % of recommended allowance
Utilization :	- proportion of children who do not utilize protein adequately

The first box was decomposed into two components. Each component can now, in turn, be the point of departure of a new decomposition, as shown in Figure 2.

Building the model therefore proceeds as a succession of decompositions. The process of construction moves from the top towards the bottom of the graph. Each box can be considered as the dependant variable towards which all the decompositions below it converge. A causal model is made of a number of submodels imbricated into each other.

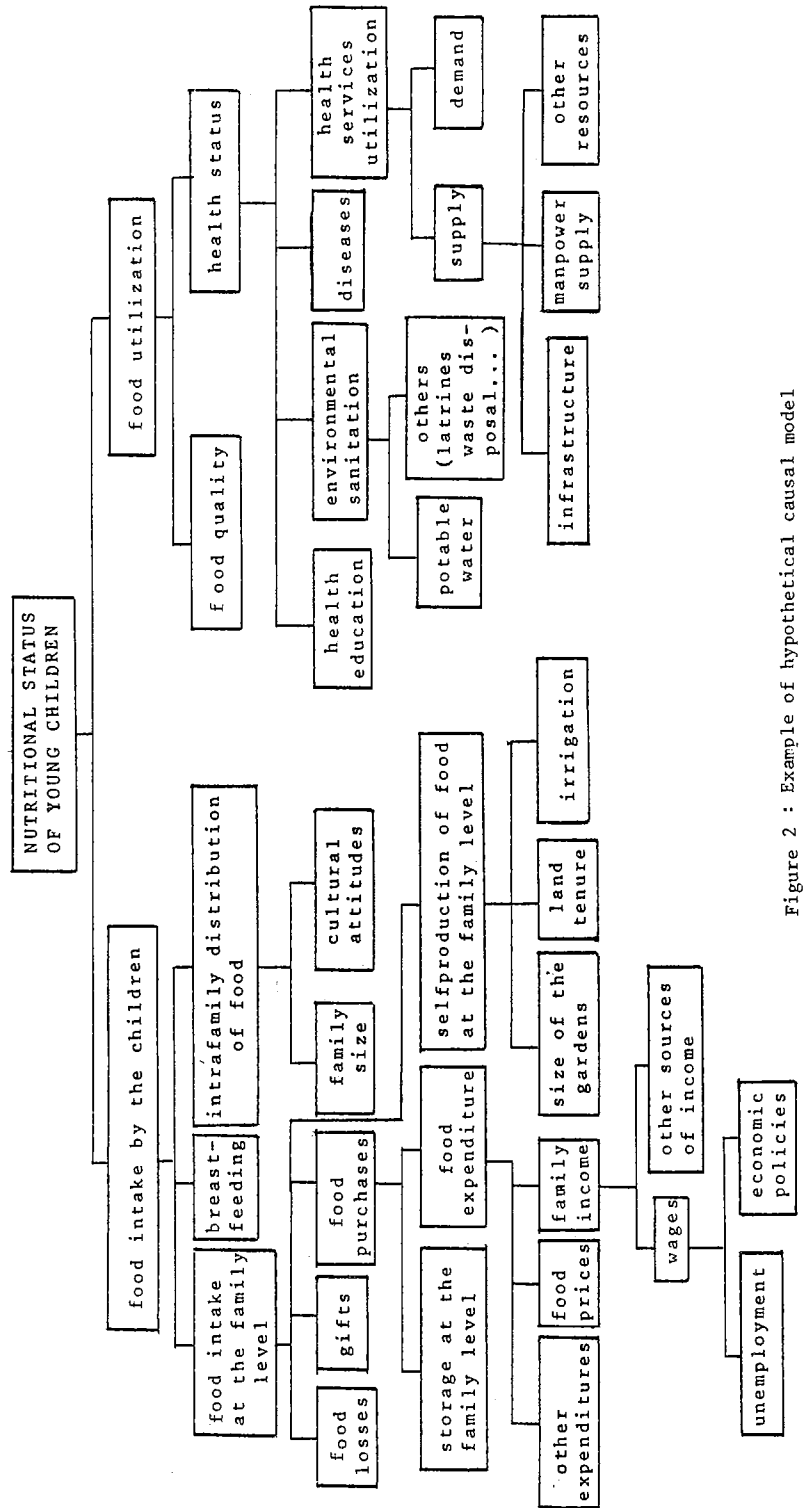


Figure 2 : Example of hypothetical causal model

Certain characteristics of hypothetical causal models, as well as the basis for some of the rules for building them cannot be developed here, although they are part of the general methodology (the nature of the decompositions, which sometimes are logical sums or products; the rejection of feed-back loops; the non-consideration of horizontal links; etc. Please see the references under GRIMM).

5. Completing the model

A few general rules need to be respected, if major omissions or logical errors are to be avoided.

(1) The construction of the model should proceed inasmuch as possible line by line. It is not appropriate to develop one or more chains on one side of the model prior to completing all the horizontal lines which are above. The upper parts of the model deserve particular attention.

(2) The identification of indicators needs to be made whenever new boxes are being added. When the group is agreed upon a new decomposition, indicators will be selected for quantifying the newly identified factors, and written down.

Experience has repeatedly shown that if the selection of indicators is left for a later stage (i.e. to the end of the model building procedure), inconsistencies will appear and extrawork will be required for correction.

Furthermore identifying indicators as the model is being built, helps precising the content of each box, and therefore avoids misunderstanding within the group as to the meaning of each factor represented by a box.

(3) People unfamiliar with such models tend to cite, as causes, factors which do indeed influence the variable under consideration, but do so only in a very indirect manner.

For example low wage can be given as one of the causes of low child food intake. This is basically correct. However the model requires more than such a statement : it aims at providing an explanation, at understanding the mechanism. It is therefore essential to identify all the possible intermediary steps. In our example the chain can at least be decomposed into the following intermediate links : low wage - low family income (also influenced by other sources of income) - low purchasing power (also influenced by prices) - low purchases of food (also influenced by other uses of money) - low family food intake (also influenced by intake of food which has not been purchased) - low child intake (etc.).

On the other hand only factors which are deemed important by consensus of the participants should be kept. Participants alone can decide, since they will have to assemble and analyse the data. Time and ressources being scarce, the choice of variables must by necessity be extremely selective.

(4) A commonly made mistake is the inversion of causality, some people tending to put below a given box, an effect of this box rather than a causal factor. This is due in part to difficulties of grasping the logics of the deductive approach, but probably even more to the unusual fact that the construction goes retrograding from effect to causes. Such mistakes should be detected immediately and corrected, otherwise they may block the discussion and be responsible for a considerable waste of time. It is a serious cause of delay in model building. It is also characteristic of fatigue, since it tends to occur at the end of the working sessions. Here is one of the reasons for splitting the exercise over a bigger number of shorter sessions.

(5) Quite a few boxes, in a well-elaborated model, cannot be quantified, and the team struggles in trying to identify indicators. Such boxes actually belong to two categories :

- boxes or factors which cannot be quantified because of their very nature (those reflecting a propension, a capacity, a desire, for example appetite, capacity of producing breast milk), and
- others which can be measured under experimental conditions (for example biological utilisation of nutrients), but not under the usual conditions of an assessment.

For such boxes no indicator will be identified. In some cases, for the sake of clarity, model builders will prefer to keep the box anyhow. There is no objection to do so.

(6) Loops are ignored in this type of model (i.e. feed-back effects of one variable on one of its causal factors). This is a compromise for the sake of simplification : the procedure, it should

be reminded, was designed to clarify our understanding of a complex set of mechanisms, and to more rationally select variables.

(7) Similarly, horizontal lines are deliberately discarded. If the same factor would appear in different places in the model, it would simply be repeated, but decomposed only once, at the place where such a decomposition would seem to be the most relevant. A good example is the level of education, which may appear as a causal factor of the intrafamily distribution of food, of the purchasing of food, of the utilisation of the health services, of the use of potable water, etc. Actually a closer look will show that, even if "education level" appears in many places, the content of the box will be different in each place. There is a very positive trade-off from this observation : at the time of selecting interventions, and for example of deciding to implement education, the content of the intervention will be determined by the place(s) education occupies in the model. In our example, the educational component of the intervention would aim at (1) changing attitudes and behaviour of the people towards a type of food purchases and distribution within the family that would be more adequate to the children's needs, (2) a better use of the health centre or the MCH clinic, and (3) towards cleanliness and care in the use of drinking water.

(8) Another common cause of perplexity among model builders is to have to decide where to stop the analysis : if unrestricted, the construction of the model would come close to a full model of socio-economic development !

Where to stop actually depends on the following factors :

- The level at which the model is to be applied : the geographical area and/or the decision level. Chains can be decomposed till they reach factors which, to be changed, would require decisions taken at a different level. Anything beyond the decision-capacity of the level under consideration (i.e. which is in the lower part of the model) will be acknowledged as a constraint for the time being (i.e. for the duration of the assessment, or of the project) and it will not be analysed further.

- The purpose of the analysis. Relevance and feasibility will limit the choice of indicators. When the analysis is preliminary to a sectoral programme or intervention, those areas of the model which correspond to the sector will be developped further.

- Political feasability. In some places it would not be politically acceptable to pursue the analysis beyond a certain point such as, for example, putting into question some fundamental political choices, or some basic structural aspects of the social and economic system. Whether to accept or not such limitations - or under what condition tolerate them, is an ethical problem of very great importance.

In summary, the interest of the method is that it allows to use only the upper part, or one side, or an area in the model, and remain consistent. As such, it is a considerable saving-device of time and resources.

(9) The need to remain very specific to the local situation cannot be overemphasized. The team must stick to reality and resist the natural tendency to generalization. The moderator should look

eagerly to it, pruning out what is not clearly and evidently relevant and important. Unless such precautions are taken, the model becomes too complicated, hence too confusing; too many variables are allowed to be collected or assembled : considerable waste of time is then the predictable outcome.

Oversimplification, in these authors' experience, is a lesser evil than overcomplication (see an example of a very simple model in the Honduras case, in Annex III).

(10) Lastly, it proves useful to recommend to the moderator to use the set of remarks just made (items 1 through above) as a checklist, at the end of each session, in order to organize the work of the following session. This means extrawork, for which provision should be made, particularly if the moderator is the same person throughout the exercise.

5. A few remarks on the graphic representation of the model

The mode of presentation which consists in putting the dependent variable at the top and the decompositions in successive horizontal layers has proven the most convenient. The model can of course be built from left to right, the causal chains being in that case roughly horizontal. Such a representation is less practical.

Rectangular boxes have the advantage of clarity and cleanliness. Attempts at using different shapes to symbolically represent boxes of different nature, have complicated comprehension, and they tended to defeat the purpose of clarity. The same seems to be the case of using dotted lines, sharp or darkened lines, etc.

The organizational chart type of representation used here definitely seems the most convenient for communication. It should be strictly respected. All lines should be either horizontal or vertical, and cut at right angles. Oblique lines and curves tend to generate confusion. The use of arrows is to be discouraged .

One should avoid presenting the model on one sheet, but rather break it down into as many legible sheets as may be necessary. A complete model discourages the uninformed reader, and generally is unfit for reproduction (it has either to be reduced and becomes illegible, or to be folded and then becomes impracticable). When breaking it down, as done in this annex, the top box in the new sheet can be any box in the model. Still, it is preferable to be selective, in order that, inasmuch as possible, each sheet would represent a self contained sub-model. It is important to clearly link each sheet with the former sheets, either through repeating a few boxes at the top, or through using code numbers or letters (see the example from Ecuador in Annex II).

However, for the duration of the assessment, and as an exception to what was just said, it is useful to have the full-fledged model on the wall of the room where the team gathers and works. Big letters should be used for everyone to be able to read them from his seat.

Annex II

Nutritional Indicators and Choice of Indicators for Nutritional Assessment

This annex contains

- a list of indicators commonly found in assessment documents
- an example of how to use a causal model to select relevant indicators, and
- a practical procedure for organizing data collection and distribution of tasks

1. Commonly used indicators

The list of indicators presented in Table 1 is based on the observation that in published assessment and survey reports, a certain number of indicators are almost always present (because they respond to the needs of most assessments, or because they are easy to collect and are therefore generally available - whether relevant or not, or just because of tradition). To this basic list, a few less common indicators were added. This reflects the fact that when a causal analysis is used, other factors which used to be given less importance in the past tend nowadays to acquire prominence.

For the convenience of presentation, the indicators are grouped into major categories which correspond, broadly speaking, to individual sectors.

In every particular situation, a strict choice of indicators needs to be made to save time and money and to reduce complexity.

Table 1 : List of commonly used indicators.

Category of factor	Factor	Data to be collected	Indicator and suggested cut off points°
Nutritional status	Growth retardation	Birth weight	% of infants born alive with a birth-weight ≤ 2.500 kg.
		Weight for age	% of children with a weight < 75 % of standard weight for age (or < 2 S.D. or < 3rd percentile)
		Height for age	% of children with height (length) < 90 % of standard height (length) for age.
			% of seven-year old schoolchildren with height < 90 % of standard height for their age.
		Weight for height	% of children with height below 80 % of expected weight for actual height.
		Arm circumference	% of children below 75 % of expected arm circumference for age or for height; % of children in red and yellow zones, if tape being used.
	Clinical malnutrition	Presence of clinical signs of malnutrition	Prevalence rate (% of persons examined with clinical sign present) : goiter, xerophtalmia, bilateral edema of lower limbs, nightblindness, etc.
			% of recognized cases of malnutrition diagnosed as marasmus, kwashiorkor or marasmus-kwashiorkor.
		Observed morbidity	% of children < 5, with diagnosis of malnutrition at first visit or at admission into the hospital, regardless of the motive of consultation or hospitalization.
	Biochemical alterations	Blood hemoglobin	% of individual with hemoglobin below standard level for age, sex and physiological status.
		Plasma retinol	% of individuals with retinol below 20 micrograms per 100 ml.

Category of factor	Factor	Data to be collected	Indicator and suggested cut off points
Nutritional status	Mortality	Preschool mortality rate	Deaths of children 1 to 4, per 1000 population in the age group 1-4.
		Case fatality rate	% of children who die in the hospital, with malnutrition being mentioned as basic or associated cause of death, on total number of admissions for or with malnutrition.
		Proportional mortality	% of deaths 1-4 over total number of deaths (or < 5).
		Infant mortality rate	Death of children 0 to 1 per 1000 live births.
Food intake	Breastfeeding	Weaning age	Average age at weaning (age at which 50 % of the infants stop receiving breastmilk)
			% of children still breastfed at 3, 6, 9 or 12 months.
	Food intake of the young child	Daily calorie and protein intake	% of children with calorie intake below recommended daily allowance.
			% of children with protein intake below recommended daily allowance.
	Food intake of the household	Daily calorie and protein intake	% of families eating on the average less than the "family basket".
	Biological value of food	Protein quality	Average NPU (Net Protein Utilization rate) of average diet.
			% of calories from protein origin, average in the group.

Category of factor	Factor	Data to be collected	Indicator and suggested cut off points
Health factors	Health status	Morbidity	% of children with one attack of diarrhoea (or more) during last month.
			% of consultation (admissions) for diarrhoea, over total number of consultations (admissions) in age group.
		Mortality	Infant mortality and 1-4 mortality rates, see above.
	Health services		Hospital beds per 1000 inhabitants.
			Doctors per 1000 inhabitants.
			Health personnel, total, per 1000 inhabitants.
			% of villages (or municipalities, or communes, etc.) with a health facility.
			Average number of contacts (preventive + curative) per person per year.
			% immunization completed among target group (per vaccine).
			Pregnant women attending antenatal clinic per 1000 births.
			Admissions in maternity per 1000 births.
			Admissions in hospitals per 1000 inhabitants per year.
	Sanitation	Water	% of households with tap water (with domiciliary connection).
			% of households less than 200 m from clean water source.
		Latrines	% of families with latrine (per category of latrine).

Category of factor	Factor	Data to be collected	Indicator and suggested cut off points
Education and culture	Formal education	Literacy rate	% of population ≥15 years with elementary school completed. Total or only women.
			% population ≥15 years, who know how to read and write. Total or only women.
		School attendance	% of children in school age who are registered in (or who actually attend) school.
	Food habits	Frequency of meals	% of families in which children receive 2 meals or less per day.
Demography	Family size		Average family size
	Mortality		See preschool and infant mortality.
Economic factors	Food prices		Average price of basic cereal (or legume) over period of observation in $.
			Average price of "family basket" in $ or in % of minimum legal wage.
	Food expenditure		Average family expenditure for food in $ or in % of total expenditures.
	Income		Average family income per capita, all sources of income, in $ or in % of minimum legal wage.
			% of families below 1, 2, or 3 minimum legal wages, or below "poverty" level.
	General prices		Increase in prices index in % of increase in minimum legal wage, or "real" wages.
	Employment		% of active population gainfully employed.
			% of mothers working outside the home.
			Distribution of population by occupational category.
			Average mother's time available for child care.

Category of factor	Factor	Data to be collected	Indicator and suggested cut off points
Food production	Production	Self production	Kg of basic food (cereal, legume, etc.), produced by the household per year.
			Value, in money, of total household food production, per year.
		Productivity	Kg of basic food (cereal, legume, etc.) produced by the family, per hectare per year.
	Factors affecting production	Arable land	Hectares of arable land per person.
			% of households with less than .... ha of arable land per person in the family.
		Rainfall	Average annual rainfall, in mm.
Etc.			

° Cut off points are suggested for a number of indicators. They correspond to values generally admitted in the literature. For the other indicators cut off points will be established according to local situations.

Such selection is based in the first place on the relevance of the indicator to the local situation and problem, and secondly according to the feasibility of gathering the information in a satisfactory manner.

Relevance is best assessed in relation to the causal model specific to the situation under study. This point is illustrated below with an example.

2. Use of a causal model for selecting indicators

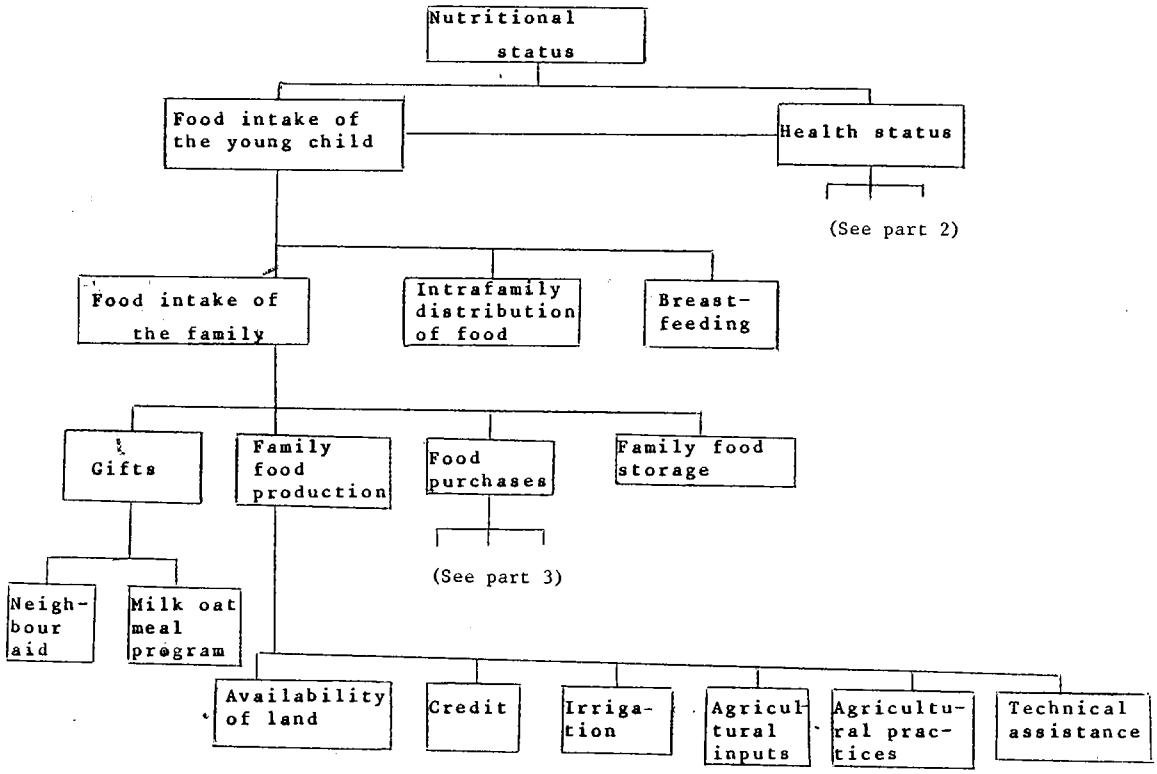
The causal model provided here (Figure 3) is a real case. It was designed by the local multidisciplinary team in charge of a rural development project in the mountain area of Ecuador in 1982. No attempt was made to correct a few mistakes which the reader might legitimately identify. Only minor modifications were made to insure consistency.

From the model, a tentative list of indicators was derived. Table 2 presents, for each of the three parts of Figure 3, a few examples of indicators corresponding to selected boxes in the model. The purpose here is to show how, for each box, one or more indicators can be identified and listed.

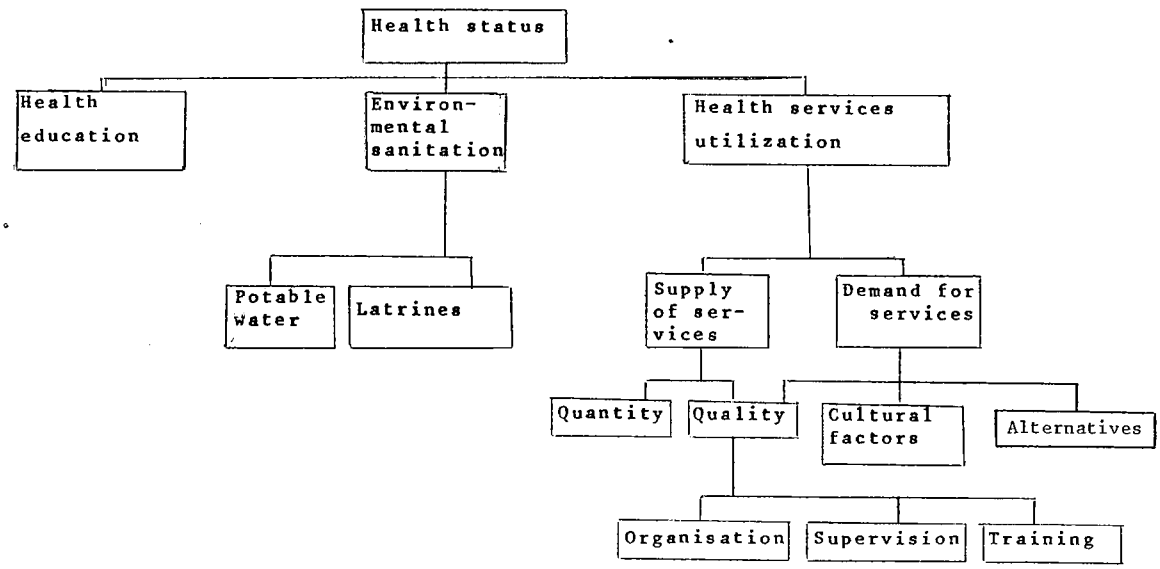
As one gets lower and lower in the model (which of course could be developed further - both horizontally and downwards) indicators belonging to disciplines other than nutrition become predominant : economics, agriculture, education, sanitation, public health administration, demography, management, political sciences, etc. To consider such indicators here would be beyond the scope

Figure no. 3 Example of Causal Model

Part 1



Part 2



Part 3

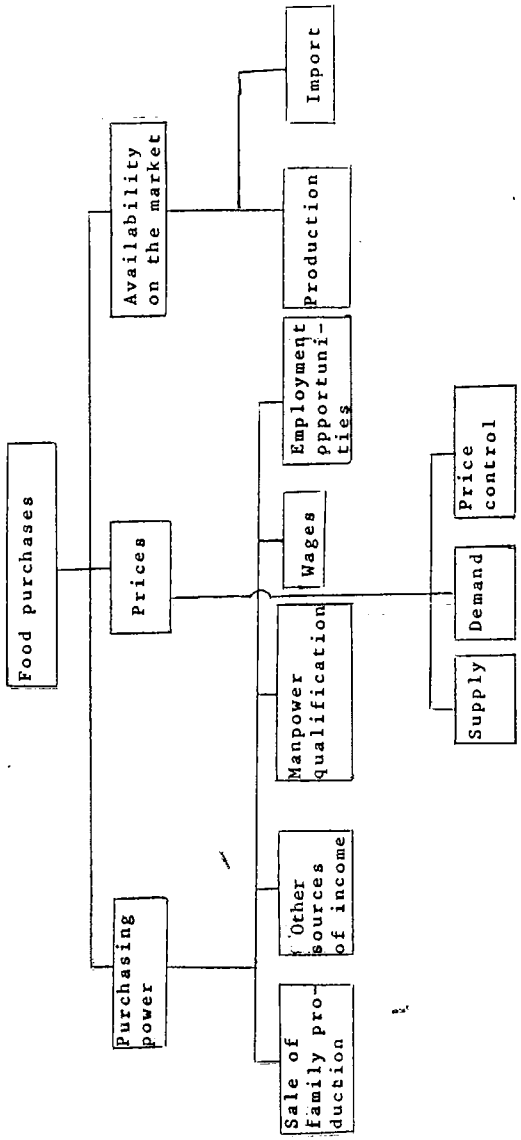


Table 2

Examples of Indicators Derived From the Causal Model (Ecuador)

1. Indicators corresponding to Part 1 of Figure 3

(1) Nutritional Status of children 0-5

- % of children 0-5 having their weight for age, weight for height, height for age, arm muscle circumference below an agreed cut-off-point
- % of newborns with weight at birth $\leq$ 2.500 kg
- age specific mortality rate in children 1-4
- infant mortality rate

(2) Food intake of the family

- % of children receiving a diet below the recommended daily allowance for calories and/or protein

(3) Family intake

- % of families below the recommended daily allowance for calories and for protein
- % of families whose consume less than the daily "family basket"

(4) Breast feeding

- % of infant shall fed on the breast at 3, 6, 9 and 12 months

Etc.

2. Indicators corresponding to Part 2 of Figure 3

(1) Health status

- infant mortality rate

(2) Environmental sanitation

- % of households with domiciliary water connection
- % of households with latrines (by type of latrine)

(3) Health service utilization

- total number of contacts with health services (preventive and curative) per person per year
- same indicator for children 0 to 1, 1 to 4
- number of hospitalization per inhabitant per year

Etc.

3. Indicators corresponding to Part 3 Figure 3

(1) Food purchases

- quantity of food purchased by the family in grams per person per day
- average expenditure on food per person per day in monetary units
- family food expenditure in % of total expenditures

(2) Purchasing power

- family income all sources, per person per day, in monetary units
- % of family with an income below the minimal legal wage

(3) Prices

- average market price of basic foods (during the observation period)

Etc.

of this guide. On the field, the specialist in those disciplines should be called in.

3. Final selection of indicators

A convenient procedure to establish the final list of indicators is to use a frame such as provided in Table 3. Feasibility is assessed, and only those indicators that can be gathered and are deemed to meet the requirements of quality, disaggregation, etc. are included.

From Table 3 a last table (Table 4) can be built, which indicates the responsibility of each institution in providing data. Although Table no. 4 is basically another manner of presenting the information contained in table no. 3, experience shows that from an operational point of view it is perceived as very useful by the representatives of the different sectors who participate in the model building and in the selection of indicators exercise.

Table 3 : List of data to be gathered, with characteristics and source (Example)

Box in the model	Data to be gathered	Level of disaggregation	Periodicity	Source of the data	Remarks
Nutritional status	weight, height, age	individual	annually (or more frequently	Health centres	
	deaths 1-4, population 1-4	district	annually	Institute of Statistics	
Food intake	food intake of young children, age	individual	depends on the survey	Surveys by the Nutrition Institute	Sample
	food intake of family, composition of family	household	twice a year	Household Consumption and Expenditure Surveys by Institute of Statistics	Sample
Food production	cultivated area, for each basic food	district	annual	Ministry of Agriculture	
	yield/ha, for each basic food	district	annual	Ministry of Agriculture	
Utilization of health services	total number of visits to health centre, population	health district	annual	Regional Health Office	
Etc.					

Table 4 : Responsibilities of institutions in providing data for the nutritional assessment

Institutions providing the information	Data to be provided	Level of disaggregation and periodicity	Precise source of information	Name of the person responsible for supplying the information	Remarks
Ministry of Health	weight, height, age of young children	individual, annually	Mother and child health Division	Mr. X...	
	total number of visits to health centres, population of health district	health district, annually	Directorate of Health Services	Dr. Y...	
Etc.					
Institute of Statistics	deaths 1-4, population 1-4	district, annually	Vital Statistics Division	Ms. Z...	
	family food intake, family composition	household, twice yearly	National Survey Office	Mr. W...	Household sample in selected areas
Etc.					

Annex III

Case Studies

From the over 20 assessment and survey reports reviewed while preparing the guide, three were selected as an illustration of some of the major points made in the text.

The Honduras case is presented as an early prototype of the kind of assessment which is described in the guide. Its major characteristics is that it is based on a causal model, which is utilized throughout the period of data collection and analysis and is the guiding thread of the final report.

In contrast, the Guyana national survey posesses almost diametrically opposite characteristics. Its major merit, however, resides in two aspects, which proved useful in preparing the guide: the quality of the data, and the manner in which the final report is presented.

The Zimbabwe report is as an example of a compromise in which immediately available data are complemented with highly selective newly collected data, in an attempt to maintain quality and meet the deadline. Great attention is given to causality, although a thorough causal analysis is not performed.

In addition brief notes are provided on documents from Guatemala and Bangla Desh, for their historical interest mainly.

Honduras Nutritional Assessment

In 1975 the Government of Honduras undertook a diagnosis of the population's nutritional problems. The work was coordinated by CONSUPLANE, the Secretariate of the National Council for Economic Planning, who requested the technical support of INCAP (Institute of Nutrition of Central America and Panama). The United States Agency for International Development (USAID) provided the funding of external experts.

The diagnosis was executed in two stages :

The first stage corresponded, strictly speaking, to an assessment and resulted in the drafting of a preliminary document having a limited circulation. This stage lasted 17 weeks (August 1 - November 30, 1975).

The second stage corresponded to the revision of the preliminary document which was completed, corrected and brought up to date for publication in October 1976.

Twenty four people were employed in the study, full-time or part-time with a total of 111 men/weeks, including the external specialists. The cost of the latter (salaries, travel, and associated expenses) was approximately one man-year, i.e. about US $ 40.000).

1. Description of the study

1.1. Objectives and diagnosis

Identify from a nutritional viewpoint, the priority regions and the possible solutions to their problems :

(1) Carry out an analysis which takes into account the different characteristics of the situation prevalent in the rural and urban communities.

(2) Analyze the current programs set up to correct the nutritional deficiencies of risk groups.

(3) Propose new projects, integrated in coherent programs.

1.2. Methodology

(1) Training of pluri-disciplinarian team. The diagnosis was carried out by a pluri-disciplinarian team with a view to attain a multisectorial coordinated action from the start - up to the finalization of the selected interventions.

(2) Data utilized. The diagnosis was based on existing data (sometimes confirmed through interview) and, in view of identifying the priority regions, disaggregated where possible by municipality (municipios).

(3) Research of causal factors. Utilization of a causal model to enable the identification of essential factors which could influence the nutritional state of the population (see Figure no.4).

The model considers nutrition like a situation conditioned principally by two elements : on one hand the quantity and quality of food consumed, and on the other hand, the biological utilization of this food, the first resulting from the food flow, and the second resulting from social environment and health structures. Both are influenced by the level of income of the consumer and the

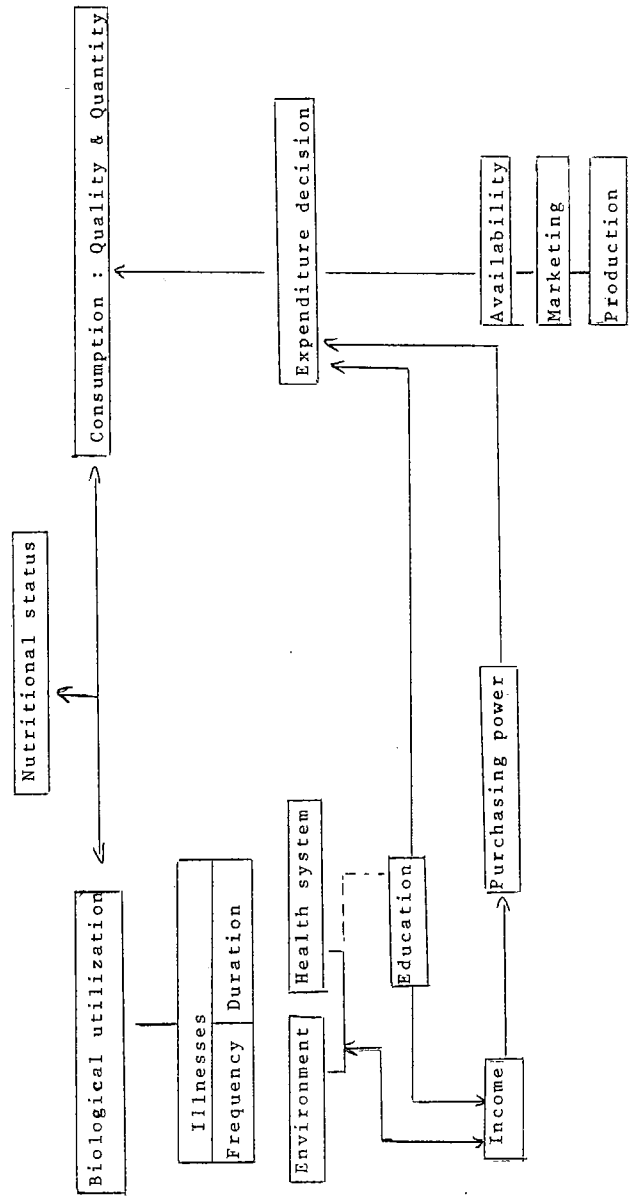


Figure 4 : Assessment model, Honduras case

level of education.

For each factor, corresponding to a specific box in the model, the group formulates the hypothesis that this factor is a conditioning element of the nutritional state.

For example : the participation of the health sector in the improvement of the nutritional state is based upon the following hypotheses :

- the presence of a health structure does not necessarily decrease the prevalence and incidence of illness, even though it contributes to the decrease in mortality and the duration of illness. The preventive activities influence the frequency with which the illness re-occurs
- the diarrhoeic syndromes, measles and whooping cough are considered to be the illnesses which most affect the utilization of nutrients, whereas bouts of fever increase the need of these same nutrients
- many factors connected to a sanitary environment condition the nutritional and health state of a population (availability and utilization of water, elimination of waste, living conditions, etc.).
- it is a recognized fact that a relationship exists between the water supply and diarrhoea, and between diarrhoea and the nutritional state. However, it is difficult to foresee whether an improvement in the water supply would decrease the rate of malnutrition
- etc.

(4) Selection of indicators. The model was used to choose the indicators characterizing each factor, the final choice being determined by the availability of data.

The indicators chosen to evaluate the nutritional state are attributed to children under five years of age. Other risk groups (pregnant and breast-feeding women), were not studied due to lack of data.

The table n° 5 is a summary of indicators which were used by the assessment team.

(5) Objective of Government programs and considerations of ongoing projects. The report describes summarily the objectives of the national development plan with special emphasis on those linked to agriculture, health, and education. It also reviews current projects (although mainly those related to food marketing).

1.3. Analysis and interpretation

(1) Identification of limiting factors. This analysis is made in detail for each factor. We give here, as an example, the global analysis of the factors which play a determining role on the nutritional situation.

- The agricultural production is not considered to be the principal causal factor of the nutritional problem. The results of the analysis show that the national production is sufficient to cover the needs of the country.
- The weak purchasing power of the population and the lack of elementary commercial circuits greatly influence the lack of food availability.
- Low productivity on behalf of a population dependent on self-sufficient agriculture is due, among others, to the system of land ownership and implies that this population can neither produce nor acquire the necessary food.

Table 5

Indicators Used by the Honduras Assessment Team

	INDICATORS: DIRECT	INDIRECT
1. Nutritional Status	Anthropometry	- Mortality
2. Food Consumption quantity and quality	Dietetic Surveys	- Balance sheets
3. Illness		- Causes of death - Reasons for seeing a Doctor
4. Sanitation	Housing Census	- Beneficiaries of the System
5. Health System Coverage		- Accessibility - Number of Doctor visits per person
6. Income	- Expenditure and Consumption Survey - Elasticity of Demand	- Minimum wage. - Occupational Index. - Consumer price indices - Dispersion of rural population
7. Education	- Illiteracy - Enrollment per year	- Number of primary schools
8. Availability Marketing Production	Balance Sheet Food Production per municipality	- Land tenancy - Technical assistance - Credit - Accessibility

- More than 80 % of the population have less than one third of the national revenue and the greater majority of the population with low income reside in rural areas.
- In addition to a low food consumption, the precarious state of health of the majority of the population further contributes to reduce the absorbtion of consumed food.

(2) Identification of priority regions.

The criteria used.

a) Identification of municipalities where the nutritional problems are the most serious.

Among the 282 municipalities of the country, 105 were retained as the age group of children from one to four represents more than 20 % of the total death rate of the municipality. (The data on mortality was preferred to antropometric data, as the latter is obsolete - 1966).

b) As regards the 105 municipalities, some were identified in relation to the insufficiency of the following elements :

- The state of health

  The only municipalities retained were those presenting at the same time, insufficient health services and a low level of environmental sanitation.
- The level of education

  It is also considered that in areas where less than 50 % of the school-age children are registered in primary schools, the education factor plays an important part in the food consumption, the use of existing services and the level of income (see model).
- The availability of food

  Identification of those municipalities where the production of

mais and beans (basic food), is insufficient to cover the local needs.

The choice of indicators were limited and dependent on numerous constraints, among which, the quality of the existing data and the time available to analyse these factors.

Associated factors

Research was undertaken regarding the association between risk factors, (health, education, food availability), through the superimposition of transparent maps.

This process enables us to bring to the fore those municipalities where an accumulation of three, two or one risk factors could be observed. For a limited number of municipalities (19/105), no association with the considered factors could be observed.

In this way, the group identified 8 municipalities where the nutritional problem was associated with health, educational and production problems.

Among these, five belonged to the same province. The latter should therefore be considered as a priority area.

1.4. Conclusions and recommendations

The conclusions and recommendations made in the report are based on the causal analysis, taking into consideration the government objectives and current projects.

2. Comments

2.1. This study possesses most of the attributes of a genuine assessment :

(1) A good justification for the study is provided and the objectives are clearly defined.

(2) Risk groups are also clearly identified and characterized.

(3) The study was realized over a short period of time, at a reasonable cost (even if the external experts are included in the cost calculation), by an interdisciplinary team using existing information.

(4) The study was based on a simple and functional hypothetical causal model, from which indicators were selected, and which served as the point of departure for the analysis as well as for the distribution of tasks.

(5) The organizational set up, involving various sectors, included a pre-established work plan and calendar, and regular meetings to discuss progress.

(6) The results did indeed permit the identification of priority areas, thereby successfully meeting one of the study's prime objectives.

(7) Existing policies and programmes were given due consideration, and realistic and specific recommendations could be made.

(8) The final report, revised and completed during the course of the second stage, was published one year after the finalization of the diagnosis. This was a positive factor and was made possible because the "diagnosis team" took on a permanent character and was integrated in a "System for Food and Nutrition Analysis and Planning" (SAPLAN) composed of representatives of the different ministries.

2.2. The major drawback, on the other hand, is the generally poor quality of the data. This of course is common when one has to rely on existing information which for its main part is collected routinely by unmotivated personnel. In the case of Honduras, a thorough reading of the text and the tables casts a big shadow over the validity of much of the data provided.

The causal model was not the result of an interdisciplinary effort, but an input from external experts. This may partly explain why it was not used very efficiently. The voluminous final report is indeed full of data which are often incomplete and/or irrelevant. As a result, the report is not very convenient to use : 495 pages do not make easy reading.

Still it should be recalled that the Honduras study is, historically, the first exercise of this kind at the national level, in which a causal model was systematically used for selecting the variables, sharing the work, and analyzing the results. As such it is a prototype of the kind of assessment described in this guide.

The National Food and Nutrition Survey of Guyana

This national survey was done in 1971 by the government of Guyana and CFNI, the Caribbean Food and Nutrition Institute, assisted by academic institutions and supported by PAHO/WHO and FAO. Field work lasted two and a half months (April-June). The final report was presented to the government in January 1973, i.e. 21 months after the survey started. A working group met in the same month to set the basis for a food and nutrition policy.

The survey was a sizeable entreprise; no less than 115 people are reported to have participated, more than 900 households were studied, and 2500 individuals were examined.

1. Description of the survey

1.1. Objectives of the survey

The document does not explicitly say why such a large survey was necessary for formulating a national food and nutrition policy. Only objectives ex-post, i.e. formulated after the results were available, are provided.

1.2. Sampling

A stratified sample, based on the 1970 census, was made of rural and urban households from the coastal area. In addition, four locations in the interior of the country were selected, according to representativeness, cost, and feasibility. The sampling procedure is clearly described in the report.

1.3. Data used

Except for the census data and for the food balance sheet, all other information, which covered more than 200 variables, was collected during the survey itself through the use of questionnaires, physical examination, collection of blood, urine and stools, and direct observation of food intake.

Table 6 summarizes the type of investigations, the methods used, the data collected, and the size of the major samples.

The majority of the data collected were disaggregated for the localisation (rural urban) and for the ethnic appartenance (East Indian, African, and others).

1.4. Recommendations

They are discussed in a separate chapter, and conveniently presented by sector in front of the report (Food economics, importation and development; food production; clinical procedures; education and the promotion of nutrition; facilities and services; and further investigations). For each recommendation, reference is made to the chapter and sub-section in the report in which the corresponding data are analysed.

2. Comments

2.1. Although the survey does not correspond to the definition of an assessment as it is used here, it nevertheless possesses a number of merits which are relevant to this guide :

(1) The presentation is agreeable, functional, and remarkably concise (106 pages). The generous use of tables and graphs helps understanding the nutritional situation in Guyana. The major areas of investigation are each presented in a special chapter (Characteristics of the household, young child feeding, food production and its factors, etc.). The recommendations, are conveniently located at the beginning of the document. They are divided into sections corresponding to the major government sectors with, for each recommendation, a specific reference to the text. Easy access to the data and their analysis is therefore insured for each sector, allowing any concerned specialist to assess the validity of the information without having to read the full report. The recommendations, furthermore, are clear and concise, and seem realistic.

A brief historical section and general presentation of the country make it possible for a foreigner to figure out the situation, and it assists him in interpreting the results.

(2) The evidence provided suggests that the data are of high quality (specially trained personnel, delicate laboratory tests made abroad, few cases lost or non-respondents, detailed information on the sampling procedures, critical discussion, etc.). Disaggregation is given much consideration, and is everywhere clear and

explicit. Statistical procedures are described.

(3) The survey is undoubtedly useful, as a baseline for future surveillance or evaluation or for selecting short term interventions. It also points, explicitly, to further research needs.

2.2. On the other hand, even if allowance is made for the fact that this is not an assessment, a few negative aspects need to be mentioned, since they illustrate key points of the guide itself.

(1) Objectives are not defined. The reasons why the decision was made to conduct the survey are not given. This casts a doubt on the relevance of some of the survey components.

(2) Although the cost of the survey, in money and in personnel, is not provided, it is obvious that important resources must have been involved to coordinate so many institutions and to examine a large number of people and households. This is an important observation in view of the absence of precise objectives, as commented above, and even more if it is related to a certain degree of under-utilization of the information.

(3) The causal analysis is quite unsatisfactory, in sharp contrast to the authors' manifest concern with causes. No attempt seems to have been made at understanding causality - or at least at formulating hypotheses regarding causes, prior to data selection.

Attempts at establishing associations are incomplete and inadequate. The following quotation comes from the report " An enormous amount of very diverse information was collected during the survey. It is important to try to determine what sociological, behavioural, economic, agricultural, personal, and other factors influence the nutrition of the people of Guyana and how these factors interrelate with one another. Identification of such factors assists in the wise selection of potentially effective intervention programs. To this end, the information has been graded into categories, and associations between these various categories of different types of information have been determined. Chi-square tests have been carried out on each association".

This quotation illustrates what may be the weakest point of the study, the presentation of 200 associations of pairs of variables, without a clear plan for analysis or even a conceptual frame.

Potential causes of error such as the following are not discussed

- the fact that some associations may be significant only by chance
- the bias introduced by confounding variables
- the fact that all associations are given the same weight, while their importance may be widely different.

The discussion of the causal factors (a few of them only) is scattered among the chapters. There is no attempt at getting at a global view, which anyhow is totally absent from the published document (although not necessarily, it must be pointed out, from the authors' mind, as the context in many respects suggests).

Under these circumstances, it is difficult to assess the relevance and the usefulness of such a document for policy formulation.

2.3. Such criticisms, it must be pointed out, can be applied to many assessments and surveys, which do not possess the qualities of the Guyana study. It is because of their general interest that they are given emphasis here. The attractiveness of the Guyana report is further enhanced by its being issued in the Scientific Publication Series of PAHO. This fact, the care taken by the authors to include a brief introduction to the country, and the quality of the presentation, make the report not only interesting well beyond the boarders of Guyana, - but make it also accessible - a rare occurrence for documents of this kind.

Table 6 : Investigations, Methods, Sample Size and Individual Data Collected During the Survey of Guyana

Type of Investigation	Method and Sample Size (between parentheses)	Data Collected
Biomedical	Anthropometric measurements (2518)	- Child underfive : weight for age, weight for height, height for age, triceps fat fold, arm muscle cirumference - Other child and adults : weight for age, tricep fat fold, arm muscle circumference
	Biochemical and Hematological tests (1758)	- Hemoglobin and hematocrit (performed in Guyana) - Mean corpuscular hemoglobin concentration, serum albumin, cholesterol, lipids, vitamin A, folate levels (subsample of 500 for each test, performed in New York)
	Clinical signs (2512)	- 27 clinical signs of malnutrition . - Current infections : respiratory, etc. - Dental examination : teeth decayed or filled, mottled enamel
Socio cultural	Household questionnaire (922)	- Location and ethnic variation, residence, tenure, mobility, size and social structure, family budget, main providers, reading and listening habits - Ecological factors related to nutrition*: Housing and sanitation (number of rooms per household, water sources and latrines, cooking facilities, kitchen equipment...); Dietary attitudes (foods used, desired or prohibited); Child care, Education and Health
	Young child feeding questionnaire (507)	- Breast feeding , supplementation (cow's milk), weaning foods, breast feeding and pregnancy, meal frequency
	Pregnancy and lactation questionnaire (473)	- Diet in pregnancy, diet in lactation, use of medical services during pregnancy and lactation, ideal family size.
Food consumption	Household inventory method (416)	- Mean energy and nutrient intakes (8 nutrients)
	Household weighing method (416)	- Contribution of different foods to energy and nutrient intakes, cost-nutrient value of principal foods (26) available in Guyana
	Individual weighing method (50 household : 50 children under five, 50 adult males, 50 adult females)	

Type of investigation	Method and Sample Size (between parentheses)	Data Collected
Food production	Kitchen garden questionnaire (269)	- Nutrient composition of principal garden vegetables - Fertilizer used, sources of seeds, utilization of the household production
	Farm questionnaire (200)	- Land tenure and use, farm labor and employment, irrigation and drainage facilities, utilization of farm production (for 10 products), application of fertilizers, insecticides and manure, agricultural extension, farm tools and machinery, agricultural credit

* In the document, the ecological factors are assembled in a specific chapter.

Malnutrition in Zimbabwe

The study was undertaken by a World Bank mission in April-May 1982 as a portion of a larger Population, Health and Nutrition Sector Study. The report was published two months later (July 1982), and a revised version appeared in December 1982.

The author of the report arrived in a context in which malnutrition was recognized by all to exist in Zimbabwe, but opinions were diverging substantially as to its severity, its nature, its distribution and its causes.

1. Description of the study

1.1. Types of Data Used

The study uses existing data to the maximum. An impressive amount of documents were consulted, close to half of which - i.e. over eighty, were unpublished reports, notes, theses, papers, etc. Still, the available data being scarce, fragmented, and often of doubtful quality, they were completed by new data and information collected over the short duration of the study :

- subjective "best judgements" on the nutrition situation by 55 health field staff (questionnaires, and interviews); on the sufficiency of food in their areas and the causes of the condition by 94 agricultural extension field staff.
- field surveys and reports from 5 areas of the country by fifth-year students of the University of Zimbabwe Medical School.
- "snapshot" surveys of the nutrition status of samples in two non-drought communal areas on whom the socio-economic and agriculture data were being collected.

Data collected for three field surveys conducted in conjunction with the World Bank's Agricultural Sector Study were also used.

1.2. Main points

The main points are summarized in the first three pages. They are clear and relevant, and conveniently refer to numbered paragraphs in the text.

1.3. Magnitude and nature of the problem

A thorough but careful exploitation of data of uneven quality and from diverse sources, provides nevertheless a generally consistent pattern, which shows that malnutrition is a significant problem among children 7 to 24 months old, stunting being more marked than wasting. Children of commercial farm workers and of peasants on communal lands are more affected. Seasonal variations are observed. Among micronutrient deficiencies, endemic goiter and pellagra are significant.

1.4. The causes

The discussion of the causes takes about one-third of the whole report. Causes are considered by broad categories.

The first group of causes are linked to food production and availability. Although Zimbabwe is a food surplus nation, the report provides evidence that significant portions of the population suffer shortages of food. Low income is another problem, particularly among the two groups already mentioned, commercial farm workers and peasants on communal land. The role of remittances sent by people working in the cities or the mines is shown to be important. An attempt is being made to examine production /income/ expenditures with nutrition status, including a preliminary effort at multiple regression analysis to determine causality.

One of the best sections in this document describes the process of "modernization" and its impact on the patterns of food consumption. Other problems considered are cultural and social problems, and the role of infections.

Linkages between the categories of causes are not discussed in depth,

and some of the major causes are not analysed further or are refered to other World Bank sector studies.

1.5. Programs

Among the considerable number of nutrition-related actions undertaken in Zimbabwe the study focuses on the most important, and discusses them in detail (consumer food subsidies, feeding programmes, nutrition education, nutrition rehabilitations, and food technology). Drawbacks, advantages, past experience, etc. are critically considered, and cost is justifiably given much attention.

1.6. Needs

On the short term, as the report convincingly argues, a number of policy decisions ought to be considered, among which

- formulation of a nutrition policy and the creation of an organizational structure to this effect
- reorientation of consumer food subsidies
- coordination of nutrition education
- better targeting of feeding programmes

Priority groups, as said before, are clearly identified as workers on commercial farms and peasants on communal land. A number of interventions are discussed or proposed

1.7. Bibliography.

It covers over 180 references, explicitly provided to help government staff and Zimbabwean researchers who will be doing further work in the area of nutrition.

2. Comments

2.1. This is a piece of work which is clearly presented and, by any standard is of unusually high quality. It in many respects meets the criteria of a nutrition assessment :

(1) The study was realized over a short period of time.

(2) It is based mainly on existing data, and it provides a good example of both effective data "hunting" and efficient data utilization. Noteworthy are the degree of disaggregation given to the data, the combination of existing and newly collected data, and the quality of the discussion. The latter leads to what the authors appropriately call a "montage". But the montage is prudent, critically watched, and convincing to the reader.

(3) Great attention is given to causality. It is a constant concern throughout the document, a third of which is dedicated to the causes - although with only moderate success, in our opinion, as we will try to show below.

(4) The study yields a few clear (and clearly expressed) conclusions which are consistant with the facts as analysed : policy recommendations are made, a few interventions are suggested, and key vulnerable groups are identified. Such recommendations are rather suggestions, which the report respectfully presents to the government as options awaiting a more in-depth consideration.

(5) A comprehensive list of references is attached.

The study has a few additional merits some of which were mentioned before : the section on modernisation, which is useful to perceive trends; a note on caution about big surveys; the importance awarded to the cost of interventions, etc.

The cost of the study itself, the number of people involved (individuals, man - months of highly skilled professionals), and the amount of effort

absorbed in short surveys, analysis and travel are unfortunately not provided. They presumably were higher than those of the usual assessments - or at least closer to the upper limit.

2.2. Aside from the merits emphasized above, the study possesses a few weaknesses, inasmuch as it can be taken as an example of a nutritional assessment as understood in this guide.

(1) In the first place the objectives are not clear. It is not said why a nutrition sector study was needed, who requested it (the government or the World Bank), and what for. The relevance of the study is therefore difficult to judge. Nor are reasons given why nutrition was taken as a separate sector study.

(2) Another drawback, as far as we are concerned here, is that the study was done by an external institution, without major explicit responsibility of the government in it. The work, in addition, does not seem to have been a team work. The reader is left with the impression that the "mission" was one consultant, assisted by highly competent national professionals who acted mainly as providers of data and discussants. There is no evidence of a substantial contribution of the health, agriculture, economic , and other sectors in the selection of data and in the identification of probable causes of malnutrition. There seems therefore that an opportunity was lost to fully involve such sectors.

Maybe such impressions do not correspond to reality. In that case, they should have been dispelled in the report.

(3) Closely linked to the previous point are the disadvantages of the sectoral approach (Is nutrition a "sector" anyhow ?). Although it is acknowledged that an international agency such as the World Bank cannot always avoid fragmentation into sectors, in the present case the drawbacks are serious. Inputs from some sectors are missed, or at least not fully utilized (inputs here means more than data : ideas, explana-

tions, implications of observed facts, involvement, committment, etc.). Linkages of nutritional problems with factors listed under other sectors or omitted, or are not made explicit, or are refered to other sectoral studies. The fragmentation of the problem precludes a comprehensive understanding of its mechanisms. The sectoral approach both reflects a lack of global vision, and further contributes to its absence.

(4) In spite of the obvious concern of the author for the causes of malnutrition, it is the analysis of causes which may be the major weakness of the study, largely a consequence of the points cited above. Broad categories of causes are discussed without justifying why such causes were selected instead of others. In some cases the choice may have been influenced by the existence of data. Only some of the causes of food shortage are analysed, not others, etc. Causes are somehow taken as if they were independant from each other, and linkages are not examined in depth. As was said before, when the discussion moves to basic causes, the latter are fragmented among different sectoral studies - a frustration to the reader. The latter cannot but agree with the author's statement that "What is required to bring the group of peasants on communal land to nutritional adequacy goes beyond what can be achieved through conventional short term nutrition interventions". Yet the analysis stops short of going into deeper causes. The authors realize this : "It is possible to begin to get an understanding of some of the more prominent influences on the problem". This, we believe, is a much too modest goal. Enough is known about the causes and mechanisms of malnutrition generally to allow to get at once much further : to formulate specific causal hypothesis and postulate linkages between them, in a orderly fashion. This has been done quickly and successfully in countries where much less information was available than in Zimbabwe.

The use of a causal model (or any other systematic and comprehensive

method) would most probably have permitted a more structured and consistent analysis of causality, a list of recommendations more consistent and better connected with each other, and a more thorough and critical discussion of the relevance of interventions - both existing and proposed.

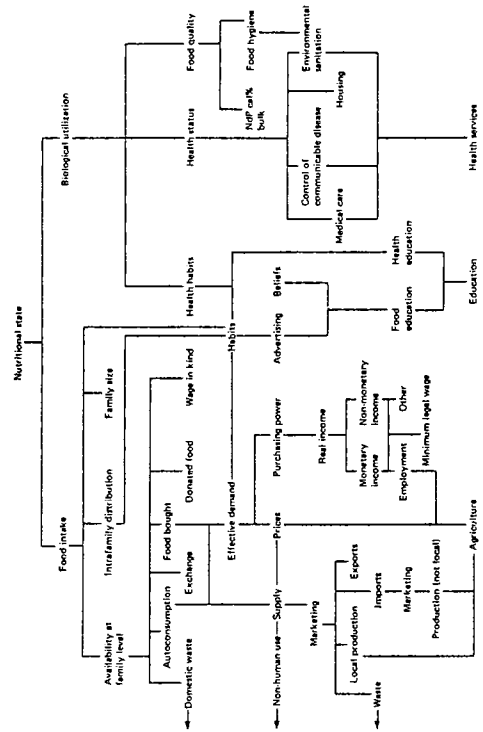
The critical comments made above are used to illustrate some of the key points of the guide - not to diminish the merit of the study. The Zimbabwe case, in spite of our criticism, remains one of the very best among the twenty or so assessment reports which were reviewed.

Guatemala

This assessment was conducted between September 1976 and August 1977 under severe constraints of time by the government of Guatemala and INCAP, with financial support of USAI. The study was a part of a broader nutrition and health sector assessment, and although a rather global causal model was built and used, only data related to nutrition and to health were assembled and analyzed. Other factors were left for a later stage.

The data were generally of rather poor quality, except those coming from good but localized surveys. Still a general consistent picture emerges from the report, and shows how, in spite of marked development in recent years, no improvement of nutrition was observed. The report does not provide much information on the manner. the assessment was conducted, and it does not present the model. (The latter, however, has been reproduced in Beghin, 1979 - see Figure 5). The importance of the Guatemala case, resides in the fact that for the first time a causal model was built by the members of the assessment team instead of being brought in by external specialists - thus establishing the feasibility of the method and demonstrating its practical advantages (among the latter is the manner in which the model building exercise led to active involvement of different sectors, some of which were initially little motivated).

Figure 5 : Causal model used in Guatemala



Bangla Desh

A short allusion will be made here to two papers presented at the Third Bangla Desh Nutrition Seminar in 1978.

The first article, by G. Mostafa, is an attempt at comparing the districts of Bangla Desh according to a small number of indicators using existing data. The data are obviously of poor quality, and the reader has difficulties in following the author in his interpretation of his data. Still the paper has merit for a number of reasons. It provides in its introduction a very well articulated rationale of the need of a guide like the present one; it correctly uses a causal model (here the Honduras one); and in the discussion of nutrition problems it follows the model.

In the second paper, by A. Khan, the same model is applied, but this time to a local situation in a prospective study. Although the same reservations about data and interpretation would seem to be justified, again, from a methodological point, this work deserves to be mentioned.

Both papers are the first published attempt we were able to trace, to use the guide's methodology in an Asian country.

Annex IV

List of Assessment and Survey Reports Reviewed

Below is a selected list of assessment and survey reports, presented in the chronological order of actual implementation, i.e. of data gathering and/or collecting. Date of publication was not considered in ranking the references. Only documents which provided either useful inputs to the guide or significant insight, are listed.

Rao, K.S., M.C. Swaminathan, S. Swarup and V.N. Patwardhan
Protein Malnutrition in South India. Bull. Wld. Hlth. Org. 20, 603 - 639, 1959.

ICNND
Northeast Brazil Nutrition Survey. Interdepartmental Committee on Nutrition for National Development, Washington D.C., 1965.

INCAP/OIR
Evaluación nutricional de la población de Centro América y Panama : Nicaragua. Instituto de Nutrición de Centro América y Panama. Office for International Relations/National Institutes of Health, Guatemala, 1969.

INCAP/ICNND
Nutritional Evaluation of the Population of Central America and Panama 1965 - 1967. Regional Summary. U.S. Department of Health, Education and Welfare. DHEW Publ. nr. (HSM) 72-81 20, 1972.

Beghin, I., W. Fougère et K.W. King
L'alimentation et la nutrition en Haïti. Etudes "Tiers Monde", Presses Universitaires de France, Paris, 1970.

PAHO
The National Food and Nutrition Survey of Barbados. Scientific Publication n° 237, Pan American Health Organization, Washington DC, 1972.

Nutrition Canada
Enquête Nationale. Information Canada, Ottawa, 1973.

ATAC
A Nutrition Programming Handbook. A Guide for National Planners. American Technical Assistance Corporation, Mc Lean, Virginia, 1972.

UASS
Evaluación del componente nutricional dentro del sector Salud. Unidad de Análisis del Sector Salud (UASS), Managua, Nicaragua, 1975.

PAHO
The National Food and Nutrition Survey of Guyana. Scientific Publication n° 323, Pan American Health Organization, Washington DC, 1976.

SAPLAN
Evaluación de las Áreas Prioritarias del Problema Nutricional de Honduras y sus Posibles Soluciones.
Sistema de Análisis y Planificación de la Alimentación y Nutrición (SAPLAN), Secretaria Técnica del Consejo Superior de Planificación Económica, Tegucigalpa, Honduras, 1976.

Sri Kardjati, J.A. Kusin and D. De With
East Java Nutrition Studies. Report I. School of Medicine, Airlangga, Surabaya, and Royal Tropical Institute, Amsterdam, 1977

Culbertson, R.E. and J.E. Sarn
Health Sector Assessment for Nicaragua. United States Agency for International Development Mission, Managua, Nicaragua, 1976.

Poyner G. and C. Strachan
Nutrition Sector Assessment for Nicaragua. United States Agency for International Development Mission, Managua, Nicaragua, 1976.

Análisis del Problema Nutricional de la Población de Guatemala. Secretaría del Consejo Nacional de Planificación Económica. Instituto de Nutrición de Centro America y Panamá (INCAP), Guatemala, 1977.

Nutrition Assessment Report for El Salvador. Community Systems Foundation, Ann Arbor, Michigan, 1977.

Valverde, V. and coll.
Classificación Funcional de Problemas Nutricionales en El Salvador (3 vol.). Ministerio de Salud Pública y Assistencia Social, República de El Salvador, Instituto de Nutrición de Centro America y Panamá (INCAP), Guatemala, 1977.

Mostafa, G.
Districtwise Assessment of Food and Nutrition : Use of Available Sources of Data. 3rd Bangladesh Nutrition Seminar, Institute of Public Health Nutrition, Mohakhali, Dacca, s.d.

Shakil Ahmed Khan
Development of a Methodolgy for the Nutrition Evaluation of Communities : A case Study of Bera. 3rd Bangladesh Nutrition Seminar, Institute of Public Health Nutrition, Mohakhali, Dacca, s.d.

Beghin, I.
Mise en place d'une enquête. Recherche des facteurs déterminants de la malnutrition. Document Paraïba.
Unpublished, 1981.

IFAD
Report of the Pronorte Rural Development Project Preparation Mission. Annexes 17 and 19. Report n° 1 NI.PR.1. International Fund for Agricultural Development, Rome, 1981.

Berg, A.
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