



DOCUMENTING TRADITIONAL FOOD SYSTEMS OF INDIGENOUS PEOPLES: INTERNATIONAL CASE STUDIES

GUIDELINES FOR PROCEDURES

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The authors alone are responsible for the views expressed in this document.

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Cover photos - Top left to right: Dalit millet, Dalit pulses, Bhil meal, Bangladesh laboratory, Karen pile sort
Bottom, left to right: Nuxalk salmon, Arctic char, Miao green
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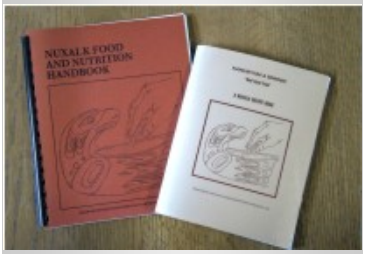
List of Data Forms for Steps 2-5:

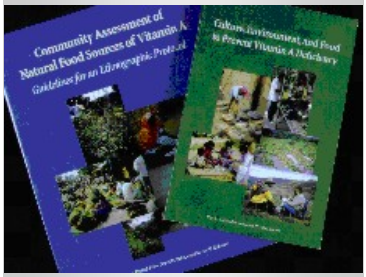
BACKGROUND AND CREDITS

This draft procedure manual was developed with contributions of many people. The initial idea for the need for such a document came from the work of the Center for Indigenous Peoples' Nutrition and Environment (CINE) at McGill University, Montreal, where several years of work have documented traditional food systems of Indigenous Peoples in Canada. CINE's methods had foundation in community nutrition studies in Western Canada, particularly with the Nuxalk Nation in Bella Coola, British Columbia, conducted in the 1980's. From 1993-2001 CINE professors and staff developed traditional food system assessment methods by working with 46 communities of Dene/Metis, Yukon First Nations, and Inuit communities in Arctic Canada, which had a foundation in the Nuxalk work. Several of the procedures included here are modifications of CINE methods, and some techniques are described from the CINE experience, particularly with regard to participatory research and research agreements. The need to expand CINE's work into the international arena of Indigenous Peoples was a priority for the CINE Executive and the Governing Board, and noted in the CINE Strategic Plan of 1999. The CINE Governing Board is comprised of 7 Aboriginal leadership organizations in Canada: the Assembly of First Nations, the Council of Yukon First Nations, the Dene Nation, the Inuit Circumpolar Conference, the Inuit Tapiriit of Canada, the Metis Nation of the Northwest Territories, and the Mohawk Council of Kahnawake. The current chair of the CINE Board is Chief Bill Erasmus of the Assembly of First Nations.

This document is a result of a project with 5 communities of Indigenous Peoples in Asia. The project was conducted from 2001-2003, and sponsored by the Food and Agriculture Organization of the United Nations, Rome, and the International Development Research Centre of Canada (IDRC). The project is part of the mandate of the current Task Force of Indigenous Peoples Food and Health of the International Union of Nutritional Sciences (IUNS), of which Harriet Kuhnlein is the chair.

A significant predecessor of this manual is a project conducted under the auspices of the IUNS Committee II-6 from 1992-1994, and published in 1997 by the International Nutrition Foundation for Developing Countries (INFDC) and the IDRC. The IUNS project was field tested in communities in China, India, Peru, Philippines and Niger, and addressed culture, environment and food to prevent vitamin A deficiency. It contained guidelines for an ethnographic protocol for the community assessment of natural food sources of vitamin A. Special acknowledgement to the collaborators in this project is given to Dr. Gretel Pelto, Dr. Bert Pelto, and Dr. Lauren Blum. In fact, the manual presented here is an adaptation of "the vitamin A procedure" to specifically address traditional food systems of Indigenous People, with a focus on nutrient composition of traditional food, and the unique environmental and cultural constraints and benefits of traditional food to address adequate nutrition of several micronutrients in communities. Several of the exercises and descriptions of methods from the earlier works (Blum et al, 1997; Kuhnlein and Pelto, 1997) are adapted for use here. Of special note are the qualitative methods for cultural definitions of food use including key-informant interviews, how to develop





CINE Building; Nuxalk Nation in British Columbia; Nuxalk books; Vitamin A books; Chief Bill at workshop; Arctic workshop.

good communications with communities, and keeping good field notes, all described in the tradition of RAP (rapid assessment procedures). The current document has expanded sections related to participatory research with Indigenous Peoples, field sampling of food for analysis, laboratory methods, dietary analysis, assessment of environmental constraints and advantages for Indigenous Peoples, and planning food-based interventions.

Within the United Nations agencies, the Food and Agriculture Organization documented the need for development of this procedure and its application to Indigenous Peoples at the Workshop on Food Insecurity and Vulnerability Information Mapping Systems (FIVIMS) held in Bangkok in November, 2000. As well, the World Health Organization expressed interest through its Health of Indigenous Peoples section, as part of activities during the Decade for Indigenous Peoples. Interest was also expressed from United Nations conventions on Human Rights and Biological Diversity.

The need for case studies to apply the procedure was obvious. Therefore, case study teams were developed for representative Indigenous People in one regional area, Asia, where there are many indigenous cultural groups in diverse environmental settings. Case study teams met in a workshop to discuss methods in Salaya, Thailand, March 12-16, 2001, which resulted in this draft.

Case studies which developed were:

1. the Karen of Thailand, with team members lead by Dr. Suttilak Smitasiri, Dr. Prapasri Puwastein, Mr. Solot Sirisai, and Dr. Lakana Daoratanahong;
2. the Miao of Sichuan, China, with team members led by Dr. Li Dan and Dr. Fengying Zhai;
3. the Bhils of Gujarat, India, with team members led by Dr. Gopa Kothari and Dr. Lalita Bhattacharjee
4. Nayakrishi farmers, including the Mogh of Makeshkhali Island, Bangladesh, with team members led by Ms. Farida Akhter and Dr. Salek Ahmed; and
5. Dalit farmers of Zaheerabad area, Medak district of Andhra Pradesh, South India, with team members led by P.V. Satheesh and Ms. Salome Yesudas.

The Salaya workshop was directed by Dr. Harriet Kuhnlein, with logistical support from Dr. Suttilak Smitasiri and the Institute of Language and Culture for Rural Development, and the Institute of Nutrition at Mahidol University. Funding was provided by the Food and Agriculture Organization of the United Nations (Regional Area of Asia and the Pacific), the International Development Research Centre (Canada), and CINE. Two visits to the Karen area were made in conjunction with the workshop: one to witness a special ceremony to celebrate the forest in which the Karen of Sanepong and other communities live; and a second to introduce Chief Bill Erasmus (National Chief of the Dene Nation at that time and Chair of the CINE Governing Board) to Karen leaders in Sanepong and Kanchanaburi, Thailand.

Salaya workshop participants; Salaya workshop; Bhil community; Mogh community; Miao participants.

In addition to those noted above, special thanks are given to the following major contributors who developed the plan and the procedures during the Salaya workshop: Dr. Biplab Nandi (FAO Regional Office for Asia and the Pacific in Bangkok), Dr. Lakana Daoratanahong (Institute of Language and Culture for Rural Development, Mahidol University), Dr. Pongtorn Sungpuag (Institute of Nutrition, Mahidol University (INMU)), Mrs. Orapin Bangong (INMU), Ms. Sopa Tamaehotipang (INMU), Mr. Jaray Sadakorn (Bangkok Herbarium), Dr. Opart Panya (Faculty of Environment, Mahidol University), Mr. Alongkot Chukaew (Wildlife conservation specialist), Ms. Siri Damman (International Program for the Right to Food in Development, University of Oslo), Ms. Benjamas Chumvorratayee (Sanepong Village), Mr. Sompop Sungklachalatarn (Karen leader, Sanepong Village), Mr. Bundid Grivijitr (Education specialist, Sanepong Village), (Ms. Sinee Chotiboriboon (INMU) and Ms. Prapa Kongpunya (INMU), Dr. Emorn Wasantwisut (INMU), Dr. Sakorn Dhanamitta (INMU) and staff of the Division of Communication and Behavioral Sciences at INMU.

We also thank those contributing to final preparation of this document. In particular, Kristin Rindress and Helen Rimmer of McGill University are thanked for work on the final draft. We also acknowledge those contributing revisions at the workshop held in Rome, 2002.

The procedures are suitable for application to other case studies in the global environment, including North America, Africa, South America, Australia, and other Asian areas. It is anticipated that further refinements will be developed to improve this version.

INTRODUCTION

Intended readers

This procedure is intended for all who have particular interest in the food, nutrition and health of Indigenous Peoples. The text and various elements of the procedure appropriate for study of traditional food systems of all Indigenous Peoples, with special relevance to Indigenous Peoples in the Americas and Asia, from where contributing experts have been drawn.

The intended users of the procedure are expected to be experienced health professionals, with interests and experience in food-based strategies for nutrition promotion programs.

The assessment described here has the purpose to provide essential information for developing better micronutrient nutrition in communities of Indigenous Peoples, and to lead to appropriate food-based interventions where they may be needed. The case study areas were selected with recognition that the natural environment, if still basically intact, is capable of contributing a complete diet within the traditions of the people living in it. Knowledge derived from these assessments can therefore be applied to other communities of Indigenous People within the same culture and environment context of those described here. The procedures can be broadly applied.

This assessment is not intended to generate information for industrial exploitation of natural environments within which Indigenous Peoples live. Rather, it is a procedure blending traditional knowledge and laboratory science information which can most appropriately be applied by Indigenous Peoples themselves to their own circumstances to improve community nutrition and health using traditional food resources.

Who are Indigenous Peoples?

A succinct working definition of Indigenous Peoples for the purposes of this project is: 'Indigenous people' refers to a cultural group in a particular ecological area that developed a successful subsistance base from the natural resources available. The plural form, ' Indigenous Peoples', refers to more than one cultural group. Under International Law, and by United Nations bodies, Indigenous Peoples are distinguished by

- residence within or attachment to geographically distinct traditional habitats, ancestral territories, and natural resources in these habitats and territories;
- maintenance of cultural and social identities, and social, economic, cultural and political institutions separate from mainstream or dominant societies and cultures;
- descent from population groups present in a given area, most frequently before modern states or territories were created and current borders defined;
- self-identification as being part of a distinct indigenous cultural group, and the display of desire to preserve that cultural identity.

Bhil women; Bhil samples collected; Miao participants; Nayakrishi home, Bangladesh; Nuxalk salmon barbeque.

Self-identification as indigenous or tribal is usually regarded as a fundamental criterion for determining indigenous or tribal groups, sometimes in combination with other variables such as language spoken and geographic location or concentration. (UNDP, 2000)

Why have a procedure targeted to Indigenous Peoples?

Universally, within communities of Indigenous Peoples, there is the knowledge of the natural resources that make up the food environment. Capacity-building to use this knowledge for contemporary nutrition and health promotion of these people is well-received. At the same time, Indigenous Peoples face potential loss of this knowledge due to lack of use by younger members of the society and to gradual loss of elder members who know the most about the resources. Thus, it is important to implement use of this knowledge soon. Additionally, Indigenous Peoples are often the most disenfranchised and poorest members of the larger society or nation, and they are targeted by most governments for health improvement and development. However, it has been shown that development often leads to trends in dietary change that lead to increasing risk of chronic disease such as obesity and diabetes. This unfortunate consequence of development can be moderated with increased attention to the principles of diet and health already contained within the culture, and with recognition of the nutrient properties of traditional food resources, these local foods can be used to their best advantage for health promotion.

Concerns with environmental protection of food biodiversity also lead to understanding the need for close work with Indigenous Peoples. Many species of both plants and animals are threatened with extinction due to environmental deterioration of their habitats in forests and other fragile ecosystems. Indigenous cultures around the world are being disrupted and destroyed for the same reasons, especially since economic agricultural and health/nutritional conditions of these people depend on their local food resources. In fact, native peoples have been the stewards of 99% of the world's genetic resources, and the inextricable link between cultural and biological diversity which cannot be ignored can lead to protection of these food resources for all humankind.

What is unique about community nutrition work with Indigenous Peoples?

Community nutritionists who work with Indigenous People, and who are not part of the local indigenous culture, always face the requirement to work cross-culturally. Not only are the targeted people usually from another culture, but they face issues of assimilation by a larger culture. Understanding and sensitivity to these issues and maintaining knowledge and respect for local traditions and lifestyles is paramount to success in health promotion efforts with Indigenous Peoples. Issues in environmental protection, and availability of land for food purposes are often politically sensitive areas of which health professionals must be appraised, and which affect knowledge areas key to the procedure, but which are better addressed through different channels. Finally, there are important and fascinating lessons to be learned about unique food species and their place

in a traditional food system.

Procedures to compensate Indigenous Peoples for the utilization of their knowledge of their biological food resources are expected to be unique. Often, the most salient compensation is development of education and action programs for the youth of these communities so they may have future access to these resources. In addition, most Indigenous Peoples welcome the opportunity to alert the global community to the value of indigenous knowledge. Local knowledge regarding conservation, management and sustainable utilization of food resources should be recorded and duly recognized.

Short term targets, medium term objectives, and long term goals

The **short term** target addressed in this book is development of a useable procedure for understanding and documenting the traditional food system of Indigenous People, and publishing this under the auspices of the FAO and IDRC. Cases studies in the Asian region were selected to build a model, understanding parameters of the food diversity within a broad geographical region, and also so that the case studies could assist each other and make use of existing nutrient data in neighboring areas. The most significant **medium term** objectives for which this procedure is specifically intended is to derive from the knowledge gained a successful food-based intervention that improves health of Indigenous People within the same culture and environmental setting. **Long term** goals are to expand this procedure and health promotion efforts using traditional food to many communities of Indigenous Peoples worldwide.

How to use this procedure

The steps in this manual lead to achieving interrelated milestones toward the short term and medium term targets and objectives; that is, to build the knowledge of food as consumed in communities of Indigenous People that will lead to a successful food-based health promotion strategy. The five component parts are:

1. Prepare the interdisciplinary research team, gather background data and develop good participatory technique with communities of Indigenous Peoples.
2. Gather food list data, including seasonality, preparations, suitability for children, etc.
3. Gather the scientific parameters of traditional food, including taxonomic identifications, laboratory evaluation and compilation of nutrient composition.
4. Understand dietary food use and nutrient intake patterns and cultural context in the community of Indigenous People, particularly for infants, children, mothers and elders.

5. Plan for food-based intervention to improve community micronutrient status within the environmental and cultural context of the community, and document success.

This manual assists with identification of the research questions, and how to collect the data to address them. Please see the Table of Contents to find specific procedures for each component step. Descriptions of data gathering tools and examples of data presentation are given at the end of the document.

QUESTIONS ADDRESSED WITH THIS PROCEDURE

Main questions: Can the traditional food system be used to improve micronutrient status of the community? Can the negative effects of the nutrition transition (obesity, poor quality diet) be prevented or reversed?

1. What foods are contained in the complete traditional food list of the cultural group under study? How are these identified by local names and scientific nomenclature, including listing of varieties of food frequently used.
2. What is the seasonality and frequency of use of each food? How are the most often used foods ranked for year round quantity of consumption by the community as a whole?
3. What are the 25-30 key foods that are likely to provide micronutrients? What are the best foods in the community that prevent protein-energy malnutrition?
4. What are the cultural attributes and environmental constraints to using these foods? What adjustments can be made to improve micronutrient nutrition of the community?
5. How and in what forms are these foods harvested, stored and prepared for consumption by children and mothers?
6. What new data are needed for nutrient contents of the important foods used by children and mothers?
7. What are the new laboratory data derived?
8. What are the current dietary and nutrient intake patterns of infants, children, mothers, and elders? What traditional foods are regularly incorporated? What is the need, and the potential, for incorporating other micronutrient-rich food items?
9. What food-based strategies are planned, conducted and documented to successfully improve micronutrient status of children and mothers using items contained in the traditional food system?
10. What strategies can prevent or reverse the nutrition transition to nutrient poor foods and increasing obesity?

OVERVIEW OF TIMELINE AND REPORTING

Data-gathering in the community and food sampling can be conducted within a full time period of 8 weeks with a research manager and 2 field assistants, however seasonality of the food items to be sampled may stretch this out over the seasonal year. The time required by the nutrient composition laboratory is variable, depending on other responsibilities in the organization; however, approximately 60 days are expected to meet time needs for the suite of nutrients under consideration in this report for approximately 30 unique foods. Time for planning and implementation of food-based strategies to improve micronutrient nutrition are quite variable, and depend on the specific local situation.

PROTOCOL TIMETABLE

This timeframe is a guideline. A second season identified for interviewing and food sampling would have a similar framework.

	Week							
	1	2	3	4	5	6	7	8
Set-up and Background Data	■	■						
Community Food System Data Tables	■	■	■	■	■	■	■	■
Key-informant Interviews/Focus Groups	■	■		■	■		■	■
Community Traditional Food List	■	■						
Market Survey			■	■				
Food Sampling and Laboratory Analysis			■	■	■	■	■	■
Community Discussions	■							■
Interpretation and Report							■	■
Planning to Conduct Intervention								■

FIVE STEPS TO TAKE

1. Step 1: Prepare the Team
2. Step 2: Gather Foodlist Data
3. Step 3: Scientific Parameters of Food
4. Step 4: Understanding Food Use and Health
5. Step 5: Plan Intervention

Yukon workshop; Karen community food list workshop; Bangladesh laboratory; Karen focus group; Nuxalk interview.

STEP 1.
PREPARE THE INTERDISCIPLINARY RESEARCH TEAM, GATHER BACKGROUND DATA AND DEVELOP GOOD PARTICIPATORY TECHNIQUE WITH COMMUNITIES OF INDIGENOUS PEOPLES

The interdisciplinary research management team

The team leader or co-leader for this method development should have background in nutrition. In addition, there are 4 key interdisciplinary specialists with expertise required in this procedure:

1. Indigenous People's local leadership: for development of good participatory research technique
2. Food culture anthropologist/specialist: for providing background on community history, and local food and cultural understanding
3. Food analysis specialist with laboratory: for nutrient composition studies
4. Food and dietary database specialist: for computer definition of dietary intake

Additional data may be required from these specialists:

- Herbarium scientist and, where needed, a link to a taxonomic zoologist: for identification of species of food plants and animals
- Local Indigenous People's environment protection specialist: for providing background on environment issues related to traditional food systems

Team members should be brought into the project early on with meetings and workshops to discuss the research questions, and research plan.

Gather background data

A background of the group under study is needed at the beginning of each project to set the stage for the work to be undertaken. The basic background description is to address: a) evidence of need to focus on these particular communities; b) sufficiency of food as energy and protein sources; and c) evidence of concern for micronutrient status. The following information should be sought from a variety of sources to understand the Indigenous People of the area, their food system, and their nutrition and health situation. It may not be possible to get all of this information from existing documents; however, it is also important to know when data do not exist.

1. National micronutrient nutrition situation reports; local data if possible
2. Geography and climate of the specific community area
3. Brief history of the Indigenous People in the study, including

migration patterns if applicable

4. Current situation of the people
    a. Village structure in context of the region
    b. Transportation; communication channels and patterns
    c. Census/information for the area; general population structure
    d. Family structure and way of life; recreation; general family resources
    e. Material culture; housing, clothing, etc.
    f. Persistence of traditional lifestyle
    g. Agriculture/livelihood/income, including general cropping patterns
    h. Hunting, fishing, and gathering wild/uncultivated foods
    i. Typical education pattern
    j. Water, sanitation, hygiene
    k. Political/administrative structure
    l. NGO's aid programs in the area
    m. Environmental concerns and protection issues to date
5. Food availability
    a. Major crops, and proportion of these sold or retained for home use
    b. Food items from gathering, hunting, fishing
    c. Livestock
    d. Distance to market areas
    e. Availability of foods fortified with micronutrients
    f. Storage facilities in village, regular preservation practices
6. Health care
    a. Customs, including child care practices in the community
    b. Closest nurses, doctors, hospitals
    c. Immunizations: local campaigns and frequency
    d. Distribution of nutrient supplements
    e. Nutrition programs in the area: when, where, degree of success
    f. Agency programs implemented in the area that promote child health.

GOOD PARTICIPATORY TECHNIQUE FOR WORKING WITH INDIGENOUS PEOPLE

Successful work with Indigenous Peoples requires effort in building trust and co-operation. For this special relationship between health professional/researcher and the community to develop, it is important that the following principles be considered:

- Deal with community concerns and involvement. To be successful, this work should be a priority for the community.
- Request clear community guidance in the process to develop the research goals and techniques employed.
- Involve local community residents to assist the research process, employ them whenever possible, and train them in the research methods.
- For individual interviews request a signed informed consent statement. If signatures are not possible, request local leaders to advise you on how the elements of informed consent are guaranteed to respondents.
- Contribute to the community in other ways with expertise of the researchers—for example, offer to assist at the health center or to give special class to the school.
- Be sure to return something relevant to the community, in consultation with them - for example, desired medicines or food supplies, or documents on the food system that can be used in local schools.
- A document on participatory health research with Indigenous Peoples has been published by the World Health Organization, and is available at www.cine.mcgill.ca.
- Give timely progress reports of the results back to the community leaders; ask for their advice if a procedure needs to be changed.
- Return all results to the community, and request input on your interpretation of the results.
- Consider a firm research agreement. If written agreements are not possible in the area, have a witnessed verbal understanding with the village leader. Be sure to discuss the disposition of the resulting data, and the benefits that will accrue to the community.

Research agreements are regularly incorporated into procedures for work with Indigenous Peoples in North America. An example of a community research agreement is given in Appendix 1, and of an Indigenous Peoples' collective research agreement is given in Appendix 2.

Informed consent is the principle by which a potential participant agrees to assist your work. Elements of informed consent that the participant should be aware of are:

- description of the project (what is to be learned and why it is important to them)
- what is to happen in the research process
- are there any risks to the participant
- the participant's personal information will never be publicly

Karen home; CINE Governing Board Meeting; WHO/CINE Participatory Research Guide; interviewing Karen participant.

attached to their name

- the participant will not be coerced into participating, and can stop the procedure at any time
- that the results of the overall work will be reported back to the community
- what benefits will come back to the community as a result of this work
- the names of the leaders of the research, and the individual who is the community liaison to the project.

An example of a consent form is found in Appendix 3. If signed consent forms are not used in your area, be sure that a verbal description of the above elements is noted to each participant, and before each focus group or workshop.

STEP 2. GATHER TRADITIONAL FOOD LIST DATA

Gathering data on the traditional food system is the first and most important foundation for the duration of the project. A combination of key informant interviews and focus group or workshops can be successfully used for this purpose. It is an activity that most Indigenous People enjoy, because it helps them identify the bounty and benefit of their culture and environment. Notes on working with key informants and for conducting focus groups/workshops are found in the data gathering tools section of this manual.

Most traditional food systems of Indigenous Peoples contain 70-100, or more, species of traditional food. In addition, some species have several distinct varieties that are known and used to advantage. The best way to create this list of traditional food species is to guide key informants or focus groups to think about independent species (and varieties) of food animals or plants. Leave consideration of recipe items for a later time. Characterizing the species, and perhaps collecting them for scientific identification by a specialist is the first step in understanding the entire **traditional food system** which is defined as:

" all food from a particular culture available from local resources and culturally accepted. It includes sociocultural meanings, acquisition/processing techniques, use, composition, and nutritional consequences for people using the food."

Traditional Food List

When working with key informants, field notes capture the names of each individual plant or animal, and perhaps other information. Be sure to ask if there are different types (varieties) of the species that the individual recognizes as important. The Free List Record Form for Community Food Names Given by Individual Key Informants (Form 2.1) is an example of how these data are listed. The form can be copied to provide ample space for listing all the foods in the traditional food system. Information from 3 or 4 key informants is sufficient to set the stage for a focus group or workshop where a group of 6-10 people jointly decide upon items for the complete list.

The focus group or workshop can set the food items into food groups, as noted on the Traditional Food Complete List from Focus Group or Workshop (Form 2.2). It is helpful to have the group list the food species, and possibly the varieties, one by one by common food groups (fruit, vegetable, grain, meat, fish, etc.) before going on to other ways that food may be classified into groups (hot/cold, also used for medicinal purposes, etc.). This exercise will take a focus group or workshop of 6-10 people approximately 2 hours. Be sure to get the common names of the food items, particularly if they are unique varieties—this may be the only unique name for the food there is. The names on the final form should be written in English letters for sharing with the other case studies.

Karen workshop; Dalit community workshop; Inuit workshop; Bhil community meeting; Karen men's focus group; Karen food list workshop.

Traditional Food Seasonality and Popularity with Children and Women

The next exercise uses this food and food group list to place each food item in the months it is harvested, as noted in Form 2.3. A single check is placed in the month box when the food is available, and two checks are placed in the month box for the peak season. The focus group or workshop can then easily note whether each food is liked by children or mothers, or perhaps both. In the comments section, note can be made of the rough quantity harvested by the community in a year, in order to estimate the relative quantitative importance of each food

For literate groups, writing the food names in the food groups on flip-chart paper, and taping it onto the wall helps the group place each food in the appropriate seasonal grid with checks. As well, identifying the children/mother likes and recording comments with overall harvest quantity can be done in a similar fashion. In the Dalit case study, this was done on the floor with chalk.

Form 2.3 can be copied so that the complete food list can be recorded by food group for seasonality and child and mother preferences. An example of a traditional food list by season for one community in the Dene Nation, Northwest Territories, Canada, is given in Appendix 3.

Community Traditional Food System Data Tables

With a complete traditional food list, the researchers can then construct the resources known as the Community Traditional Food System Data Tables. For this, each food species is given a table as seen in Form 2.4. An appendix to this form should be made for each species that has several varieties. For example, in many parts of Asia, several varieties of eggplant, sweet potato, and mango are known and frequently used. As well, many other important foods (eg. rice, potato) that are less likely sources of micronutrients have several varieties. By using this form, and searching through existing information about food availability and food composition, the extent of unknown information about each species (variety) can be determined. National food composition tables and tables from neighboring countries should be reviewed for existing information.

You may need consultation with a food composition specialist to complete the nutrient data in the tables. Information from other countries that have a similar climatic zone may contain relevant data; however the scientific names must be known for these comparisons to be made. Information specific to varieties will be limited. For example, the food composition tables for China, India and Thailand contain some of the same foods; they have different common names, but the same botanical/zoological name (but perhaps no varietal names). There may be different parts and different preparation styles, but the nutrient data may be similar, and should be noted in the Food System Data Table. This information will guide your selection of foods to target for sampling and analysis in Step 3.

Miao preserved duck; Miao greens without identification or nutrient data; Miao rice cakes; Dalit kitchen; Dalit chilis; Bhil chapatti and curry; Dalit bagging pulses; horseradish tree leaves.

These tables will be completed throughout the research process, as information becomes available. It will be this resource that guides decision-making on what traditional food may hold promise for food-based strategies to alleviate micronutrient malnutrition. An example of a completed community food system table is given in Appendix 4.

Little-used or currently unused traditional food known by elders

Special effort is needed to uncover foods to add to the traditional food list that may currently be little-used or unused. Key informant interviews or focus groups with elders can uncover this information. What is needed is a list of foods not already on the traditional food list and information about why they are not there. You are looking for the following information:

- The food name (and food category). This may be available only in the local name. If there are several varieties, each one should be discussed separately.
- Season available (be sure to ask if there are foods that are only consumed during periods of drought, and if they exist in the local area)
- Place available (this may require a map of the local area)
- A brief description of the food harvest and preparation
- Why the food is used infrequently, or no longer used
- Could this food be shown to you? If not, why not? If so, take a photograph
- and possibly a herbarium sample (see Step 3)

You may want to start the interview or focus group by saying, "People in this area eat quite a lot of different foods. We want to know if there are other foods you know about here that people are not using and why not. We are also interested in the different kinds of the same foods (varieties) that may grow and be harvested here. We are interested in local foods that grow here (not imported ones bought in the market), and especially those that were eaten by most family members".

For each general food (animal food, starch/staple food, fruit, etc.) category ask the elders if there are other foods to add to the traditional food list you already have for the area, and request the information noted above.

Examples of reasons that a particular food resource may little used today are:

i. The food is now considered "old fashioned" by the current generation of inhabitants; perhaps due to the influence of European and American cultural contacts (including administrators and missionaries).
ii. The food may have been collected in connection with other activities (e.g., weeding of fields or collection of firewood) which are no longer done. Hence this relatively secondary source of

Bhil elder man; Bhil community leaders; Bhil toddler; Bhil elder woman; Dalit elder woman; Dalit village chicken.

food is now neglected, in part because of inconvenience.

iii. In some cases the food may have been contaminated or damaged by activities such as the spraying of pesticides, closeness to garbage dump, etc., and people are not sure of its quality or safety.

iv. As people have become accustomed to the purchasing of foods from stores and markets, use of less-popular traditional foods (whether taken as wild food, or grown in gardens) has dwindled to insignificance.

v. Various other factors may also be involved in the low utilization of certain foods. For example, former cropland may now be used for cash crops, thus displacing the ecological niche for a particular traditional food rich in micronutrients, such as leafy green plants.

Key informants and focus groups should be probed for lists of foods that might be used only during special times, such as lean seasons, or lean years. Some of the so-called "famine foods", or "lean-year foods" may be important sources of micronutrients at certain times of the year. Some individuals and families may be particularly good sources of information about "famine foods" and other no-longer-utilised foods. Some families that live in marginal circumstances, or perhaps in the distant outskirts of the community, or in other special ecological locations, may have information about wild foods or unusual cultigens that the rest of the population has forgotten.

If, in the memory of the elders, the community had been relocated into this area, make a note of it on the form. Knowledge of locally-available foods is often limited when people migrate into a new area. Sometimes peoples of different ethnic groups use different foods from the same environment.

This list of foods no longer used should be scrutinized for what may be potentially good sources of micronutrients. If the food is still available, it should be added to the list of foods in the Community Food System Data Tables for identification, possible nutrient analysis, and for the structured interviews.

Complete Form 2.5 to record these newly listed foods, and to identify those with good potential for providing micronutrients. The foods can be scored on a scale of 0-5 for their availability (and potential for promotion). Adjust the criteria for the area you are working in, and describe the criteria in your report. For example: 0 = no potential, 5 = high potential. Criteria could include: a) easy to grow or gather; b) plenty is in the area; c) it is available for several months of the year; d) about ¼-1/2 cup is consumed each time by adult.

Bhil fish trap; Dalit grains; Karen focus group; Dalit bachali.

Selecting a short list of potential micronutrient-rich food for more detailed study

Form 2.6 can be prepared after reviewing information in the Food System Data Tables. You are looking for foods that have good *potential* to be micronutrient sources in the community, but for which complete information is not already known. You are also looking for foods that are available in the community during more than one month, and that are liked by children and mothers. Twenty-five to 30 foods are a reasonable number to work with, but you may wish to select more than this, depending on your findings.

Generally speaking, you are looking for foods with potential to provide good sources of iron, zinc, vitamin A (retinol or carotene), vitamin C and folic acid. Therefore, Form 2.6 should contain primarily animal foods, leafy vegetables, orange or deep yellow vegetables and fruit. Be sure to note whether or not there are several varieties of the same food that should be looked into. Some may have little recorded food composition data.

At this point you should note the parts and general preparation style (raw, steaming, roasting) of the animal or plant that are regularly consumed, and likely targeted for sampling and analysis. This information is recorded in the tables of Form 2.4.

Patterns of traditional food harvest, storage and preparation

The Community Food System Data Tables will contain a large number of food species, perhaps up to 100 different species, and several varieties for some. It is useful to look for common practices of harvest, storage and preparation within the community, and prepare a summary statement of the foods which are harvested in each of the major seasons, which seasons may be lean seasons for total food as well as micronutrient resources, how foods are stored (if they are stored), and general methods of food preparation.

Using Form 2.6 as a guide, complete Form 2.7 about the harvest, processing and storage techniques of important foods to guide your sampling of these foods for Step 3.

Market survey for purchased food

Forms 2.8 and 2.9 A, B, and C are to guide your exploration of local market food potentially micronutrient rich. Your objective is to determine the price of each food by season, and whether there are affordable and acceptable foods in the market that are consumed by children.

From your key informant interviews and focus groups, you can determine what food items are regularly purchased that are consumed by children. List these foods in Table 2.8, and determine where purchased

Nayakrishi food use interview; Karen squash; Karen rosselle; Canada goose; Bhil portion; Miao green.

(market or store), the price range, seasons available, and serving size. Be sure to list the part of the food species that is being purchased (for example goat *liver*, or sweet potato *leaves* or *tubers*).

In Table 2.9, select the foods from Table 2.8 for their contents of Vitamin A (2.9A), iron (2.9B), and vitamin C (2.9C). You can then determine the price per unit of each nutrient. In the Community Food System Data Tables, you will want to record the price range, if it varies over different seasons.

While in the market you will also want to determine whether or not **iodized salt** is available and purchased, as well as the purchase price, so this important micronutrient (iodine) can be included in your final report.

Village market; Philippine market; market grains; Karen market prices.

FORM 2.1

FREE LIST RECORD FORM FOR COMMUNITY TRADITIONAL FOOD NAMES GIVEN BY INDIVIDUAL KEY-INFORMANTS

NAME: _____AGE: _____ PROFESSION: _____

	TRADITIONAL FOOD ITEM	LOCAL NAME/NATIONAL LANGUAGE NAME (ENGLISH COMMON NAME)	COMMENTS: CHARACTERISTICS AND FREQUENCY OF USE
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
- - -			
100			

FORM 2.2

TRADITIONAL FOOD—COMPLETE LIST FROM FOCUS GROUP / WORKSHOP

VILLAGE: _____ **DATE:** _____

FOOD GROUP:	
TRADITIONAL FOOD NAME / ITEM	**COMMENTS**

FOOD GROUP:	
TRADITIONAL FOOD NAME / ITEM	**COMMENTS**

FOOD GROUP:	
TRADITIONAL FOOD NAME / ITEM	**COMMENTS**

COMPLETE TRADITIONAL FOOD HARVEST CALENDAR AND KEY DATA

FORM 2.3

VILLAGE: _____ **DATE:** _____

TRADITIONAL FOOD LIST	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	CHILDREN LIKE Rank 1-3 (3=most liked)	MOHERS LIKE Rank 1-3 (3=most liked)	COMMENTS: Kg/yr by community
FOOD GROUP:															
FOOD GROUP:															

... continue until complete

FORM 2.4

COMMUNITY FOOD SYSTEM DATA TABLES

Food group/category (animal, fish, bird, insect, vegetable, fruit): _____
Local name & other common names: _____
Scientific identification: _____
Part(s) used: _____
Preparation: _____

Nutrient	Nutrient Composition/100g (Edible Portion by Part)*		
	Part:	Part:	Part:
Energy, kcal, kJ			
Protein, g			
Fat, g			
Fiber, g			
Retinol, mg			
Beta carotene, mg			
Total carotene, mg			
Folic acid, ug			
Ascorbate, mg			
Zinc, mg			
Iron, mg			
Calcium, mg			
Other:			

*Highlight New Lab Data

Notes: Animal (Wild, Domestic, Hunted?), Plant (Wild, Gathered, or Cultivated?):
_____
_____

Home Harvested or Purchased: _____
_____

Seasonality of Use: _____
_____

Cost of Production, if Known: _____
_____

...Continued to page 2

COMMUNITY FOOD SYSTEM DATA TABLES : FOOD DATA SHEET (continued)

Record the **relative importance for frequency of use or quantity of consumption by the community** by month in the following table. This information should be take from the focus group or workshop data. Notes can be used to indicate the season when prices are high or low, if the food is purchased. Also in the notes section, the rough total quantity harvested by the community (determined in the focus group or workshop) can be recorded. This information will establish when (if) a food sample should be scientifically studied (step 3).

Use / price

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
High												
Medium												
Low												
None												

NOTES:

Importance Value to the Community by Age / Gender

_____

_____

_____

Notes on quantities harvested annually by the community

_____

Notes on Samples Needed for Analysis

_____

_____

_____

_____

_____

Reference to Sample Collection Sheets

_____

_____

FORM 2.5

LIST OF LITTLE-USED OR UNUSED EXPECTED MICRONUTRIENT RICH FOOD

Focus Group participants: _____ No: _____

Date: _____ Place: _____

	TraditionalFood Name/ Item	Food category/part and preparation	Season	Habitat (woods, dry field, etc.)	Why Not Used More often	Score* 0-5
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
15.						
16.						
17.						
18.						
19.						
20.						
21.						
22.						
23.						
24.						

* Availability Score 0 = no potential, 5= good potential

FORM 2.6

SHORT LIST OF EXPECTED KEY MICRONUTRIENT-RICH TRADITIONAL FOOD FOR CHILDREN AND ADULTS

(Notes on cultural values and potential, and anticipated micronutrient contents)

Key Traditional Food list	Children - notes	Adults - notes
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		
17.		
18.		
19.		
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21.		
22.		
23.		
24.		
25.		
26.		
27.		
28.		
29.		
30.		

FORM 2.7

SHORT LIST OF KEY EXPECTED MICRONUTRIENT RICH FOOD WITH NOTES: HARVEST, PROCESS, STORAGE TECHNIQUES

Traditional Food Name	Harvest (time, place)	Process (preservation, cooking)	Storage Procedures
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
21.			
22.			
23.			
24.			
25.			

FORM 2.8

MARKET SURVEY TABLE FOR CHILDREN'S FOOD

Date: _____ Place: _____

Can you buy iodized salt? ( ) Yes ( ) No

Food Items	Food Quantity	Commercial Food Source (Identify location)				Months Available	Price Range	Price per Serving (Range)	Serving Size
		Market	Store	Vendor	Other				
1.									
2.									
3.									
4.									
5.									
6.									
7.									
8.									
9.									
10.									
11.									
12.									
13.									
14.									
15.									
16.									
17.									
18.									
19.									
20.									
21.									
22.									
23.									
24.									
25.									
26.									
27.									
28.									

FORM 2.9A

RANK ORDER OF FOOD PRICES FOR MICRONUTRIENT RICH MARKET FOOD

VITAMIN A

Vitamin A Food Item	Price or Price Range /Serving	Price or Price Range /1000 RE
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		
17.		
18.		
19.		
20.		
21.		
22.		
23.		
24.		
25.		
26.		
27.		
28.		
29.		
30.		

FORM 2.9B

RANK ORDER OF FOOD PRICES FOR MICRONUTRIENT RICH MARKET FOOD

IRON

Iron Food Item	Price or Price Range /Serving	Price or Price Range /100 mg Fe
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		
17.		
18.		
19.		
20.		
21.		
22.		
23.		
24.		
25.		
26.		
27.		
28.		
29.		
30.		

FORM 2.9C

RANK ORDER OF FOOD PRICES FOR MICRONUTRIENT RICH MARKET FOOD

VITAMIN C

Vitamin C Food Item	Price or Price Range /Serving	Price or Price Range /60 mg
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
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29.		
30.		

STEP 3. SCIENTIFIC PARAMETERS OF TRADITIONAL FOOD

In this step of the procedure, you will use the traditional food list and basic data on food likes with children and women (Form 2.3), as well as the Food System Data Tables (Form 2.4) to determine which food items need taxonomic identifications and nutrient analyses. It is important to recognize the costly nature of these procedures, in both time and funds; therefore it is necessary to carefully review existing data for the most promising items before proceeding. This is true for the field sampling for herbarium specimens, as well as for nutrient analysis. It is important to work closely with a community research assistant to assure accurate identification of the particular food recognized as fit for consumption, as well as the most efficient way of harvesting and preparing the food sample. It is also important to work closely with the food analyst to ensure that good quality samples are received and treated in the laboratory.

Taxonomic identifications

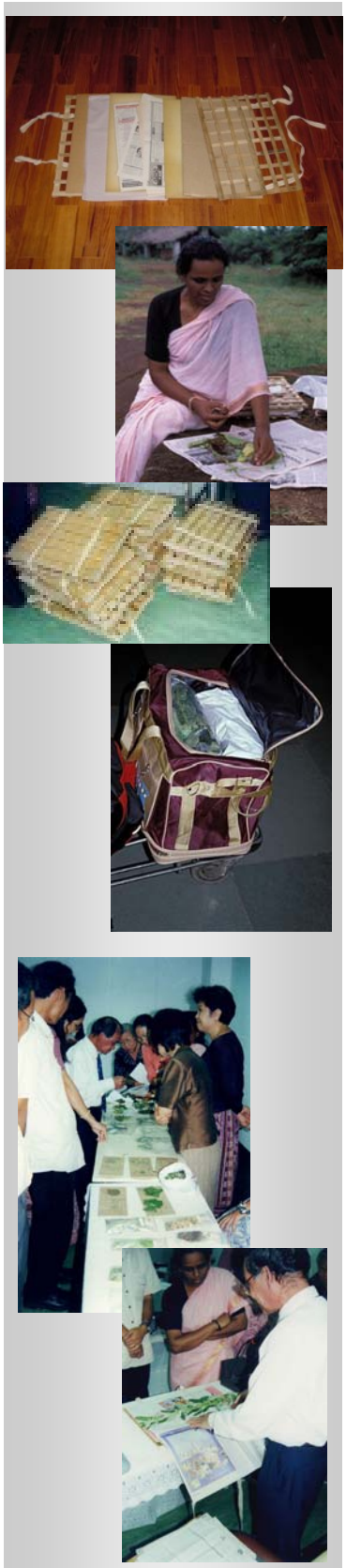
To begin the investigation of the traditional food list for identifications, have an early meeting with your collaborating herbarium and zoologist specialists to review the common names of items on the food list. Pay particular attention if the specialists recognize availability of several varieties of a species. If there are items he or she does not recognize by common name, the next step is to collect a small raw sample of the food in its natural state together with a photograph of the food in its local environment. If the herbarium specialist still does not recognize the item, and cannot provide genus, species and family, a full herbarium sample needs to be collected as described further.

Plant samples

Taking plant specimens for a herbarium from the field setting requires careful methods. First of all, the collector should take the following equipment: pruning shears, pocket knife, trowel for digging underground parts, hatchet, handsaw, tag-labels and field labels, altimeter, notebook, large plastic bags, camera, and a portable plant press. An example of the tag-label and field label is shown in Form 3.1.

When taking a sample, it is important to consult with the community field assistant, and to record the locality carefully, as well as the local name of the plant food -- and variety (if any), date and time of collection, altitude, growing habitat (full sun, shade, type of soil, general climate), and notes about the color of the leaves, fruit, etc. Then take as complete a sample as possible into a large bag, with enough foliage to prepare 4 herbarium specimens.

When back from the field, press and dry the specimens as quickly



Plant press; preparing sample for identification; stack of plant presses; satchel for transporting fresh samples; plant identification workshop; workshop on identifying plant foods in Mahidol University, Thailand.

as possible, to prevent development of mold. Place the specimens between newspaper, absorbent paper and place in a drying press that can be closed with webbing straps as seen in Figure XX.. The paper should be changed frequently and the press placed in full sun (or near an electric heater) for as much time as possible until the specimens are completely dry. In this form, the drying samples can be transported to the herbarium.

The botanist will make the taxonomic classification, usually with the aid of a microscope, and retain the herbarium specimen if it is a unique and new identification for the area. The classification will be given as Class, Family, Genus, Species, and potentially the Variety. With this information you will be able to screen existing food composition tables for food items with the same genus and species, and part of the plant used as food. If you do not find any information on this particular food item, you will certainly have a good candidate

Animal food samples

Animal samples are less problematical than plant samples for scientific identifications. Firstly, there are usually fewer of them, and they are well known by common name. Exceptions may be insects, small birds, ducks, and fish, because there are many different kinds. Since animal samples are not easily prepared for the specialists in the same way that plants are for herbarium samples, the best course of action is photography of the intact animal *before it is prepared for consumption*, and distinguishing outer markings (feathers, fins, etc.) removed. Use a good camera with a macro lens and a size marker (such as a small ruler or pocket knife) to get a quality color photograph. You can then use the photographs for consultation with a zoologist on taxonomic identifications. For the food systems data tables (Form 2.4), you will want to know how the food is prepared for consumption. It is important to get the taxonomic identification before proceeding with sampling for the laboratory, for reasons noted above.

Using a camera

Pictures are valuable for your documentation.

Plant foods: Take 35mm color photos with a macro lens, if at all possible. If the setting is shady, use as high an ASA number in film that you can find. Digital cameras can also be used, but take photos at as high a resolution as practical. Take more than one picture, and take pictures of the food before it is picked, when it is picked, and after it is prepared. We will want to have photos of all the foods in the traditional food system, if possible, but especially those that are newly identified species, and unique species.

Animal foods: As noted earlier, you will want photos of the animal, insect, fish, bird, etc. before it is cleaned of external identifying features. Again, take close-up photos of the creature before it is cut or cleaned, and

Taking fresh leaf samples in Bangladesh; collecting samples in Bangladesh; Miao plant samples; collecting Bhil tree fruit samples.

again after preparation. Use a size marker as noted above.

If you have a digital camera, this is even better; but take care that they are of high resolution, and will transmit well on email with your scientific collaborator.

Selecting and prioritizing food with missing nutrient data

In this section, food proximate composition and micronutrient composition is emphasized due to the common problems of micronutrient deficiencies in developing countries and communities of Indigenous Peoples in general.

When selecting food for nutrient analysis sampling, you need to carefully review the following:

- Traditional Food System List (Forms 2.1, 2.2, 2.3- including seasonality and likes by children and mothers – check for those with a score of 1-3)
- Food System Data Tables (Forms 2.4 and 2.5) – check for food items that have missing nutrient data for the key nutrients of this project.
- Identifications by a botanist/zoologist – if possible considering field travel, do not take a sample for analysis which has not been scientifically identified. First take the initial sample to show the botanist, or a herbarium sample for identification.
- If no identification, there is a good chance that there is not nutrient information. For field efficiency during a short availability season, you might want to take the herbarium sample and food sample at the same time.

With this information at hand, complete Table 3.2. You will need the opinion of a nutritionist with some knowledge on food composition to complete the first column. Since you will not yet know the nutrient values, you will still have to decide whether or not to sample the food. As noted earlier, green leafy vegetables, orange or yellow vegetables, and animal foods are good candidates for the nutrients under study.

You may find that the Food System Data Tables contain only partial information for the nutrients under study, or that the existing information is contradictory. This would mean that the food can be reasonably sampled for new analysis.

Preparing food sample for photograph; photograph of wild plant sample; photographing a food sample; Dalit children getting a lesson in photography; photo of unidentified fish in Bangladesh.

Identifying good laboratory procedures and cost

Since taking food samples in the field and laboratory analyses for nutrients are costly in terms of funding and time, it is important to have confidence that the procedures are conducted precisely. When searching for a good laboratory for sample analysis, you are searching for an organization that can demonstrate ***precision*** (getting the same results with repeat analysis), ***accuracy*** (getting the right results), and ***reliability*** (getting the same results that are correct). This can be demonstrated when the laboratory uses in-house quality control procedures, reference materials from an external source, and participates in laboratory performance tests.

Within the laboratory, you should check that standard analytical methods or in-house validated methods are used and that the procedures used with samples are documented on a daily basis (see the lab notebooks). Using clean glassware and calibrated instruments should be routine, and staff should be well trained. In-house quality control procedures include use of an internal standard, and sample results that are regularly recalculated and rechecked.

In the 2001 workshop held in Thailand, it was determined that at two national food composition laboratories in Asia one sample analyzed for proximate composition (protein, moisture, fat, ash), dietary fibre, retinol, carotene, folic acid, vitamin C, iron and zinc would be accomplished at a cost of approximately $190 USD. Costs are determined by the equipment and instruments used, the cost of chemicals, and laboratory staff salary costs. Approximately 60 days are required to do the complete set of analyses for duplicates of 30 original samples (60 independent samples).

Food sampling, packaging and transport to the laboratory

Firstly, it is important to approach the community with a list of food samples you are clearly interested in collecting. This will result from your traditional food list, and prioritizing of samples after reviewing earlier data. Prepare Form 3.3 to identify the food items you are interested in collecting.

When collecting samples in the field setting, it is important to be certain that the food item is indeed fit for consumption. Ask your field assistant if this food is suitable to prepare for a family, so that you avoid inadvertently taking samples that are perhaps unripe, spoiled, or otherwise unfit to eat.

The second important principle in these initial stages is to ensure that there is sufficient sample. You will need from 100-500 g of sample, so be cautious that your field assistant or others do not take a large portion of what you collect together for the household kitchen or the next feast! You want a food sample that is representative of what is actually eaten.

When you are sure you can obtain sufficient sample, be prepared to package, label and store the sample to prevent spoilage. Form 3.4 should

Laboratory in Bangladesh; Bhil samples; Nayakrishi plant samples; Dalit plant samples.

be copied and completed for each food sample taken in the field. It identifies the place, date, person collecting, and the size of the sample take. It also requires a sample number that you should use consistently for identifying this sample, and the sample number should be placed on or inside the sample container so that it will not be easily dislodged. When returning samples to the laboratory, include copies of Form 3.4. Additional information can be recorded in your field notebook.

The equipment you will need for taking food samples for the nutrients included in this procedure are: large and clean plastic bags, ties or bands to hold the bags closed, a stainless steel knife and Teflon cutting board, plenty of paper towels, labels and a pen, and a cooler filled with ice. If the samples are fresh and fragile (intact fruits and vegetables and whole animals are less fragile), they must be transported with ice, or spoilage will set in).

The sample should be taken into the ***labeled bags*** when it is clean and free of obvious external moisture. Therefore, if soil clings to the roots of a plant sample, and the roots are not consumed, remove them, wash the plant, and dry it carefully with toweling or sun-drying only to the point of removing excess moisture (not desiccation or drying of the sample). However, for vitamin analysis, it is especially important not to desiccate the food sample before packaging. Removing excess water is critical, for this will interfere with the moisture data of the intact edible portion of the plant. Bags in which samples are placed should have excess air removed, to prevent oxidation as much as possible. New (previously unused) zip-lock plastic bags are recommended

Place the sample in the cooler, and transport to the place for initial processing and freezing. This may be a home kitchen or a laboratory. For shipping long distances, use dry ice for keeping samples frozen for 1-3 days. Wet ice will not usually last more than 10 hours in a well-insulated cooler. It is important that samples arrive in the laboratory chilled, if not solidly frozen.

Be sure that a food sample data sheet (Form 3.4) is completed for each sample taken, and that the label number on the package matches that on the food sample data sheet. You will want to copy this several times, so there is one for each food sample collected in the field. Plan the food code numbers in advance with the laboratory analyst.

Initial food processing in the field

As noted above, the samples should be fit for consumption, cleaned and packaged for shipment to the laboratory. Animals should be cleaned, eviscerated and skinned, and samples packaged according to tissue (muscle and organ meats, for example, should be packaged separately). Plants should be cleaned of major inedible portions, but skins and shells left intact, if they enhance shipment. Leaf foods should have soil removed, and be free of excess moisture. When possible, include portions from several plants when taking a field sample. This will help ensure

representativeness of the sample which is ultimately analyzed. Notes on the food sample data sheet will alert the food analyst if skins, etc. are to be removed.

Preparing foods with heat and sealing them is one way to enhance food preservation for transport to the laboratory. This is especially relevant if the final product is always eaten cooked. If the intent is to sample cooked foods in the field, it is critical to prepare the food without added ingredients, except water (for example, simple steaming, simmering or roasting). Added ingredients will contribute additional nutrients to your sample. Record the weight of the food before and after preparation. If water is added, it should be measured, so that a known (and recorded) amount of water is added to a known (and recorded) amount of food sample. The final cooked volume should also be recorded. This is important to calculate the moisture contents of the original raw sample, and to calculate nutrients per gram of raw or cooked sample. Keeping careful notes of these details is critical to good food sampling. These notes should be made on the food sample data sheet.

Nutrient analysis

Initial food processing in the laboratory

The first steps in the laboratory are to first gently thaw the sample, and to process it into a homogeneous sample, using any number of methods depending on the sample (chopping, blending, mixing, sieving, etc.). Ensuring a representative sample is key to precision, accuracy and reliability of analyses. If sample portions are not randomly selected, or if the sample is not representatively portioned, replicate samples may have widely divergent results, an uncertainty which will lead to unnecessarily taking more samples in the field.

Samples should be analyzed as quickly as possible after they are received from the field. For nutrients under consideration in this procedure, portioning from the homogenous sample should be into 4 portions, each of which must be carefully labeled with the sample number and name.

Portion 1 is made for proximate composition, dietary fiber, and minerals (at least 150 g);
Portion 2 for retinol and carotene (at least 40 g);
Portion 3 for folate and an extra reserved sample (at least 40 g)
Portion 4 for vitamin C placed in 3% metaphosphoric acid (at least 20 g).

Portion 2 should be carefully sealed under nitrogen and protected from light (use brown plastic or glass vials, or cover the vials with metal foil) and heat, and frozen quickly, ideally at –80º C. Portion 1 can be freeze dried (recorded weight before and after drying) and stored with a dessicant for ease in storage and shipping, and processed at a later time. This initial portioning of samples can be done with basic laboratory equipment. If

possible this step can be done close to the field setting to save shipping costs.

Nutrient analysis procedures

Some basic ideas of the separate analytical techniques are given here to assist the data manager who is not skilled in food chemistry. It is necessary to ensure that the basic principles of the analytical method are adhered to for the costs described earlier.

Generally speaking, the reference of authority for food composition analysis procedures are those of the AOAC (Association of Official Analytical Chemists). This reference book known to all food chemists, and present in all quality laboratories, describes a variety of methods for analysis, and in particular for the proximate nutrients (protein, fat, moisture, ash), as well as dietary fiber.

Total carbohydrate can be computed by subtracting the amount (g) of moisture, protein, total lipid and ash from 100 g sample. **Digestible carbohydrate** can be computed after subtraction of dietary fiber.

Energy of food samples can be calculated using the factors of protein x 4, fat x 9, and digestible carbohydrate x 4.

Protein from plant and animal sources is determined by the Kjeldahl method which determines the amount of nitrogen in the sample, which is subsequently multiplied by a factor of 6.25. If other conversion factors are used, these must be clearly recorded.

Fat in food samples is determined by extracting the total fats with organic solvents, subsequently evaporating the solvents, and weighing the residue.

Moisture is usually determined by first weighing the sample, and then drying it in a drying oven, after which it is reweighed. Moisture is calculated from the loss of weight in moisture.

Ash in the sample is prepared by igniting a weighed portion of dried sample in a muffle furnace at 525-550º C. The remaining residue (ash) is weighed.

Dietary fiber is determined in a food sample after treatment with enzymes to digest starch and protein, after which the residue sample is re-weighed. Dietary fiber can be computed after subtraction of protein and ash in the residue.

Iron, zinc, and other minerals can be measured using atomic absorption spectrophotometry or inductively coupled plasma emission spectroscopy. Samples are first prepared by dry or wet ashing.

Vitamin C is determined using fluorometry or high performance

liquid chromatography (HPLC). Both dehydroascorbic and ascorbic acid are measured.

Folic acid (total folate) is determined with a microbiological method using *Lactobacillus casei* or, *Lactobacillus rhamnosus* after the samples are hydrolyzed using enzymes.

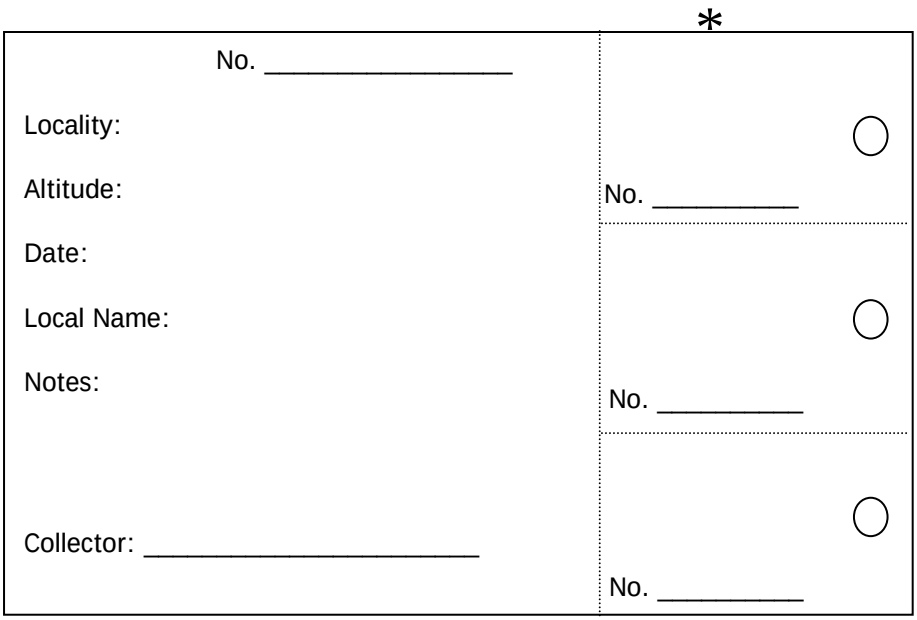
Vitamin A and carotene are determined with HPLC. The samples must be carefully protected from destruction by air, light, acids and trace minerals. Precautions throughout the analysis must be taken to protect the sample/vitamins from air, light, acids and heat

Be sure to record the results received from the laboratory in the Community Food System Data Tables, with a note that these are new data (record field and lab code number, laboratory name, address, and date of laboratory report).

FORM 3.1

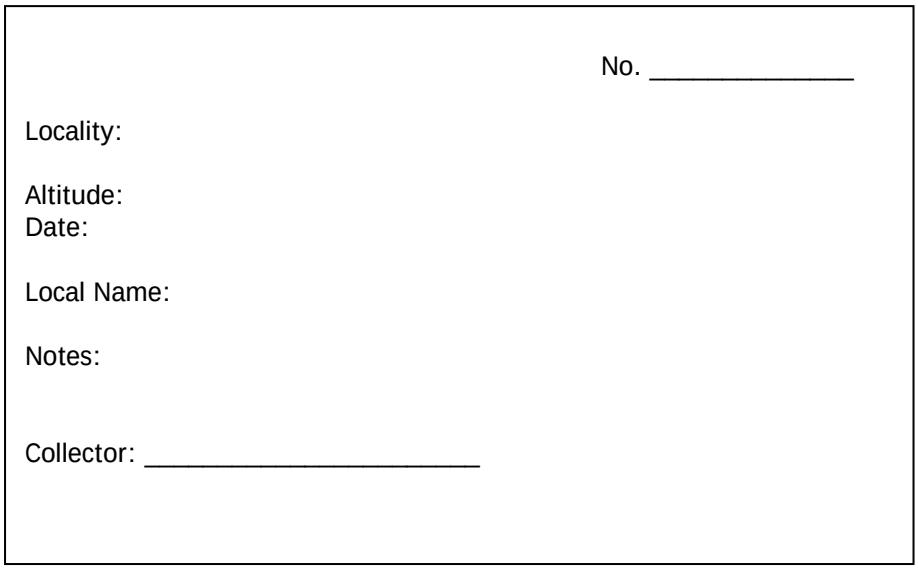
SAMPLE HERBARIUM LABELS

Sample field label



** Labels for 3 replicate samples*

Sample Herbarium Lab label



FORM 3.2

PRIORITIZING FOOD FOR SAMPLING

Food likely good source of micronutrient	Which nutrients?	Missing composition data: Which nutrients?	Used by mothers (m) or children (c)		Priority score*	Rank 0-3
			m	c		
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
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30.						

* **Score:** 0 = none 1 = low 2 = medium 3 = high

FORM 3.3

LIST OF SAMPLES TARGETED FOR COLLECTION FOR NUTRIENT ANALYSIS

	Local name / common name	Identification	Season	Nutrient data needed
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
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29.				
30.				

FORM 3.4

SAMPLE COLLECTION DATA SHEET

Food Sample # :

Date: _____
day-month-year

Harvest Location: _____ Herd or Stock (if known)

Harvest Date:

Person Collecting/Harvesting:

Person Packaging:

Animal or Plant Name:

Other Local Names:

Part:

Approx/Actual wt of animal or part sampled:

How prepared:

Date of freezing: _____
day-month-year

Time from harvest to freezing of sample:

Comments (For example – any occurrence of thaw and refreeze; general condition of sample etc.):

Label on packaged, frozen sample should include:

Sample #
Food Name and Parts

For Lab Use:

Date received :

Lab Code :

STEP 4. INDIVIDUAL INTERVIEWS FOR UNDERSTANDING DIETARY FOOD USE AND NUTRIENT INTAKE PATTERNS, AND CULTURAL CONTEXT IN THE COMMUNITY OF INDIGENOUS PEOPLE, PARTICULARLY FOR INFANTS, CHILDREN, MOTHERS AND ELDERS

Introduction

With the community traditional food list, and the selection of the short-list of foods (around 30 items from the traditional food list) likely to be good sources of micronutrients, as developed in Step 2, the team is now ready to conduct individual interviews. The key is to find how these potentially micronutrient rich foods are used in the community, and the meanings and other attributes that people attach to them. This is essential information for understanding how these foods might be used to better advantage to improve micronutrient status. Also important are factors concerning current environmental advantages and constraints for using these foods, which were developed in Step 5—and which round out the picture of the community's potential for incorporating these foods into diets of children and mothers. Keep in mind that the short-list of food items for special study can be revised from time to time, when new information becomes available to identify new foods for inclusion in the short-list. Also be reminded that Step 2 and Step 4 can be conducted in the same time period in the community.

First, review the information compiled during Step 1 with the entire traditional food list for seasonality, harvest characteristics, and general taste appreciation by children and mothers. Step 4 begins with learning more about how children and mothers view the overall characteristics of food items contained in the short-list and how food items are grouped for similar characteristics by conducting card sort exercises. Following this, scoring of overall taste qualities for mothers and children is understood. Other key attributes of the short-listed foods are then questioned with focus on infants, followed by children. This can be combined with interviewing for infant feeding practices. Step 4 is concluded with individual dietary evaluations using 24-hour recall and traditional food frequency interviews of infants, children and mothers, which are then analyzed by the team member responsible for quantitative dietary estimations of food and nutrients. A physical health assessment is included for children 0-12 years of age. With this information, the team will have adequate information to understand ***why***, ***if possible***, and ***how to*** incorporate locally available micronutrient-rich food into the diet.

Selection of individuals for these individual interviews

The leaders of the community of Indigenous People are the first source of advice on which families are available and suitable for conducting these interviews. The team will need an appreciation of the general community practices for traditional food harvesting (for example, do mostly all households participate, do only a few households participate, or do a few households supply the whole village?) With this information, ideally, a random sample is selected from a community list (or map) of households

Dalit elder; workshop; Karen women; Dene interviews.

with resident mothers, infants and children present. You will want a final number of interviews of approximately 30-40 in each category. Thirty randomly selected respondents will usually give sufficient qualitative date to represent the community's diversity on food use and cultural values.

Dietary evaluations which use statistical comparisons require larger sample sizes. Additional considerations on sampling, and larger numbers, are needed if you are planning this data phase as the baseline against which to compare a later post-intervention phase, and you also need to consider other measures of nutritional status for these comparisons (see Step 5). Depending on the complexity of the diet and the skill of the interviewers, up to 100 individuals is a reasonable "ball-park" number for comparisons.

1. Understanding Food Use Patterns and their Cultural Context

Conducting card sorts

This exercise is developed from that published in 1997 by Blum, Pelto, Pelto and Kuhnlein (Community Assessment of Natural Food Sources of Vitamin A: Guidelines for an Ethnographic Assessment, pages 28-31). If you have this reference source, please review these pages for the detail provided. This is a popular and easy exercise for respondents, and a good way to get people thinking about why they choose the foods they do. The basic idea is to understand how people classify and group foods contained in the short list, and how these ideas are reflected in food choices. The person interviewed is asked to take a series (stack or pile) of cards, each with a drawing or picture of one food in the short-list and each with a number on the reverse side, and to place each card into a group with other foods that belong together. Then the person being interviewed is asked why this grouping was made. There should be several reasons given with card sorts made by each person. The results of the groupings and the description of the reason by the individual respondents are recorded on Form. 4.1A.

Before beginning the card sort interviews, the cards need to be prepared. Index cards (3x5 inch) are a good size for handling, although other sizes also work. Use a local artist to make drawings of each food species on the short-list on one side of the card--or else use color photographs; on the reverse side, use the number in the short-list that is being consistently associated with this species. Form 4.1B should be prepared with names of the items in the short-list in the left-hand column. Form 4.1A is for the interviewer to record the grouping characteristics described by the respondent during the interview, and Form 4.1B is used to summarize the individual data.

The purpose of this exercise can be described as a game to the respondent, and it should always be stressed that there are no right or wrong answers. The respondent can take as much time as they would like. You may wish to begin the game with a demonstration of how foods can go together to stimulate thinking of the respondent. For example, by using

Karen Buddhist monk sorting food names by categories; Karen pile sort for food qualities; Arctic card sort.

color (green foods go together), food species type (animal foods go together, plant foods go together in a separate place), seasonality (wet season foods in one pile, dry season foods in another), etc.. What you are looking for is ***cultural reasons*** why people group foods together, particularly foods for infants and children. Other examples include "hot" or "cold" characteristics, or "blood building" characteristics. Using a short-list of various micronutrient rich foods contained in the food system, you can begin to understand how and why certain foods have cultural definitions, and this information will be useful in planning a food-based nutrition promotion program. You will already have clues about these groupings from your key-informant interviews.

On Form 4.1B summarize the individual data by recording all the characteristics noted across the top of the table. You can then tabulate the number of times each food in the short-list was given by the respondents for each characteristic. It will then be obvious what are the most important characteristics and how the entire set of interviewees views the short-listed foods; less frequently mentioned characteristics should also be carefully noted for further data gathering. These data are extremely important for understanding the food system.

Taste appreciation of expected key micronutrient rich foods by children and adults

One of the most important qualities driving food choice and acceptability is taste. In trying to understand how foods can be used in food-based nutrition programs, basic taste appreciation of a food species must be understood. Form 4.2 is a way to guide interviewing and recording of taste appreciation of children and adults.

The name of each food on the short-list should be written in advance next to its corresponding number on the left column of Form 4.2 for ease in the interview. The mother will likely be able to respond with a score of 1-5 for the young child as well as for herself to complete the form. Alternatively, older children may be able to score their own taste scores for each food.

When each food contains a score, the short-list of micronutrient rich foods can be ranked. It is possible to separately summarize the short-list foods rich in the various micronutrients under review. In this way, the most taste-popular foods (highest rank) can be identified and prioritized for their usefulness in a food-based promotion strategy. As well, micronutrient rich foods that receive low scores may be good items for discussion in key-informant interviews or focus groups to understand how and if taste qualities can be improved.

Focus on micronutrient-rich complementary foods for infants

Each of the short-listed micronutrient rich traditional foods can be questioned for their particular attributes for introduction to infants as

Karen children's anthropometry; Karen infant; Karen mother and infant; Karen child height measurements

complementary foods during the first 2 years (Form 4.3A). You can begin the interview by describing the general information you have from key-informant interviews about community practices for complementary feeding. You can then show the cards, one by one, and ask the respondent, "How would you describe this food as being suitable for infants?", and "When would be a good time to start giving this food?" You can begin with an example, to give the respondent an idea of the kind of information you are looking for. Usually, the interview moves quickly once the respondent has the idea of what is wanted, and you can then proceed to complete the information for each short-listed food.

The various attributes of each short-listed food can be given on Form 4.3A, and a summary of the individual responses can then be prepared on 4.3B, using a separate form for each of the short-listed foods. Be sure to record the number of interviewees from which the % figures are calculated.

An identical procedure is followed for understanding how these micronutrient-rich foods are useful for children 2-12 years of age, and recording responses on Form 4.4A and summaries for each food on 4.4B. A caveat is that the mother interviewed may prefer to identify a particular child for referring to the micronutrient-rich food attributes, and perhaps for a particular attribute. If so, be sure to record the age and gender of the child considered directly on Form 4.4A.

Infant food history

Another interview tool to capture information about infant feeding and nutrition is to use Form 4.5. In this procedure you are asking the mother about a particular young child in her care, and asking about the kind and duration of milk feeding as well as complementary foods.

You begin by explaining to the mother that you are there to understand how infant feeding is usually done in the community, and what kind of foods are introduced to the infant during what time period. In Form 4.5 you record the use of the first milk of the infant, usually this is breast milk, and then ask if and when other milks have been given, and during which month first introduced. This is then followed by asking about complementary foods given to the infant, and in which month first introduced. If many new foods are introduced during the same month, the back of the form can be used to record this.

This information on infant complementary foods is intended to be free-listed by the mother. At the end of this free listing, you can prompt the mother to explain if, how and when the micronutrient-rich foods in the short-list are introduced to the child before the age of 2 years.

Recording dietary intake: 24-hour recall and traditional food frequency; dietary data entry and analysis

If an infant is cared for by someone other than the mother during

Dene children gathering berries; drying fish; young Miao girl; Arctic family.

certain times of the day, the interviewer should contact that individual for answering the relevant time period of the interview.

24-hour recalls for all members of the family (infants, children, adults)

Two 24-hour recalls during the same week (but not consecutively) for the same individual should be taken to estimate usual dietary intake. It is expected that dietary interviews will be conducted for infants (0-2 years of age), children (>2-12 years of age) mothers, and elders (>60 years). Form 4.6 can be used for collecting 24-hour recall information for infants, children, mothers, and elders.

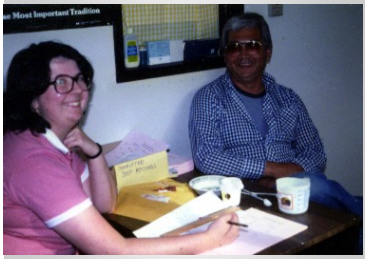
The overall objective of dietary evaluations is to understand food use, as much as is possible, on a year-round basis; to understand the amount of micronutrients consumed; to understand the proportion of traditional food of the Indigenous community used in contrast to purchased food; and if necessary, to provide a baseline of dietary intake against which a comparison can be made following a food-based dietary intervention. Two interview tools are used for this procedure: the 24-hour recall, described above, and the traditional food frequency interview.

The 24-hour recall tool is useful to obtain group a3verages of food intake and nutrient intake, but ***cannot be used to establish average intake for the individual*** because of the diversity of intakes from day to day. Food frequency interviews give information useful for understanding seasonal traditional food use, and the number of times a food may be consumed. ***Frequency data cannot be used for quantitative estimation of food or nutrient intake, because portion sizes are irregular, and difficult to summarize.*** Even though 24-hour recalls and frequency interviews are conducted at the same time, it is usually the case that fewer traditional foods are mentioned in the recalls. However, using both tools gives a good estimate of the parameters under review for this project.

The breadth of information in understanding what food, and in what form and quantity it is consumed, is important information for understanding the food system. It may be that few traditional food items, including those on the short-list of micronutrient-rich foods, are consumed during this time, and key informants should be asked to confirm these facts, and the reasons for them.

The seasonality of interviews should be considered. The intention for this procedure is that two seasons of interview will be conducted: the season when many traditional foods are present in the community, and the season when the least number of traditional foods are used.

Because elders in communities of Indigenous Peoples often consume more traditional foods than other members of the family, a series of 24-hr recalls from elders (>60 years) will often give important clues on the availability of traditional foods, including those on the short-list.



Nuxalk interview; Bhil portion with chapatti; Bhil portion with rice; interviewing a participant.

Therefore, it is recommended that if the household has elder(s) in residence, that they also be asked to complete the dietary interview.

Computing the Percent of Energy from Traditional Food

In many studies emphasizing local or traditional food resources of Indigenous Peoples, it is desirable to understand the percentage of total dietary energy of the population (or of age/gender groups) that is derived from traditional food. This can be easily accomplished using 24-hour recalls. Begin with the list of foods mentioned in the group of recalls, and separate them into two groups: traditional/local food and purchased/other food. Then compute the energy contributions in the recalls in two separate segments, with the addition of these segments being the total energy. It is then a simple matter to calculate the proportion of total energy from traditional food. For example if the mean total energy of the group is 2000 kcal, and the mean traditional food energy is 1500 kcal with the "other" food energy being 500 kcal, 1500/2000 = 75% of energy from traditional food.

Frequency interviews for the short-list of micronutrient-rich foods

All those interviewed for the 24-hour recall (infants, children, mothers, elders) should also be interviewed for the number of times the short-listed foods are consumed during the current season. At the top of Form 4.8, you should record the accepted community definition of the current season, and which months of the year this corresponds to, and fill-in the names of each of the short-listed foods in the left-hand column. For this, a master form can be prepared and photo-copied. Then each of the short-listed foods can be questioned for the times per day, week, or month the individual has consumed them.

On the right side of Form 4.8 the team member can complete a relative rank (0-3) of the vitamin A, iron, and vitamin C content of each of the short-listed foods. With this information the general use of micronutrient-rich foods in the short-list can be understood.

The information obtained from the card sorts, attributes listing and summaries, 24-hour recalls and frequency interviews are essential for understanding the patterns of food use and nutrient intakes of members of communities of Indigenous Peoples.

Physical health assessments for children 0-12 years of age

Form 4.7 is provided to emphasize anthropometry (both overweight and underweight), protein, energy, malnutrition, and symptoms of micronutrient deficiency commonly seen in developing countries (vitamin A, riboflavin, iron, vitamin C). A standing balance sensitive to 100g is required for weight measures. A tape measure attached to the wall and a flat head board can be used to take height measurements, sensitive to 0.1cm. Supine (laying flat) measurement is made for children less than 2 years of age.

For details, see: www.health.gov.au/pubhlth/strateg/food/pdf/anthropometric.pdf or Gibson, R. (1990).

FORM 4.1A

CARD SORT TABLE FOR INDIVIDUALS

Name of Respondent_____ No._____
Name of Interviewer_____ Date_____

Card Numbers in Group	Description of Characteristics Given
First group sort	
group 1	
group 2	
group 3	
group 4	
group 5	
group 6	
group 7	
group 8	
group 9	
group 10	
Second group sort	
group 1	
group 2	
group 3	
group 4	
group 5	
group 6	
group 7	
group 8	
group 9	
group 10	

FORM 4.1B

SUMMARY OF CARD SORT RESPONSES

Trad. Food Item	.....Characteristics.....						
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
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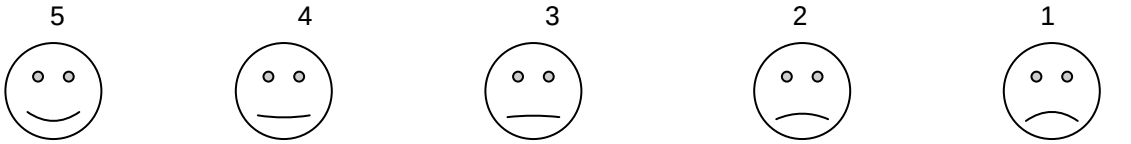
26.							
27.							
28.							
29.							
30.							

FORM 4.2

SHORT LIST OF EXPECTED KEY MICRONUTRIENT-RICH TRADITIONAL FOOD: TASTE SCORES AND RANKS BY CHILDREN AND ADULTS

Score each food for general taste appreciation:



Traditional Food Name/item	Children				Adult	
	Child 1 (age:____)		Child 2 (age:____)		(age: _____)	
	Score	Rank	Score	Rank	Rank	Score
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
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23.						
24.						
....						
30.						

FORM 4.3A

Individual Report: Complementary Food Attributes for Infants (<2 years) (Local traditional food short list of micronutrient-rich foods)

Respondent's Name _____ Respondent No._____

Date:_____ Interviewer:_____

Traditional Food Name/item	Attributes
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
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12.	
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FORM 4.3B

Summary of Individual Responses on Complementary Food Attributes for Infants (< 2 years)
(Local traditional food short list of micronutrient-rich foods)

Food name _____

Attribute	Number / % of responses
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	
13.	
14.	
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FORM 4.4A

Individual Report: Complementary Food Attributes for Children (2-12 years) (Local traditional food short list of micronutrient-rich foods)

Respondent's Name _____ Respondent No._____

Date:_____ Interviewer:_____

Traditional Food Name/item	Attributes
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
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FORM 4.4B

Summary of Individual Responses on Complementary Food Attributes for Infants (2-12 years)
(Local traditional food short list of micronutrient-rich foods)

Food name _____

Attribute	Number / % of responses
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	
13.	
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FORM 4.5

INFANT FOOD HISTORY (0-2 Years)

Mother's Name: _____Number:_____Village:_____

Interviewer: _____Date: _____

Child's name: _____Age of child (months):____Gender (M or F)____

1. Did this child have colostrum? ( ) Yes ( ) No

2. Did this child have breast milk? ( ) Yes ( ) No

3. At what age did this child stop receiving breast milk? *OR* If child is currently breastfed, at what age does the mother plan on stopping breastfeeding? _____

4. What milk besides breast milk has this child received? At what age?√

Type of milk	Not given? (√ if applicable)	Age that child first received this milk	Still received by child? (Yes/no)	Age that child stopped receiving this milk
Powdered milk				
Condensed milk				
Whole milk, UHT				
Soy milk				
Ovaltin/Milo				
Other				

Continued ...

5. When did the mother give the following supplementary foods to this child? *OR* If young infant, which foods does the mother plan to give, and when?

Age supplementary food was first given	**Supplementary food group***	**Preparation**	**Quantity per serving (Tbsp)**	**Frequency of consumption (times/d, days/wk)**
	Rice			
	Cerelect			
	Banana			
	Fish			
	Vegetable			
	Pumpkin			
	Egg			
	Fruit			
	Chicken/pork			
	Liver			
	(Fried food)			
	Other:			
	Other:			
	Other:			

*Food examples from Thailand

FORM 4.6

INDIVIDUAL 24 HOUR RECALL (INFANT, CHILD, ADULT)

Note: Complete 2 24-hour recalls (use duplicate forms) for each respondent within one week.

Name: _____ No. _____ Community: _____

Interviewer: _____

Gender: ( ) Male ( ) Female Age:_____

Status: ( ) Child 0-2 y ( ) Child 3-5 y ( ) Child 6-12 y
( ) Pregnant ( ) Lactating ( ) Non-pregnant/lactating adult

Self-identification: Indigenous:_____ Other _____ (specify)

Today's Date _____ (day/month/year)

Day Recalled_____ (day/month/year)

Was yesterday a "usual" day?: ( ) Yes ( ) No ( ) Sick ( ) Other (specify): _____

Do you take any vitamin/mineral supplements?: ( ) No ( ) Yes
If yes, please specify: Brand name: _____ Frequency of intake: _____

Continued...

Interviewer, please read to the respondent:
Please, recall as exactly as possible what you ate yesterday, _____ (write which day of the week), from the time you first woke up.

Time of day	Name of food	Ingredients	Cooking method	Food source (purchased, gathered, produced)	Quantity consumed	Food code	Weight for coding (g)	Comments

Interviewer, did you remember to check about: lard, butter, salad dressing, the milk/creamer/sugar in the beverages, any juice, alcohol, jam/honey…? Any snacks, beverages, or foods consumed outside the home? **(Modify to fit your local food situation)**

FORM 4.7

Physical Health Questionnaire for Children 0-12 Years Old

1. Child's name:_____ Gender: ( ) Male ( ) Female Age: _____

2. Mother's name: _____ No. _____
   Date of interview: _____ (day/month/year)

3. Birth date: _____ Source: ( ) Memory ( ) Birth certificate ( ) Don't know
   (day/month/year)

4. Weight: ____ kg (Mother + child ____kg – Mother ____kg)

5. Height/length: _____ cm

6. Has child ever had trouble seeing clearly when the light is dim?
   ( ) No, never ( ) Yes, but is now OK ( ) Yes, currently ( ) Don't know

7. Did mother ever have trouble seeing clearly when the light was dim when pregnant with this child?
   ( ) No, never ( ) Yes ( ) Don't know

8. Clinical signs:

Physical exam	Normal	Abnormal
General physical health (PEM)		( ) Overweight ( ) Underweight
Hair (PEM)		( ) Dry, thin, falls out easily
Bottom eyelid (Fe)		( ) Pale
Mouth (vit B_2)		( ) Wounds on sides of mouth ( ) Scars on sides of mouth
(For child 2-6 y only) In the past month, have you noticed any bleeding during tooth brushing?		( ) Yes ( ) Don't know
Other (specify): _____		

Nutritional status (Anthropometry) W/A:_____ H/A: _____ W/H: _____

FORM 4.8

KEY MICRONUTRIENT-RICH FOOD FREQUENCY FOR INFANTS, CHILDREN AND MOTHERS

Respondent No.: _____ Date: _____ Interviewer:_____

Name of Child: _____ Child's Age: _____ Gender: ( ) Male ( ) Female
.....or.....

Name of Woman of Reproductive Age:_____
(circle one) : Lactating Pregnant Neither

Season of interview: _____

Name of Traditional Food	Frequency of intake (state times per day, week or month)	Usual serving size	Rank *		
			Vit A	Iron	Vit C
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
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STEP 5. PLAN FOR FOOD-BASED INTERVENTION TO IMPROVE COMMUNITY NUTRITION/HEALTH STATUS

INTRODUCTION

The overall aim of this procedure is to generate knowledge about indigenous food systems that can be useful for micronutrient interventions. In step 5, the knowledge that has been accumulated will be reviewed and synthesized in order to assist planning for a food-based intervention to improve community micronutrient status. This information might be applied in the studied populations or in other culturally similar communities.

In Step 5, guidelines are given for: review of food and food use data, how to consider environmental advantages and constraints of key micronutrient-rich foods in the community; presenting the need for an intervention to the community; working with them to develop and implement an intervention; and measuring outcomes of the intervention.

Review food and food use data

Review of data gathered from each of the steps in the procedure should be conducted with the entire research team, including the designated members of the community of Indigenous People that is under consideration. Data from each of the steps should be reviewed for relevance and "common sense reality check." to the current community circumstances. This can be done in a one-half to one-day workshop with team members.

Especially important is for the group to consider each of the foods in the short-list of micronutrient rich foods and its likely potential for improving community nutritional status. Once likely foods are identified, a review of environmental advantages and constraints for use of the food should be undertaken.

Considering environmental advantages and constraints to use of key micronutrient rich foods.

For this exercise, initial discussion must be held with the team member responsible for understanding the environment in which the community is situated, and who knows the most about the presence of each of the short-list of micronutrient-rich foods. Key members of the community are interviewed for their perceptions of how each food may be optimized in the existing environmental circumstances. Following key-informant interviews, a focus group of community members, including elders, should be held to consider each of the foods on the short list.

Form 5.1 is for recording a summary of environmental constraints and advantages of each of the short-list of micronutrient-rich foods, and for reaching a judgment on whether or not it is feasible to further pursue

Karen results return workshop; studying the results; Arctic workshop; Bhil community meeting; focus group; DDS women.

improving the availability of each food. This information is key for consideration of the local circumstances, and is important before approaching a general community meeting. Other experts who may advise on how to improve availability of micronutrient-rich foods should also be consulted.

The community presentation

Based on the knowledge gained thus far, case study teams should have quite good understanding about the target populations. They should have information on -- the food system, environmental, psychological, economic, political and cultural factors that support and reinforce and/or constrain and prohibit the considered change for micronutrient improvement in the community.

This information can be organized and reported back to the community by focusing on certain specific questions. For example: What are the key issues regarding their food and nutrition practices, particularly for micronutrient nutrition? Who are the most important participants in the development process? What are the roles of those who are important to them? How do they perceive the micronutrient problem? What are the issues regarding micronutrient-rich foods? and What are the other issues necessary to support micronutrient improvement in this community? The team can prepare this presentation so that it is easy for the community to understand.

Advice should be sought from project team members who are actually part of the community how to approach and conduct the presentation session. During this session, the team should allow adequate time for the community leaders and other key members to confirm accurate interpretation of the session, to ask questions, and to make any comments they may have. Then the team can discuss with the community leaders and other members whether they think a food-based intervention to improve micronutrient status is desirable for their community. It is most important that the community themselves express the desire for an intervention.

Working with the community to reach a decision on the target group segmentation

Different influential groups have different motivations, even with respect to a similar issue, and they therefore should be addressed differently in order to obtain successful results. Also, it is necessary to consider possible constraints for each context before deciding which groups and what expected outcomes to be included in the food-based intervention plan. All people receive similar information, but different groups will provide various kinds of leadership to implement the intervention.

The ***First group*** usually includes those individuals whose development is directly affected by micronutrient status, i.e. mothers and children. For this group, expected outcomes are changes in food knowledge, attitudes and behavior necessary to improve micronutrient

status.

The ***Second group*** consists of other important individuals (i.e. women of reproductive age, elderly women, traditional midwives, fathers and community health volunteers) whose support is crucial for the development needed in the first target group. For this group, expected outcomes are, for instance, changes in knowledge and attitudes necessary for future practices or for them to be able to support the first target group.

The ***Third group*** is the necessary community supporters (i.e. religious or spiritual leaders, community leaders, school headmasters, local officers, etc.). Expected outcomes are their advice and encouragement on how to best implement development activities.

The ***Fourth group*** includes High-level government officers, local politicians, business men or women, etc. It is important to keep them informed, because their approval and support of the development activities are essential for an effective intervention.

Based on available time and resources, a decision can be made which groups are to be included in each stage of the intervention process, and with what outcomes. Case study teams should be prepared to assist community members to reach good knowledge-based decisions. It is thus obvious that the entire community must be involved at some level to implement a successful intervention.

Working with the community to develop and implement the intervention

Based on the information gathered, it is important to assist the community to identify environmental and personal factors that require development i.e. food sources, peer pressure, family support, health care practices, indifference, fear and personal preference. This information is necessary for the development of a successful intervention strategy. In general, a good strategy means putting more effort on what is likely to create desired development, while being realistic about what can be expected with regard to time and resources available. At this stage, case study teams should discuss with community leaders and other members what activities should be highlighted for initial intervention strategies. Case study teams should give adequate time for community leader to discuss intervention strategies with others who they think important in the future intervention process. Following this, the team can meet again to revise the strategies.

It is usually helpful to give a preliminary test (pilot) to the intervention strategies, since it is often unknown how the community as a whole will react to the development proposal and whether the first target group will be convinced to adopt the development idea(s). After the pilot, case study teams can assist community members to finalize their intervention strategies and develop them further. At this stage, case study teams should give enough time to assist community members with

communication/media development and production.

Before any implementation activities, it is very important to discuss with community members the actual intervention work plan, what mechanism they would take to ensure that planned activities would be carried out accordingly, and how they will monitor the progress of the intervention.

Working with the community to measure outcomes of the intervention

Case study teams should find ways and means to discuss and train community members about intervention evaluations. Both quantitative and qualitative methods should be applied. Quantitative methods can be used to focus on the prediction of change or impact analysis. Qualitative methods can be used to address the dynamics of change or process analysis.

Quantitative research methodology can be applied to assess food knowledge, attitudes and reported behaviors or practices. Nutritional assessment techniques can be used to measure dietary intake and micronutrient status.

To understand more about how and why the intervention works or not, a qualitative research methodology can be used to look at the effect of the intervention process on individual and community changes and development.

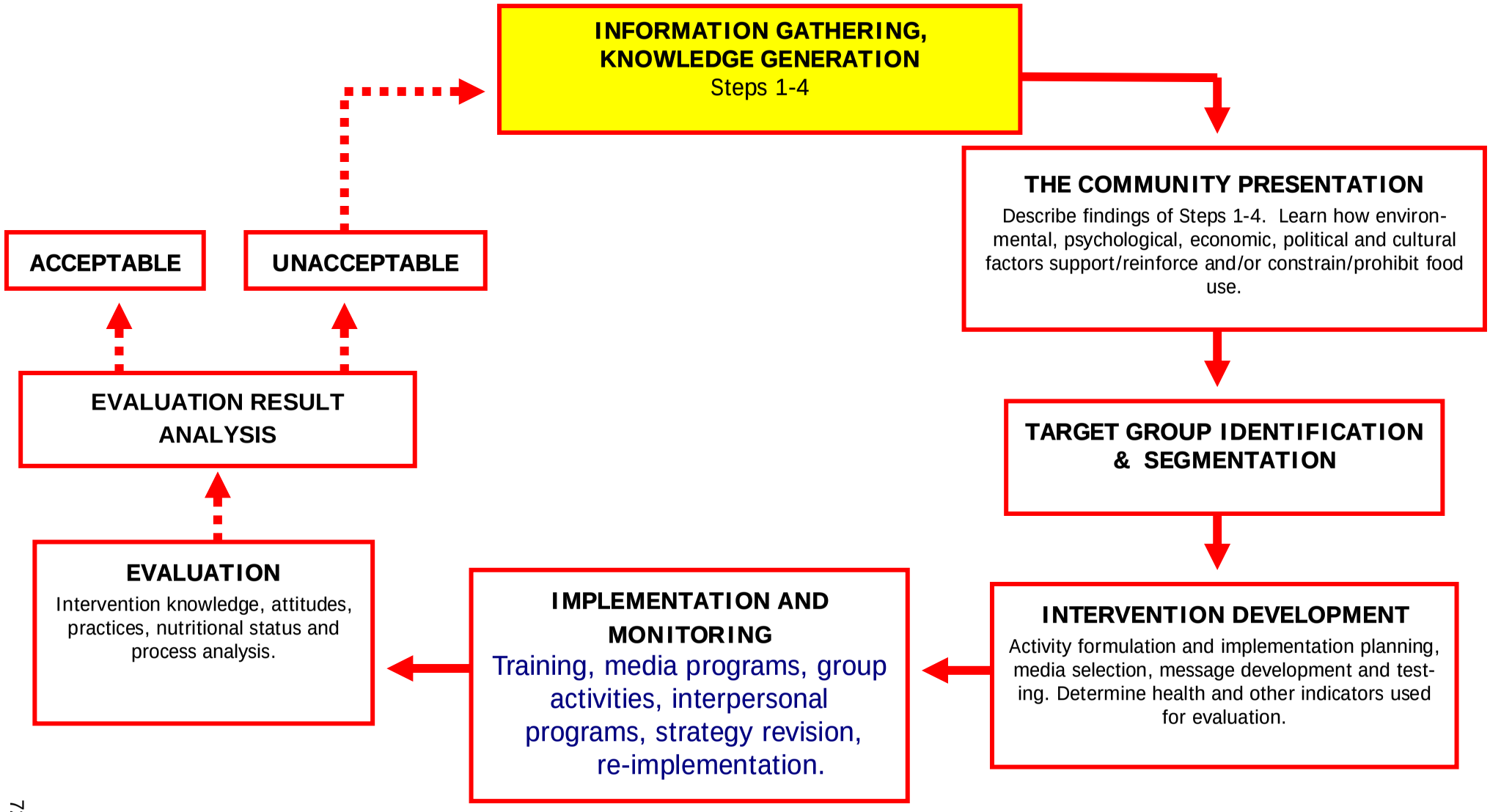
Regular process assessment should be conducted for all activities including individual and group interviews, interventions and training/ education components. The aim is to document people, hours and end products of project activities for use in reporting, tabulating summaries and planning future activities. A sample process indicator documentation form is found in Appendix 11.

It is very important for case study teams to assist community members in understanding not only the need for evaluation, but also the results of their intervention efforts. This is not only essential for this actual intervention, but also for sustainability (long term change and good nutritional status at the community level).

For the case studies in this particular project that aspires to develop a method for documenting traditional food systems of Indigenous Peoples (short term), and to show success stories for using this information to improve micronutrient status (medium term), it is critical that all possible efforts are made to carefully document progress and effects of the intervention. This then gives impetus to others to follow this method for using traditional food systems for improving health of Indigenous Peoples.

Step 5 is illustrated in Figure 1.

Figure 1 - Anatomy of a Planning Process for Food-based Intervention to Improve Community Nutrition and Health Status



FORM 5.1

DECISION-MAKING :
Summary of Environmental Constraints and Advantages for Key micronutrient-Rich Food –
Data from Key-Informant and Focus Groups

* 0 = none 1 = low 3 = high

High micronutrient food	Advantages	Constraints	Conclusion
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DATA GATHERING TOOLS

1. KEEPING GOOD NOTES

(Adapted from Blum, Pelto, Pelto and Kuhnlein (1997)

Field notes are your primary data records from interviews in the community as well as from direct observations. The different kinds of items that should be written in field notes are:

1. Observations of crops and other food sources that one sees while walking about the community.
2. Lists of the different types of food being sold on a market day, along with notations about prices, quantities, condition of the food, behaviors of people in the market and other details.
3. Detailed, play-by-play description of unstructured interviews with key-informants.
4. Observations of the cooking areas seen in peoples' homes and lists of cooking equipment, stored foods, and other details.
5. Step-by-step descriptions of cooking processes as told to you by informants (e.g., preparation and cooking of unusual wild foods, sauces).
6. Notes on past history, geographical features, ecological data (climate, rainfall, etc.), ethnic and language features, and other background materials as gathered from written sources and from open-ended interviews.
7. Notes on health patterns and behaviors you see in the community that may be affected by nutrition.

This discussion will cover writing of notes from both informal observations and interviews. Formally structured interviews (survey interviews), on the other hand, are generally recorded directly on the prepared interview forms.

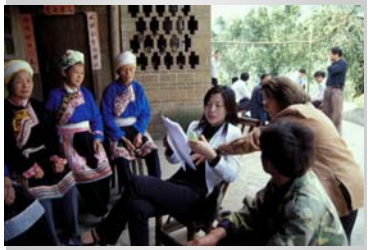
Field Notebook

Your field notebook should be small enough to keep in your pocket or purse. The notebook should not be overly conspicuous, but it is often a good idea to make it obvious to community people that you (and your team members) are taking notes. Writing things down from interviews demonstrates to the community colleagues that you are serious about wanting the information and you regard them as experts.

Whenever possible, your information gathering team members should write down notes directly into a notebook when doing open-ended interviewing. In addition, you should have your information gatherers write notes on descriptions of places (e.g., marketplaces, cooking and food-storage areas); sketches or diagrams of a complex food processing device; sketch plus written description of home gardening area with its crops; and other special information. It is also useful to include notes on such things as: "Graciela is a very good key-informant...but it's important to find her early in the morning, or else late at night, as she goes to sell in the marketplace every day...."

Reviewing food list notes; taking field notes; interviewing Karen participant; Miao mother and child.

Many of the items you write in field notes are the *same information* your research assistants already know because they are members of the local community. But writing these things down in field notes makes the information available and organized for direct use in planning interventions.



Reviewing Dalit data by candlelight; reviewing Miao interview data for accuracy.

From "Jottings" to Fully Written Notes

Obviously you can't write down everything the informant says. But you can jot down key words and phrases, to keep a running "log" of the ideas and answers as your informant responds to your questions, probes, and encouragements.

The jottings are intended to jog your memory when you expand them into fuller statements, as soon after an interview as possible. Here is an example of jottings from an interview and then the full notes, written up later:

Interview with elderly woman (excerpt)

Jotted notes:

> Earlier..."all people collected them (calchan) wild greens, stalk, leaves had time. Children. Especially older women. Now. Too far. All summer. Cooked with meat. Poor people potatoes. Lazy. "Young women won't cook 'em..." Edge of fields...river...people. "Weaker now..." "Poor food..."

Expanded notes as written up afterwards:

> The elder grandmother in the_____ household told me that when she was a child and even as a young married woman, people gathered the wild greens called calchan, which were available throughout the summer. "All people collected them...." The main locations were at the edges of the cornfields and also along the riverbank. They gathered the stalks and leaves. Sometimes they sent the children to gather them, but mainly it was older women who did not have small children to care for. The wealthier families cooked the greens with meat, but most families were poor and cooked them with their potatoes.
>
> When I asked why people do not gather these wild greens nowadays, she said that "people are lazy" and then she added that "...the younger women won't cook 'em." because they view the greens as being inferior food and "poor food" (that is, food for the poor people). She also said that she believes people today are weaker now and less healthy because they do not eat the healthy foods "from nature" like they did when she was young.

In this example we see that the expanded field notes are approximately four times as many words as the originally jottings. Also,

the jottings are almost undecipherable. Only a person who heard the original interview could make sense of these jottings.

Some Additional Guidelines

1. Look for *key words and special vocabulary*. Be sure to write down those key words in the exact language of the speaker. Note especially any words that are special to this population and which identify special roles, (e.g., the name of the food) and special words for actions, behaviors, or ideas that might come up in structured interviews or behavioral messages during the actual intervention, especially words such as "poor food" that reflect strongly held attitudes.
2. Check with the informant to be sure that the special vocabulary is actually used by the target population, that it is an insider vocabulary. You may find that the older informant uses a word (e.g., calchan), that is not familiar to the younger generation, or, perhaps it is the word used by the people in one ethnic group only.
3. Particularly important ideas of the key-informants *should be written down in their exact words* (at least key phrases showing how they expressed the idea). Expand and write out full field notes from your jottings as soon as possible after an interview. If you do not have the opportunity to write out the full notes immediately, try very hard to get all the notes written out *the same day of the interview*. Otherwise you may lose much of the content.

Often it is useful to check some part of your jottings during the interview. Sometimes you can say to the informant. "Let me just check this thing I have here in my notes...let's see...you said that _____"

It is a good idea to go over your notes right after an interview, if you can find a private place. Just go through and add in a few details to the written notes. That will help to make sure that you will remember clearly when you sit down to write out the notes more fully.

As you write out your notes more fully, try to preserve as much as possible of the play-by-play flow of the interview. Do not try to write a polished essay, just go through the specific information-what the informant said-in the order that it occurred in the interview. Often during the interview you will need to change direction to get more data on a point made earlier. Also, your key-informants usually wander off the topic and return to earlier points, filling in earlier gaps. Usually it's best that those later additions be written in the order in which the interview actually happened.

The most preferred way to write out your notes fully is with a microcomputer. If possible, your team members should become familiar with using a word processor system in the microcomputer, so that all the interview notes and other field note materials will be accumulated in computer files. That makes it much easier to go through the files of notes to find particular points of information.

A second alternative is to write the notes out on a typewriter. In any case the field notes should be written out on paper so that they can be stored, sorted, and organized efficiently. If the notes are typed, be sure to make at least one extra copy, and it's better to have two extra copies of all of the materials. Those should be stored in different (secure) places.

If your team members cannot type, they must write out the notes fully by hand, and those handwritten notes should be checked by others to be sure that they can be read easily. In some cases, if you have typists available, it is possible that your information gatherer can *dictate* out loud from the field note jottings, while the typist writes out the full text.

5. You can include in your notes some of your own *interpretation* of things that your key-informant said. You should also include comments such as, "At this point the informant seemed to be covering up something and quickly changed the subject. Next time, I should ask her some more about this. This time it seemed to be a touchy and emotional subject."

   When you write such personal impressions, you will of course, make sure they are clearly your ideas and not the words or ideas of the informant.

6. Allow at least *two hours of writing time for each hour of interview*. That's right-two hours! It is slow work, because often you will be remembering many different things that your key-informant has said, at the same time trying to make sense of the very short and cryptic jottings in your field notebook.

7. In some cases you may be able to use *tape-recordings* of some key-informant interviews. Even if you are tape-recording the interviews, you should still take good notes and write out those notes fully, as described here. The tape-recording can serve as a backup source. Remember that it costs a great deal of money and time to transcribe from tapes to typewritten form. Most projects cannot afford to pay for the transcribing.

8. If you do use a tape-recorder, be sure to transcribe the interview(s) into the computer or write them out on paper as soon as possible. Never leave tape-recorded materials in unwritten form, as it is very difficult to go back to find information on tapes. Often you won't be able to hear everything clearly, especially after several weeks have passed after the interview.

9. *Keep all field notebooks and your written out field notes in safe and secure places* where unauthorized persons cannot get them. Even seemingly noncontroversial, innocent-sounding information about foods and diet may be considered personal and private and you should always protect the confidentiality of informants' statements.

Keeping Field notes Organized

Field notes can quickly become an unwieldy mess unless you take pains to keep them organized. Even a few weeks of fieldwork will produce several hundred pages of notes that can be very difficult to manage unless some system of indexing is used.

1. In most cases it is best that your field notes are kept in chronological order. That is, at least one set of field notes kept more or less in the calendar order that the materials were collected. The pages of field notes can be numbered consecutively. It may add some additional structure if you start new page numbers each month. So, if you started in October you would have notes from zero to one up to perhaps zero to 500. Then comes N-1, N2, and so on.

2. It can help you to find things if you put key words at the beginning of each interview, or at the beginning of each separate note. Some people put key words at the top of each page.

3. If you are entering all your interview notes and other field notes in a computer, *you do not need to list key words when those words are in the text itself*.The normal search programs that you use with the computer can quickly find any words that are in the interviews. Only list key words that are important index words, or identification of topics, if they are abstractions that do not occur in the statements themselves. For example, in the case of the bit of interview above, you would use key words such as *prestige foods, SES, traditional or historical*.

4. During the first two weeks of information-gathering, as your interview notes begin to pile up, start listing the main topics in the notes-key words that you will use as an index.

5. If you are not using a microcomputer for writing and storing your interview notes, then you will need to write more key words at the front of each interview-including important words that are found in the text itself.

6. Even if you are storing all notes in the computer, you will want to have hard copies (paper copies) in your files. As mentioned above, store your paper copies in two different, secure, locked places.

7. With two separate sets of (paper copies) of interviews and observations, you can keep one set in the chronological order in which the work was completed and notes written; the other copy can be sorted out into the *topical areas*, key words that you begin to organize into different file folders. When the research is completed you will want to ask your community leaders and assistants if they want to keep a copy of the notes, and make it possible for them to do so.

8. One way to keep good organization of your field notes is to keep one set of files that are directly linked to the generic questions and other important questions.

Suppose you had a really good interview with an excellent key-informant and she told you information that applies to five or six different generic questions? Then, make extra copies of that interview, so you can put a copy into each of the five or six file folders that are answers to those generic questions.

Photo of Bhil portions; photo of Miao plant samples for analysis.

The Field Work Log

In addition to the field notes and diary, it is also recommended that the Project Manager maintain a field log. The log is a running account of your work schedule. The log should reflect your planned schedule for the next two weeks or more, as well as the record of actual times and places of interviews and other data gathering. Keeping a tidy logbook can help fieldworkers stay on schedule and maintain a sense of progress in the face of the daily frustrations brought by bad weather, hard-to-trace informants, and other problems typical of field work.

2. USING CAMERAS

In doing field work with Indigenous Peoples cameras and their products become a useful, even powerful, research tool. Cameras are helpful in documenting unique food items and research situations—as stated earlier, a picture is worth a thousand words. This being said, it is important to develop a rapport with the community that includes willingness for being photographed. In some societies, photographs are regarded as a happy event, while in others they are regarded as threatening. Be sure to check with the community leaders about general sensitivity to photography in the region. It may be necessary to request permission from each individual before photos are taken.

If publications are a goal, photos of recognizable individuals may require written permission of the individual. This is more the case for profit making publications than for educational or public service publications. Usually, it is the community and individual preference in these matters that should guide your permissions.

Good camera techniques are required for using either 35mm or digital cameras. High resolution digital images or clearly focused 35mm (slides or prints) are essential. If good, publishable pictures are a goal, a professional photographer as part of the team is a distinct asset. Otherwise, a course in photography may be required before you set out. Key elements are lighting, backgrounds, contrasts, etc. Many of the photos in this document were taken by professional photographers.

Obviously, cameras and film need to be protected in extreme weather situations. This should be planned for before beginning field excursions to document the traditional food system. Sufficient high quality film, extra batteries, and standard background cloth materials should be included.

3. KEY INFORMANT INTERVIEWS

Selecting Key-Informants

The team leader/manager should work with six to eight community research collaborators (key-informants). The most appropriate key-informants for addressing issues related to an Indigenous People's traditional food system in a community are:

- Community leaders familiar with the hunting, fishing and harvesting practices of the different family groups in the community.
- Elders consistently resident in the community and familiar with the changes that have taken place during the last several decades
- Mothers who have raised a number of children within the community
- Other primary caretakers, such as grandmothers or older siblings who play a key role in the care of the children under six years of age and living in households in the community who are familiar with health of families
- The local *outsider* health professional, agricultural extension worker, or vendor, who is knowledgeable about the topics under review.
- Traditional health practitioners.\

If there is more than one culture of Indigenous Peoples in the community, it may be important to choose key-informants from different ethnic backgrounds.

A way to identify appropriate key-informants is to ask either local community leaders or government officials with whom you meet during your initial introduction to the community, about people living in the area who may be good sources of information. For example, you may ask, "Do you know of any mothers who are active in the community and who would be willing to talk to me at length about food beliefs and household consumption?" If there is a local health clinic, you may find that the health personnel can help you select mothers who are active within the community and would be available to participate in the research.

Once you have chosen two or three key-informants, they can assist in the selection of other community members who fit the criteria listed above and who have appropriate characteristics for interviewing. When individuals are identified, you will need to test their willingness to talk and their ability to respond to questions concerning the topic. You may begin by asking them very broad questions about food within the community. For example, you may say, "How would you describe the standard diet in the area?" Short, terse answers, such as "We only eat millet," and an unwillingness to elaborate when prodded, may indicate a resistance to discuss subjects with strangers to any great length.

It is important to work with key-informants who are nonjudgmental and sensitive to differences within the community. In other words, you

need to identify individuals who are highly aware of what goes on in the community and interact with a range of community members from different backgrounds. When choosing key-informants keep in mind that these individuals need to represent perspectives on food use of the general community.

Key-Informant Interviewing: Principles of Open-Ended Interviews

Key-informant interviews will be conducted throughout the duration of the research design and data will be collected in the form of written field notes. The interviewer should record as much as possible during the key-informant interviews, in the informant's exact or near-exact words. Words, phrases and whole sentences should be written down as they were stated.

Note taking is an important element in the interview process. Remember that you are looking for vocabulary and local terms that may allow you to capture important insights into the local culture and belief system. When such terms are mentioned, insure that you have an accurate understanding by probing for specific examples or illustrations. You may say, "What do you mean by ?" or "Could you give me an example of where is found in this community?"

Often interviewers find that taking good notes requires time, leading to brief pauses while the interview is being conducted. While the notes are being recorded, the interviewer may feel that these short interruptions cause some discomfort for both the interviewer and the key-informant. If this occurs, explain once again to the informant that what they have said is important and in order to capture the information you need to write it down in its entirety. It is also important to remember that as the interviewers and the key-informants become more familiar with one another, these short periods of silence will become less noticeable. Furthermore, with time the interviewer will become more adept at note-taking. Always keep in mind that when trying to capture the local belief system and gathering data on health and nutrition concepts that it is critical to get information in the words of the key-informants.

During the interview you may also find the body language or the hand motions of the key-informant to be significant. If this is the case, record observations that you have identified as important.

You may find that the information you gather from the key-informants may vary according to the location and the timing of the interview. For instance, when talking about food, it may be useful to carry out interviews with the key-informants in settings where the foods are purchased or gathered, such as in the market or during a visit to the local garden. Another possibility is visiting other women in their compounds with the key-informant. Conducting the interview while the informant is preparing a meal may also enable the interviewer to elicit different and pertinent information. As you become more familiar with your informants and the activities in which they are involved, explore the possibility of conducting the interview in different settings that may enhance the

interview or allow you to expand upon the information gathered.

Key-informants should also be consulted for the testing of interview procedures used with the mother-respondents. Discussing the procedures and conducting exercises with the informants will help the researcher determine what revisions and modifications need to be made so that the research instrument is appropriate for the community under study. You may want to choose two or three of your best informants to test the research procedures. Once you have administered the exercises ask for advice on how to modify the procedures so that they are appropriate for the local audience. Get suggestions about specific terms or phrases and whether there are ways to make the questions more clear.

Additional Notes on Working with Key Informants

The key-informant methodology is the single most powerful ethnographic data-gathering tool. Although individuals vary considerably in their natural interviewing skills, the techniques of key-informant interviewing can be taught to persons ranging from the highly educated to near-illiterate community people. The most effective training methods are usually a combination of role-play, trial-and-error, and continued practice under supervision. The following summarizes the main elements of key-informant interviewing:

1. The informants must be interviewed more than once, so that a social relationship develops between the interviewer and key-informant.
2. The key-informant is regarded as an *expert*, who imparts important information to the interviewer. The interviewer acts the part of someone interested in learning from the informant. For this reason the term *consultant* may be used in place of key-informant. The interviewer should not respond to information from the key-informant/consultant with value judgments or expressions of criticism.
3. The interviewer must record as much of the information presented by the informant as possible, usually by writing in a notebook, sometimes supplemented with tape-recording. The act of recording the information is part of the demonstration that the data from the expert are important.
4. The interviewer seeks to get key portions of the *testimony* in the informant's exact, or nearly exact words. Words, phrases, and (sometimes) whole sentences are written down exactly, when possible. Sometimes the tape-recorder is used as a backup device, to check on the interviewer's note taking. As often as possible the interview must take place in the informant's native language and the interviewer must also be fluent in the local dialect.
5. The interviewer must avoid too much reliance on asking a series of focused questions. Instead, he or she tries to get the informant to narrate, list and enumerate, and expand his or her explanations of various topics.
6. The interviewer tries to get the informant to lead the discussion

into elaborations, explanations, and sometimes into whole new topics.

7. If the interviewer has some prepared questions, or lists of topics, these are never used to structure the entire interview. The prepared questions are introduced occasionally, secondarily, for example, when the informant has finished explaining a topic. One exception to this rule occurs when the key-informant is asked to respond to a pre-testing of a structured interview that is being developed for use with a wider range of respondents.
8. Second and subsequent encounters with the informant provide the opportunity to bring up materials from the previous interview-probing for more information. Often the interviewer repeats portions from a previous interview to verify or her understanding and to prompt the informant for more detail.
9. Probing for more detail, information, examples, or cases, is a major element of successful interviewing technique. This probing, prompting, urging of the informant is a counterpoint to "listening to the narrative explanations."
10. Ideally, the relationships of researchers to their key-informants continue throughout the duration of the project. In later phases of information gathering, it is very useful for the interviewer to try out hypotheses with his or her best key-informants. That is, the researcher has developed a model or general idea of the particular cultural/behavioral domain that is the focus of study. For example, perhaps the research team has a series of ideas about the *personality* of leafy green vegetables and how they differ from other vegetables. This idea can be brought up with the key-informant, who is asked to comment, correct, and perhaps expand the idea into other food groups. In some cases researchers will ask their key-informants to comment on drafts of reports, or on descriptions written from past interview materials.
11. In an increasing number of cases, you should seek to have true local participation in the data-collection and interpretation processes. In such cases the key-informants become participating information-gatherers, paid or unpaid.

Probing and Prompting

One of the central skills of interviewing (whether it is key-informants or just one-shot informal discussions with persons you meet in the community IS getting the informant to continue to elaborate, give examples, or suggest new areas of exploration with little interference and minimal structuring from the interviewer. The main technique involves unobtrusive *probing*. Here are some miscellaneous examples used in the midst of open-ended, conversational interviews:

"That's interesting, please go on."
"Why did people stop using ._____(e.g., a food or a method of food preparation)?"
"What did you do then?"
"Could you explain that a bit more, I didn't get the part about

the_____(some element of action or content)."
"That's fascinating...can you think of any other examples?"
"What do you call that method of food preparation?"
"Please tell me about what you ate when you were young and how food and diet have changed since then."
"Can you think of any other dry season foods?"

In many instances you can simply repeat a part of the previous statements of the informant, such as:

"I see. So the people who live closer to the river are the ones who do most of the fishing...."

Simply restating the informant's words often leads to further elaboration and explanation. It cannot be too strongly emphasized that your attitude of interest, expressed in body language and verbal reactions, is often the most effective *prompt* that leads to further explanation and detail from the informant. Sometimes the most effective prompt is in the form: "This is so interesting that, if its OK with you, I'd like to come back tomorrow. Then we can have more time to go into these details."

Getting Lists of Things (Items) in a Domain

One of the more important techniques in open-ended interviewing is that or asking informants for *lists of things*. The most mundane, ordinary topics can suddenly come to life when an informant tries to list a series of elements, types, or other things. In addition to gathering lists of foods it will be useful to get lists such as special holiday/celebration foods, types of snacks, foods that are good for you when sick, etc.

Of course we do not usually say, "Please give me a list of _____." More likely, we say "You just mentioned that chicken soup is good to give children when they are sick. Can you tell me what other foods are good to give to sick people, for different sicknesses, or for different kinds of people...?"

Usually, you will have to do some prompting and encouraging: "OK, that's three different types...any others? What about any special foods for the sickness that pregnant women get?"

It is worth repeating that the best, most detailed and systematic information comes from key-informants, after you have established a social relationship in which they come to understand and appreciate the kinds of information you are trying to gather. They become emotionally involved in the process themselves and will often make special efforts to think about the information, and will even seek out more examples and details from their friends.

So, the bottom line is, cultivate long-term communications with your best key-informants.

4. FOCUS GROUPS AND WORKSHOPS

Focus Groups and Community Workshops

In thinking about conducting a focus groups or community workshop, one must first think about objectives for the meeting. What kind of food information is needed, and do you need to gather the diversity of knowledge and opinion of a few people, or do you need a broader perspective from all in the community, or several communities? **Focus groups** are comprised of a small group of people usually of common age and gender who are knowledgeable in a specific area. **Community workshops** can engage larger numbers of people, and are ideally suitable for gathering information from multiple communities, or for sharing research results with representatives from the whole community. Both require facilitators who are excellent communicators, who speak the language of the community, and who are respected by the community. Both require a person "recording" proceedings, with note taking and/or use of a tape recorder. These proceedings should then be prepared into a report and discussed with the research leaders and community representatives for accuracy.

Training of the facilitator is critical to a successful focus group or community meeting. This leader must be completely knowledgeable about the questions being asked, and how to encourage full discussion among participants. As well the recording person needs to know what key points are being made. Advance meeting among the research manager, facilitator and recorder should clarify the purpose and desired results from the meeting. Appropriate terms and language, and if possible the key words should be identified in advance.

Participants in both focus groups and community workshops should be carefully considered. The community council or group of leaders should guide decisions on which people would be most helpful in expressing the diversity of activities, opinions and knowledge that exist in the community, and which individuals might be too controversial, domineering or disruptive and should therefore be excluded.

Focus groups. These usually take place over a maximum of two hours with a maximum of 8-10 people who commit to the entire period. The questions should be clearly "focused" and individuals of similar age and gender are asked to express their views. If knowledge and opinion of multiple ages and both genders of adults are desired, then several focus groups can be held. It is possible to understand attitudes as well.

It is important to eliminate irrelevant issues and to aspire to generate discussion among the participants. All members of the focus group must be encouraged to talk. Disagreements among members should be encouraged if they exist, and dominance of one or a few individuals should be discouraged.

Focus groups are good for planning activities of a program, solving program problems, and for advising on evaluation strategies. They can be

Miao focus group; Karen focus group; Karen men's focus group; Bhil men in workshop; Suttilak workshop.

key for conducting evaluations. A focus group can advise on wording/terminology of planned questionnaires delivered to individuals.

Community workshops. These meetings can accommodate many people, but they should not become so large they are unwieldy for the facilitator. It is very helpful to have the community leaders open the workshop to show support for the initiative. One example of a successful community workshop is when several people from different knowledge bases in the community (or from several communities in a region) come together to create a community food list. The facilitator can begin the discussion, and members will add to the list. A flip chart or wall chart of the list can be made for all to see, and a grid created to gather specific information on each food. Examples of this information are taste appeal scores and seasonal availability scores (on a scale of 1-5), even locations of foods.

Another example of a community workshop is for explaining results of a research activity. Visual aids on flip charts are very helpful in getting community members to relate to the discussion.

It is routine to conduct an evaluation of the workshop to ensure that the information was clear and understood, and that all opinions were expressed in the discussion.

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5. INDIVIDUAL INTERVIEWS (SAMPLING AND DATA PROCEDURES)

(Adapted from Blum, Pelto, Pelto and Kuhnlein, 1997)

Selecting the sample of interview respondents

Approximately twenty-five to thirty households should be selected for the structured interviews. Depending on the focus of your particular inquiry among the Indigenous People in the community, the interviews may be carried out with mothers or other primary caretakers, of children of a particular age, or defined categories of adults by age and gender. Ideally, a random sample of the particular age/gender group would be taken from the community to insure representativeness. However, random sampling is often not feasible unless a full (recently updated) list of all households is available. If such a list of all the households is not available, you can develop a method such as selecting every third or fourth house, (depending on the size of the community) in order to get a representative sample. See the end of this section for further discussion of the sample selection strategy.

If the objective is to understand the food system of a particular culture of Indigenous Peoples avoid including individuals from other ethnic groups. On the other hand, if the community is composed of other indigenous cultures that constitutes significant numbers, it will be essential to select sub-samples of these groups to be interviewed. If this is the case, it is important to include a large enough sample of respondents representing a particular culture for the analysis to be meaningful.

In communities where the nuclear family is the dominant pattern, the principle caretaker of infants and children is generally the mother. In many areas, however, the grandmother or older siblings may play a key role in the care of children. If your focus is on children, depending upon the situation, it may be necessary to conduct the structured interviews with other caretakers as well as the mother. If you determine that it is appropriate to interview more than one caretaker in a household, be sure to record the responses on separate data collection forms. However, if more than one interview is conducted in one household, for sampling purposes, they are counted as one household.

In selecting households (mothers) for the sample remember the following criteria:

1. There must be at least one target individual (for example a child six months to six years old) living in the household.
2. The person you interview should be a permanent member of the community, not a visitor, and preferably have resided there for several years.
3. Each respondent (ie, mother or other caretaker) should be available for a series of interviews over the next five to six weeks (anticipate approximately one hour per visit). When you first meet with the person of the household, ask whether he/she will be available and willing to participate in the study.

Notes on selecting a random sample

The information that you gather using these procedures is intended to provide a balanced and fair representation of the target community and population. But your time and resources are short; usually you do not have the luxury of spending a lot of time enumerating every household and then generating a careful random sample. On the other hand, you will want to be sure that your observations, informal interviews, and your sample of household respondents are as representative as possible of the geographic and cultural subgroups and subdivisions of the community.

Representativeness: Age, Gender, Ethnic Groups, Geography

In any population there are different types of people, with different attitudes and information, and some of the differences are quite predictable. That is, you know from experience that information presented to you by males is likely to be different from that of females, and young people see the world differently from the senior generation.

You should try to have key-informants from different age groups and different neighborhoods or localities in your target area. Information about typical food use patterns should be gathered from persons who are current family food providers, but older persons who may be retired from cooking and food preparation may be important sources of information concerning earlier food patterns.

Young persons, including small children, may be important informants concerning children's snacking and related food patterns, as well as their attitudes and taste preferences.

During the assessment you may not have time to be sure of representativeness of your key-informants, focus groups and all your miscellaneous sources of information. However, you should be constantly aware of the gaps in your information sources. Typically, you will be aware that you still have not talked with people from the other side of the tracks or, frequently enough, you will be aware that you have a serious imbalance of one gender or the other among your key-informants.

Use Maps and Diagrams to Chart Your Representativeness

As soon as you have a good working map of your target area, you can begin to use pins or other markers to identify the areas for which you have information. For example, you can use a pin for each key-informant, and then inspect your map to see how you can increase the geographic representativeness of your information. Perhaps you will need to find some new key-informants in those areas that are still blank on your map.

Simple tables and charts can keep you reminded of the representativeness or balance of gender, relevant age groups, ethnic groups, and other differences in your client population. In some cases, you will be able to see from your charts and maps that you have information piling up in one area because all of your team members tend to go to the same area. Perhaps, after the first week or two, your team should disperse into different areas, or specialize in talking with different kinds of key-informants.

If your data-gathering team is all female and you find that you are not getting any interviews with males, then you will need to assign someone to get some interviews with males, to get a male-oriented view of food acquisition, crops, and food preferences.

Representative Sampling of Times and Places

We often think about representative sampling in terms of *people*. In fact, many books about sampling focus all their discussion on sampling from people, households, and other sampling units. On the other hand, it is important that you consider other types of representativeness. Observations of actual meals, including collection of 24-hour recalls, should be distributed as representative of the weekly cycle, for example. If there is more than one weekly market in the area, observations should be carried out in each of those sites, especially to note differences in the foods available, price differentials, and perhaps differences in the kinds of people who shop in the different locations. Similarly, if your project is in an urban location, different neighborhoods are likely to have different relationships to stores and other facilities.

Representative (Random) Sample of Respondent Households

In rare situations, you may find that there is a recent census of the target community, listing all the households with details of household composition. In such a case the drawing of a random sample can be quite straightforward. You would follow these steps:

1. Identify the list of all households with your target age/gender group.
2. Assign a number to each household, starting with one.
3. Select numbers from a table of random numbers. Each time one of those random numbers corresponds to a numbered household, that unit is added to the sample.
4. For a proposed sample of thirty respondents, select fifty households, so you have a reserve to substitute for persons who are unavailable or unwilling to participate, as well as those who drop out due to illness or absence.

Drawing Household Numbers from a Hat (Instead of Random Numbers Table)

In most cases the total number of eligible households is not so large as to preclude your writing all the numbers on slips of paper and then drawing your sample in that time-honored folk method. The table of random numbers is then unnecessary.

Stratified Random Sample

In the majority of communities, there is some major division of the village or area-upper/lower caste, landowners/landless, uphill/lowlands, or central village/peripheries. In such cases it is wise to *sample separately* from the two sectors. That is, you would first prepare the two separate census lists (perhaps in consultation with key-informants) and then proceed to use the random numbers table.

MANAGING INTERVIEW DATA

Preparation of the report from this research is greatly enhanced by the use of the data-collection forms and data tabulation sheets with the modules. The research team will need to establish systems to manage the forms which can quickly accumulate and become unruly. It is important that the research assistants include the respondent numbers on all individual forms and that the completed forms be filed in an orderly and simple fashion. The forms can either be separated according to respondent or procedure. This depends on what your particular research team finds most logical and convenient.

Many of the forms need to have the list of the twenty-five to thirty key foods written on the form prior to the interviews. Remember that the food items retain the same order on the food list and do not change. If a word processor and photocopy machine are available a tremendous amount

of time is saved by making master forms that can be copied for the sessions with the respondents.

It is also useful to keep a table or log with a list of all of the respondents, with important background information and notes showing which procedures have been carried out with each individual. This table or log is updated on an ongoing basis and can be kept in a notebook and/or presented on a blackboard or flipchart. It is recommended that every evening after interviewing sessions the team meets to review what was accomplished during the day and to discuss the following day's events. At this time the research manager ensures that the forms have been properly filed and that new forms are prepared for the next day's activities.

Other Considerations

Remember that your goal is to capture emic (meaningful in the local culture) language and information. Therefore, to preserve the integrity of the data you will want to conduct the exercises and record the responses in the local language if possible. Translations and interpretations will need to be made later when data are analyzed and for the writing of the final report.

You will find that the exercises are more effectively carried out with two people, one conducting the interview and the second recording the responses. Before beginning interviews with mother-respondents decide who will record the responses. This should depend upon the skills of the field assistants and determined in practice sessions. Determine which modules require two interviewers and which can be carried out by one interviewer.

6. PROJECT AND COMMUNITY PROCEDURES TO ENHANCE COMMUNICATIONS

REMINDERS ON DO'S AND DON'TS FOR FIELD WORK WITH INDIGENOUS PEOPLE

(Adapted from Blum, Pelto, Pelto and Kuhnlein, 1997)

Most people who develop projects using these methods will have previous experience in various kinds of research and intervention programs. Therefore, many of these elementary principles of community-based work will already be well-known. This list of *do's* and *don'ts* will be useful when you are training team members who are new to this kind of activity with Indigenous Peoples.

i. *Do* remember to *clear* your data-gathering activity with local authorities, local governmental persons, and community leaders. Failure to follow and respect lines of local authority can lead to serious obstacles that compromise the data-gathering and subsequent intervention programs. Be sure to obtain prior collective, community and individual informed consent for the research procedures.

ii. *Do* explain your general purpose to the people that you interview and explain where the information is likely to be used. This explanation is part of the information that people should have as a basis for agreeing to be interviewed. This is what we mean by *informed consent* as required by governmental and international standards of ethics.
iii. *Do not* coerce individuals to respond to interviews or other data-gathering. Individuals should be assured that their participation is voluntary and that they have a right to refuse to answer questions.
iv. *Do* not, as a researcher, promise the community leaders or any other individuals anything in the way of unlikely or yet unknown future benefits or services in relation to the study.
v. *Do* promise to share the results of the study with the community and those contributing their time as interviewers.
vi. *Do* be considerate of people's time schedules. If possible, data-gathering should be carried out during times of the year and days of the week, when people are not burdened with heavy work in harvesting or other activities.
vii. *Do* try to set up appointments with people, so that interviews are scheduled at times of the day and week that are most convenient for them.
viii. *Do* assure your informants and respondents that everything they say to you will be confidential and will not be told to other persons.
ix. *Do not* criticize individuals concerning their food habits, hygiene practices, and other behaviors, no matter how much they differ from what you think they should be.
x. *Do not* ridicule or correct persons if they tell you ideas and beliefs that you regard as superstitious or old-fashioned. Instead, you and your field team should treat all ideas, beliefs, and attitudes with respect and interest.
xi. *Do not* assume that all the statements of your key informants (and other sources) are correct and accurate. Always look for confirmations and ways to verify statements through checking with other persons and information sources. Also, it is a good idea to be cautious in accepting written reports concerning a locality or community. These, too, might be biased or out of date.
xii. *Do* be aware of local, intracommunity differences in cultural beliefs, knowledge, and behaviors. In all communities, there are variations in food use, diet, and other behaviors, even though food use in general is highly patterned. The differences found in some families are often important clues to directions of change, as well as indications of patterns of behaviors that might become general, under favorable conditions.
xiii. *Do not* wear out your respondents or informants with lengthy interview sessions. Try hard to discover an ideal duration (often about one hour), beyond which your informants' patience and attention begins to weaken. This is especially considerate in busy households with young children.
xiv. *Do* maintain an attitude of interest and sincere learning about local food and diet ideas and practices. The data in projects like this are much more believable and the relationships with local community people are much more pleasant if the data gathering team shows

sincere interest in the ideas and practices of the community people.

xv. *Do* be aware of special cultural and social sensitivities of the local population, particularly special religious areas, religious beliefs, and ritual behaviors. For example, you should be aware of general religious food restrictions in the community. For example, in households with religion-based vegetarian practices one must use extreme caution in introducing any questions about meat-eating.

TRANSLATIONS

In working with Indigenous Peoples in different settings you may encounter a local language that is not written. If community members are not bilingual in a language that is written, you will need to employ a bilingual interviewer from the community who can record responses to interviews for data interpretation and management.

If the local dialect is written as well as spoken, here are some main points to follow in training your data-gathering team about translation from the local dialect or language to the national and international languages.

i. Preserve vocabulary of key words and phrases in the original form, as used by the local people. This applies to the names of crops, foods, meals, dishes (types of prepared foods), attributes of foods, and other key words that emerge in interviews. For example, if local people have special words, or nicknames, for food items, these can be presented as used, rather than substituting the national language equivalent.

ii. Do not assume that words that *sound like* equivalents in the national language have the same range of meaning. For example, the word *sopa* in Mexican food culture sounds as if it refers to the same kind of food as soup in English. However, when we learn that a platter of noodles is also *sopa* we realize that the word cannot be freely translated, without further explanation.

The word *tomati* in Hausa almost always refers to tomato paste in arid regions of Niger, rather than a fresh tomato. In speaking of fresh tomatoes the adjective generally is added for clarification.

In many parts of the world foods are categorized in words that refer to *hot* or *heaty*. In some contexts the word may actually refer to the temperature of the food, while in other contexts the word hot (and the opposite, *cold*) refers to an abstract quality or attribute of food in relation to maintenance of a complex balance of hot and cold qualities in the body.
Thus the label hot or heaty concerning food may require considerable explanation, instead of simply literal translation into the equivalent word in the national language.

iii. Complex local vocabulary items should be presented first in the indigenous language, followed by the *literal translation*, followed by further

The need for 4 layers of translation: Miao-Sichaun-Mandarin-English.

clarifying explanation.

Example: In Hausa some people say: "/Shine/ /mini/ /koshi/." Literally: "/That food//makes me/ /full/."

The statement can refer to filling one's stomach, but in Niger the statement also referred to building up bodily reserves for a future time of food shortages. Thus statements in the field notes should always use the Hausa word, *cowshi*, rather than the French language equivalent, plein.

For important attributes or qualities such as *cowshi* it is useful to ask informants to use the word in different contexts. Interviewers can also try using the word themselves, asking the informants if this example is a correct use of the word.

iv. Investigators must watch for topics in which local assistants might not have full command of the national language, even though they have moderately fluent use of both languages in most areas of conversation. Conversely, educated research supervisors and team leaders may believe themselves fluent in the local dialect, yet they may be lacking in local nuances. For example, in rural Haiti the term *opresion*, is considered by the local health professionals to be synonymous with asthma. There is, indeed, an overlap between the meanings of these two words, but in rural localities it turns out that opresion can refer to a wider range of sicknesses, including forms of bronchitis and pneumonia.
v. When passages of field notes are translated into the national language, the key terms in the local language should remain imbedded in the text. For example, in Andhra Pradesh, India the language spoken in rural communities is Telugu, in which the abstract concept of hot/treaty is *vedi*. Since for research purposes the national language is often English, a sentence concerning this attribute should be written like this: Fruits such as papaya and mango are rated high in vedi (hot/treaty).
vi. Team leaders can review the field notes and reporting forms of the research assistants to see that local terminologies are carefully preserved and explained.
vii. Important features of local vocabulary are not only to be found in food names and their attributes. In some cases the local dialect will have special expressions or special slang for behaviors dealing with foods and eating. Also, there may be slang expressions or special words for types of persons corresponding to ideas such as picky eater, omnivore, etc.

7. CHECKLIST FOR A QUALITY FOOD COMPOSITION LABORATORY

Gathering information about the composition of food in a traditional food list can be a tedious process, and the help of experts is often required who can complete the appropriate searches of the world's data systems. This usually happens through interface with the Food and Agriculture Organization's INFOODS network.

(www.fao.org/infoods/publications_en.stm#fna). Researchers who have completed this kind of search using common English names and scientific names of species will then have a clear idea of missing data in their traditional food list. Often, wild species are subject to neglect in national food composition tables because they do not enter commerce. Once a list of missing data are identified, and the researchers know the items that are frequently consumed in the community, it becomes clear which foods to sample and take to the laboratory for analysis.

Identification of the closest food composition laboratory with which to work on a project such as this requires attention to several details. Review of the following checklist of important points for evaluation may need the assistance of a laboratory scientist. Attention is needed to:

1. What is the training of staff supervising and doing the actual analysis? A degree in food science from a university is required within the team.
2. Is there a protocol manual of standard analytical methods that is routinely followed? Is it a recent publication?
3. Is the laboratory equipment functional? For standard analyses conducted in this manual, ask to see the following equipment: Analytical balance, freeze dryer, oven dryer, ashing oven, freezers at -20 and -70º C, atomic absorption instrument, high-pressure liquid chromatography instrument.
4. Are the equipment maintained or serviced by a professional at least once yearly?
5. Are procedures for cleaning laboratory glassware using distilled water?
6. Are reagents for analysis from a recognized chemical company (Sigma, for example-reagent grade chemicals)?
7. Are laboratory notebooks maintained by date and methods, with results? Are calculations checked and re-checked in the notebooks?
8. Are quality control analytical procedures up to date. Does the laboratory participate in performance tests with other regional laboratories using standard samples?
9. Are reference materials maintained for quality control of analyses (orchard leaves for minerals, for example?)
10. Are duplicate and triplicate analyses run for each independent sample? Is the laboratory insistent that more than one independent (harvested and packaged) sample is analyzed for each nutrient.
11. Does the laboratory keep a history of sample data sheets identifying species, place and date of harvest, quality of sample received into the laboratory (fresh, frozen, or dried without damage in transport?), record of analyses conducted, date of return of results to the researcher, and potential problems with the samples or data?
12. Is the time to completion of analyses reasonable for the expectation and needs of the researcher? Is the estimated time adhered to?
13. Does the laboratory maintain a database of previous analyses conducted?
14. Are the prices requested reasonable?
15. Ask for names, addresses, and telephone numbers of previous clients to do a reference check. Is the laboratory known by the national food monitoring agency?

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APPENDICES

1. Example of a CINE Community Research Agreement
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3. Example of a form for Individual Informed Consent
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APPENDIX 1: EXAMPLE OF A CINE RESEARCH AGREEMENT

(CONCLUDED BETWEEN CINE AND AN INDIGENOUS COMMUNITY IN CANADA)

(*Names and places have been omitted.)*

RESEARCH AGREEMENT

"VARIANCE IN FOOD USE IN …….. COMMUNITIES"

The researchers, as named, and the ….. community agree to conduct the above-named research project with the following understanding:

1. The purpose of this research project, as discussed with and understood by ….. in the community, is:

- to improve the understanding of how food practices convey different benefits or risks from a nutrients/contaminants point of view and also culturally and economically; and
- to establish a baseline dietary intake against which future dietary studies could be compared to assess changes in food intake; and
- to identify food/nutrition related concerns and potential food/nutritional problems in the community.

2. The scope of this research project (that is, what issues, events, or activities are to be involved, and the degree of participation by community residents), as discussed with and understood by ….. in this community, is:

The issues in this project are nutritional and will be addressed through organizational meetings with community members and dietary interviews of a sample of adult men and women which will be conducted in Fall 1994 and possibly in Spring 1994 as well.

The communities participating in Spring 1994 are a subset of all communities which participate in the Fall 1994. The community can elect to participate in both series of interviews or in the Fall 1994 only.

To participate in Spring 1994, the community must select one member who will be employed as interviewer by the project and will participate in a training workshop to be held in ….. in February 1994 (exact date to be announced).

Community members who will participate as respondents will volunteer approximately one hour to participate in the interview.

3. Methods to be used, as agreed by the researchers and the community, are:

A member of the community will be employed by the project to conduct dietary interviews of one adult man and one adult woman from each randomly selected participating household during at least one

season (Fall 1994) and possibly two seasons if the community decides to participate also in Spring 1994.

The dietary interview takes approximately one hour to administer, is confidential and voluntary. Questions are asked about the frequency of traditional food consumption, the dietary intake in the day preceding the interview, and a series of questions on the family and cultural attributes of traditional foods.

4. Community training and participation, as agreed, is to include:

One community member will attend the ..... training workshop in February, 1994, a 2-day training session in dietary interview methodology.

The interviewer will learn techniques common to any survey methodology as well as techniques specific to this particular project.

It is also within the goals of this project to develop community capabilities to conduct and analyze their own data. Software to aid in this process will be made available to community members. Additional training on the use of this software (EpiInfo) will be offered.

The development of this project is based on sincere communication between community members and researchers. All efforts will be made to incorporate and address local concerns and recommendations at each step of the project.

At the end of the project, the researchers will participate in community meetings to discuss the results of the analysis with community members.

5. Information collected is to be shared, distributed, and stored in these agreed ways:

The data collected are confidential and no name is attached to a record. Copies will be kept at CINE where the data will be converted to an electronic form. The data will be kept on diskettes at the band office and at CINE. The researchers and CINE will be available to answer questions and assist community members should community members decide to use these data for different purposes, beyond the objectives of this particular project.

A final report will be distributed after approval from the community members.

6. Informed consent of individual participants is to be obtained in these agreed ways.

The consent form (copy attached) will be read by the interviewer to the respondent. A copy of the consent form will be left with the respondent so that the addresses of each researcher can be used at any time, should the respondent wish to contact the researchers for additional information.

7. The names of participants and the community are to be protected in these agreed ways:

As mentioned on the consent form, the interviews are confidential. In no instance will the name of a respondent be attached to a record. Since this project is being conducted in multiple communities in ....., and since one of the objectives is to study the variation in traditional food intake between communities, the communities will be identified by name unless decided otherwise by community members. For example, number codes might be considered.

Before distribution of the final report, each community will be consulted once again as to whether the community will be identified with its name, or whether a coding system should be used.

8. Project progress will be communicated to the community in these agreed ways:

In Summer 1994, the results of the project conducted during the preceding Spring will be presented to participating communities. The researchers will travel to the communities and hold public community meetings to this effect. Similarly, public community meetings will be held in the Summer 1995, in all participating communities, to report on the overall project results.

Each researcher will also be available during the course of the project to address particular questions that may arise.

9. Communication with the media and other parties, (including funding agencies) outside the named researchers and the community, will be handled in these agreed ways:

The funding agency ..... organizes two meetings a year during which the project progress is summarized. In these meetings, as well as during any public communication on project progress and findings, the researchers will be aware of their responsibilities and commitments to the welfare of the communities involved.

Funding, benefits, and commitments

Funding

The main researchers have acquired funding and other forms of support for this research project from:

(*name of donor)*
Contact: (*name and address)*

The funding agency has imposed the following criteria, disclosures, limitations, and reporting responsibilities on the main researchers.

No limitations have been imposed on this project. The researchers must report the project progress to the funding agency twice a year.

Benefits

The main researchers wish to use this research project for benefit in these ways (for instance, by publishing the report and articles about it):

The researchers will publish a final report to the funding agency in 1995. Scientific presentations in peer-reviewed conferences and publications will be made. The final report will be reviewed by community members prior to publication. Scientific presentations and articles engage only the responsibility of the researchers.

Benefits likely to be gained by the community through this research project are:

Educational
The community researcher, who will work as interviewer, will be trained in conducting surveys. The community researcher, as well as other community members, will also be trained in the use of a specialized software which can be used to collect and analyze dietary information as well as information from other fields, as needed, within and for the community.

Informational
The community at large, by focusing on its dietary practices, will learn about the health and cultural attributes of food practices. The information generated by this project will assist individuals in making informed decisions as to their diets and food practices. The data generated by this project will be kept in the community, and may be used in the future to address new questions or compare changes in dietary practices.

Financial
The community member(s) employed as interviewer(s) will be compensated at the rate of …… per completed interview.

Commitments

The community's commitment to the researchers is to:

- recommend capable and reliable community members to collaborate/be employed in this project; and
- keep informed on the project progress, and help in leading the project toward meaningful results.

The researchers' main commitment to the community is to:

- inform the community on project progress in a clear, specific, and timely manner; and
- act as a resource to the community for nutrition-related questions.

The researchers agree to stop the research project under the following conditions:

- if community leaders, for example the Chief and Council, decide to withdraw participation; or
- if the researchers believe that the project will no longer benefit the community.

Date:.....

(Signature(s) of.....
main researcher(s))

(Signatures of witnesses)
.....

Date:.....

(Signature(s) of.....
community contact person(s))

(Signatures of witnesses)
.....

APPENDIX 2: EXAMPLE OF COLLECTIVE CONSENT OBTAINED FROM AN INDIGENOUS ORGANIZATION

(Names and places omitted.)

Name of IP

TERRITORIAL BOARD MEETING

Date

MOTION

WHEREAS ….. of the ….. rely on traditional country food in the way of caribou, moose and fish to supplement their diets and to remain in touch with the land;

AND WHEREAS recent studies, such as the *name of study* funded by ….., and other research, have indicated that industrial contaminants such as cadmium, mercury, organochlorines (DDT and toxaphene), and other man-made chemicals are present in virtually all parts of the food chain;

AND WHEREAS the missing gap to date in relating the scientific studies to the human health issue is the lack of dietary or consumption data for the various communities in the …… In other words, how much contaminated country food is being consumed;

AND WHEREAS one of the objectives of the …… Program is to protect the health of Canada's northern people and northern ecosystem, as related to food chain contamination by taking action to implement a focused research program which includes a commitment to responsible northern research to quantify the effects of contaminants to the arctic ecosystems and the relative risks and benefits to humans from the consumption of harvested animals which may contain contaminants in order to develop human health and environmental protection measures;

AND WHEREAS another objective of the …….. Program is to provide timely advice to northern native people regarding benefits and potential risks of consumption of country foods in order to support their preferred way of life;

AND WHEREAS the Centre for Indigenous Peoples' Nutrition and the Environment (CINE) at McGill University is an independent research and training centre established with funding from … to conduct community-based research and provide training on the diets, nutrition and environmental health of native people, with special emphasis on the Arctic;

AND WHEREAS the ….. Nation is in an excellent position to propose a specific project relating to a dietary survey in the *place*;

AND THEREFORE BE IT RESOLVED that the … Nation work with the Centre for Indigenous Peoples' Nutrition and the Environment (CINE) at McGill University to develop a research project to define the levels of consumption of fish and other traditional foods in … and … communities to therefore understand the extent of traditional food use in order to define contaminant and nutrient intake, so that timely advice regarding benefits and risks of food consumption can be made.

AND BE IT FURTHER RESOLVED that application for funding of the research be made to *donor* no later than January 29, 19….

MOVED BY:……

SECONDED BY: ……

MOTION CARRIED UNANIMOUSLY : …… DATE: ……

APPENDIX 3: EXAMPLE OF A FORM FOR OBTAINING INDIVIDUAL INFORMED CONSENT

(Names and places omitted).

Variance in Food Use in … Communities

INDIVIDUAL CONSENT FORM

The purpose of our work is to find out the kinds and the amounts of food eaten by the people in ….. communities, and in particular the use by adults and especially those who make maximum use of traditional ….. food. This work will help to define the benefits (nutrition and other values) and risks (contaminants) from the use of wildlife food to the ….. People in the different areas.

At the end of the study the leaders of the project will give a full report to the communities. The researchers will return to the communities for this, and will be available to discuss results from individuals, if they wish.

If you would like to participate in this interview, it will take about one hour of your time to answer questions about the food you eat. All information will be confidential and never publicly attached to your name. Number codes will be used on all forms.

This study will be done by the Centre for Indigenous Peoples' Nutrition and the Environment (CINE) in cooperation with the ….. Nation and the ….. Nation in ….. Funding is provided through ….. *name of donor*.

At any time you can refuse to answer any or all of the questions and ask us to leave. The local community interviewer or the community administrator will answer any questions you may have about this study or will refer them to the research supervisors.

Research Supervisors

1.

2.
(representing the RI)

3.

4. (representing the IP)

Do we have your permission to begin? ❑ Yes ❑ No

Respondent's signature .....

Respondent's name.....

House number.....

Community.....

Interviewer, once you have given a copy of the consent form to the respondent, please initial this form: _____ (*your initials*).

This acknowledges that you have read the consent form to the respondent in language that the respondent, to the best of your knowledge, understands, and that you have provided the respondent with a written copy in English.

INTERVIEWER, KEEP THIS FORM ATTACHED TO THE FIRST QUESTIONNAIRE AND USE IT TO CHECK THE RECORD FOR COMPLETENESS. THE FIELD SUPERVISOR WILL CHECK AGAIN.

Respondent's ID .....

		CHECK WHEN COMPLETED	
		Interviewer	Supervisor
I.	Frequency of Traditional Food Use	❑	❑
II.	Individual 24-hr recall	❑	❑
III.	Sociocultural Questionnaire	❑	❑

APPENDIX 4: EXAMPLE TRADITIONAL FOOD LIST BY SEASON OF HARVEST

Harvest Calendar for K'ásho Got̨ine

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
FISH												
ARCTIC CHAR										+	+	
CISCO						+	+					
GRAYLING								+				
CONNIE							+	+				
LOCHE					+	+	+	+		+	+	+
LONGNOSE SUCKER					+	+						
NORTHERN PIKE							+	+				
TROUT												
WALLEYE												
WHITEFISH							+	+	+	+		
LAND ANIMALS												
BEAR												
BEAVER				++	++	++					+	+
CARIBOU-BARREN	+	+	++	++					+	+	++	++
CARIBOU-WOODLAND			+	+					+	+		
DALL SHEEP								+	+			
LYNX												
MOOSE							+	++		+	+	+
MUSKRAT				+	+	+						
PORCUPINE												
RABBIT				+	+			++	++	++		
	JAN	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEPT**	**OCT**	**NOV**	**DEC**
BIRDS												
BLACK DUCK									++	+		
CANADA GOOSE				+	++	+						
CANVASBACK				+	+	+						
FISH DUCK					+	+	+	+	+	+		
MALLARD					+	+	+	+	+	+		
OLD SQUAW				+	+	+						
PINTAIL						+						
PRAIRIE CHICKEN												
PTARMIGAN	+	+	+							++	++	+
SNOW GOOSE				+	++							
SPRUCE HEN	+	+	+					+	+	+	+	+
SWAN				+	+	+						
WIGEON				+	+	+						
PLANTS												
BLACK CURRANTS												
BLACKBERRIES								+				
CLOUD BERRIES							+	+				
CRANBERRIES								+	+			
GOOSEBERRIES-GREEN						+	+					
GOOSEBERRIES-PURPLE							+					
HIGH BLUEBERRIES								+	+			
LOW BLUEBERRIES							+					
LABRADOR TEA												
MUSHROOMS							+	+				
RED CURRANTS												
ROSEHIPS												
SASKATOON BERRIES												

WILD GREENS		
WILD ONIONS	+	
WILD PEPPERMINT		
WILD RASPBERRIES	+	
WILD RHUBARB	+	+
WILD STRAWBERRIES		

+ HARVEST
++ PEAK HARVEST

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APPENDIX 5: EXAMPLE HARVEST CALENDAR SUMMARY (INUIT BIRDS-6 REGIONS)

Summary of harvest calendars –
Number of months per year birds harvested in each Inuit community

Region/ Community	Fowl	Diving ducks	Geese and Swans	Seabirds	Gulls and terns	Fish-eating birds	Marsh ducks	Sandhill crane	Owl	Wading birds
INUVIALUIT										
Aklavik	5	1	3	-**	-	-	2	1	-	-
Tuktoyaktuk	9	3	4	-	0*	1	3	1	-	-
Paulatuk	9	5	3	-	-	-	4	1	-	-
Sachs Harbour	5	1	2	-	-	-	-	1	-	-
Inuvik	12	3	3	-	1	-	3	2	-	-
Bay Chimo	5	3	4	-	-	1	-	-	-	-
KITIKMEOT										
Holman	9	2	4	-	2	3	-	2	2	-
Kugluktuk	12	3	4	-	-	4	2	2	-	-
Cambridge Bay	12	4	5	-	-	4	3	4	-	-
Bathurst Inlet	2	5	2	-	-	3	-	4	-	-
Gjoa Haven	2	3	4	-	-	1	-	-	-	-
Taloyoak	12	4	5	-	2	4	-	5	-	-
Pelly Bay	3	3	3	-	-	3	-	3	3	-
KIVALLIQ										
Baker Lake	3	-	3	-	-	-	-	0	0	-
Chesterfield Inlet	4	12	3	2	-	-	-	-	0	-
Rankin Inlet	7	1	2	2	-	-	-	1	-	-
Arviat	12	12	2	0	-	-	-	0	12	-
Whale Cove	12	12	5	12	-	-	-	5	0	-
Coral Harbour	4	3	2	0	-	-	-	0	1	-
Repulse Bay	2	3	3	0	-	-	-	-	0	-
BAFFIN										
Resolute Bay	4	2	3	2	2	-	-	-	-	-
Pond Inlet	12	5	5	5	0	0	-	0	-	4
Igloolik	0	4	4	2	2	4	-	0	-	2
Kimmirut	9	7	2	6	4	0	-	-	-	-
Qikiqtarjuaq	5	6	5	3	2	-	-	-	-	-
Grise Fiord	0	5	5	4	0	0	-	-	-	-
Arctic Bay	10	4	4	0	2	0	-	0	-	-
Clyde River	12	4	4	0	5	4	-	-	-	-
Pangnirtung	12	4	4	0	0	0	-	-	-	-
Cape Dorset	7	6	4	4	1	0	-	0	-	0
Sanikiluaq	0	7	6	2	0	0	-	-	-	0
Hall Beach	2	4	5	0	-	0	-	0	-	-
LABRADOR										
Nain	6	5	4	6	6	4	5	-	3	-
Hopedale	12	12	4	5	7	2	2	3	-	-
Makkovik	8	8	3	5	4	4	5	-	4	4
Rigolet	7	9	5	9	9		9	-	-	9
Postville	9	7	3	5	7	4	4	-	-	-
Upper L. Melville	7	4	4	2	-	3	4	-	-	-
Total	263	186	140	76	56	49	46	35	25	19

*not harvested at the time of the study but available.
**not harvested in the community, not available.

APPENDIX 6: EXAMPLE OF A COMMUNITY FOOD SYSTEMS DATA TABLE ENTRY

COMMUNITY FOOD SYSTEM DATA TABLES: Green leafy vegetables for which total data exist. Foods with identifications, or nutrition composition are not listed.

Code number:

photo by Peter Kuhnlein

FOOD CATEGORY: LEAFY VEGETAGLES

LOCAL NAME: Avise

ENGLISH NAME: Agathi

SCIENTIFIC NAME: ***Sesbania grandiflora***

PARTS USED: Leaf

PREPARATION: Curry with Pulses, other greens.

NUTRIENT	NUTRIENT COMPOSITION / 100 G (EDIBLE PORTION)	
Protein	8.4	G
Fat	1.4	G
Minerals	3.1	G
Fiber	2.2	G
Carbohydrate	11.8	G
Energy	93	Kcal
Calcium	1130	Mg
Phosphorous	80	Mg
Iron	3.9	Mg
Beta Carotene	15440	mg
Vitamin A (RE)	2573	mg
Vitamin A	25733	IU
Thiamin	0.21	Mg
Riboflavin	0.09	Mg
Niacin	1.2	NE
Vitamin-C	169	Mg
Folate	-	mg

Wild / gathered/ cultivated: Wild
Free / purchased: Free
Seasonal of use: Around the year
Cost of production: Nil

Importance value to the community by age / gender: Good for eyesight - all ages and gender groups

Miscellaneous information:

Reference: Nutritive Value of Indian Foods. 2003. S no 47

APPENDIX 7: EXAMPLE GUIDELINES FOR INTERVIEWERS

A. INTRODUCTION

This questionnaire takes approximately one hour to administer to each respondent: ideally one adult male and one adult female from each household and an adolescent (15-20 yrs old) if available. The questionnaire has four parts:

I: Frequency of Traditional Food Use
II: Individual 24-hour Recall

It is essential that each interviewer follows directions to the best of his/her abilities since differences between interviewers, if too many and too large, may ultimately make the whole project useless and a waste of time. However, it has been shown repeatedly that this type of dietary data, when collected properly, can provide valuable information for those concerned.

Interviewers are responsible persons working for decent wages, but they also must demonstrate rigor and perseverance in what is often a difficult job: it is difficult to question people, and more difficult still to obtain reliable answers. When the interviewer has a special interest in the subject of concern, the work becomes easier and more meaningful.

This particular project aims at comparing diets among Inuit. Some aspects of the project will vary according to factors that are specific to each community (such as its geographical location, its size, the different seasonal patterns, etc). It is not possible to control all these sources of variations through rigid methods of data collection. Some of the variation will be accounted for during the statistical analyses that will follow data collection.

Nevertheless, some aspects can be controlled, particularly the manner with which the questions will be asked and the answers recorded. These brief guidelines highlight some of these concerns and will hopefully contribute to data quality while making the job of the interviewer easier.

I: Frequency of traditional food use

Fill in the first line. If the respondent is a woman of reproductive age, please ask whether or not the respondent is pregnant or breastfeeding an infant.

Report the ID # and ask the respondent for age-group.

Do not forget to write your name and the date.

Then read the statement immediately following on the form. This statement defines the term traditional food the way they are being studied here. This is necessary since we are only concerned here with the food coming from the land and not other food that may be considered in another context as traditional (bannock, for example). Fill in what season your interview will refer to. This season will be the same for all respondents. Record which calendar months correspond to that season. The respondent must picture the whole past season and try to remember, on the average HOW MANY DAYS PER WEEK, or HOW MANY DAYS PER SEASON s/he has eaten the food you are going to mention. Write down the answer in terms of days per week or days per season, depending on how the respondent answers. You may reassure the respondent that this exercise is not as difficult as it first appears to be. To do so, start by presenting the first item on the list as an example.

You may want to start as follow*: Let me start with the list I have and this will become clear. For example beluga, did you eat any this past _____(season)?* if the respondent answers "no" then circle No on the

form and go to the next item on the list
If the respondent answers "yes", s/he may also volunteer comments such as "oh, sure, many times...". You must be attentive to the information which is volunteered since the respondent may in other words provide you with at least part of the answer that you are expecting. However since this is the first food on the list, you may want to add: *Since you consumed beluga this _____(season),* do not hesitate to repeat the season of concern: this will become assumed after you have gone through a few items on the list, but so far the respondent may not be used to think exclusively for that season of interest*. I need to know how frequently you ate various parts of the beluga, such as the meat and organs.*

Then, go to the next item.
Now, beluga liver, did you eat any this _____(season) if the answer is "no" then record "0" (do not leave any blanks) and go to the next item, if the answer is "yes" then ask: *how frequently, that is how many days a week, did you eat beluga liver this _____(season)* and you hopefully get an answer in a format that you can record. If not, you must re-phrase your question, or ask for precision.

Use probes when the participant is not sure about the exact number of times a part was eaten. For example, ask if the food was eaten less than or greater than once per month? Less than or greater than once per week? If it was eaten every week, would the participant agree that he/she ate the food about 12 times that season? Was the food eaten every other day? (This would translate to 3.5 days per week or 42 times during the season).

Then go to the next item:
Did you eat the kidney? if the answer is "no" then record "0" and go to the next item, if the answer is "yes" then ask: *how frequently, how many days a week did you eat beluga kidney this* _____ (season) and you hopefully get an answer in a format that you can record.

Then go to the next item:
Did you eat the heart? if the answer is "no" then record "0" and go to the next item, if the answer is "yes" then ask: *how frequently, how many days a week did you eat beluga heart this* _____ (season) and you hopefully get an answer in a format that you can record.

Then go to the next item:
Did you eat the lungs? if the answer is "no" then record "0" and go to the next item, if the answer is "yes" then ask: *how frequently, how many days a week did you eat beluga lungs* at this stage, you may not need to mention the season any longer since this may become already clear in the respondent's mind. The expected format of the answer may also be clear. If not, you need to repeat your probing

Then go to the next item:
Did you eat the tongue? if the answer is "no" then record "0" and go to the next item, if the answer is "yes" then ask: *how frequently, how many days a week did you eat beluga tongue?*

Then go to the next item:
Did you eat the eyes? if the answer is "no" then record "0" and go to the next item, if the answer is "yes" then ask: *how frequently, how many days a week did you eat beluga eyes?*

Then go to the next item:
Did you eat the flippers? if the answer is "no" then record "0" and go to the next item, if the answer is "yes" then ask: *how frequently, how many days a week did you eat beluga flippers?*

Then go to the next item:
Did you eat the muktuk? if the answer is "no" then record "0" and go to the next item, if the answer is "yes"

then ask if the blubber was eaten with the muktuk or not. Then ask: *how frequently, how many days a week did you eat beluga muktuk?* Record the number in the right category.

Then go to the next item:
Did you eat the blubber by itself? if the answer is "no" then record "0" and go to the next item, if the answer is "yes" then ask: *how frequently, how many days a week did you eat beluga blubber?* This frequency may be the same as for the muktuk, unless the kauk is eaten separately.

Then go to the next item:
Did you eat the oil? if the answer is "no" then record "0" and go to the next item, if the answer is "yes" then ask: *how frequently, how many days a week did you eat beluga oil?*

Then go to the next item:
Did you drink the soup or broth? if the answer is "no" then record "0" and go to the next item, if the answer is "yes" then ask which the participant drank, (soup or broth) and circle the answer. Then ask if the soup or broth was made with bones or without bones and circle the answer. Then ask: *how frequently, how many days a week did you eat beluga oil?*

Then go to the next item:
Did you eat the meat? if the answer is "no" then record "0" and go to the next item, if the answer is "yes" then ask: *how frequently, how many days a week did you eat beluga meat?*

Finally ask whether any other beluga parts or organs were consumed. Write in the corresponding name for the part or organ not previously listed. The corresponding frequency of consumption for other parts not previously listed is not necessary to obtain.

Then go to the next food: *This* _____*(season), did you eat bowhead*? and follow a similar questioning pattern as previously.

The questioning pattern is obviously repetitive and the quality of the answers will be related to the ability of the interviewer to maintain the respondent's interest, and keep the questions flowing without too many interruptions. The sooner during the interview, the respondent accepts the format of the expected answers, the easier this process will be.

For seals, when the entire head is eaten, ask about the parts separately, i.e. eyes, brain. The meat on the head will be counted under the meat category.

For land mammals, the meat on the ribs and head will be counted under the meat category.

For fish, if the head is eaten, ask which parts are eaten and circle the corresponding parts.

The questionnaire (I) takes approximately 20 minutes to administer.
(For identification of a particular food species, consult the Illustrated Guide.)

II. Individual 24-hour recall

You start by completing the questions identifying the respondent as previously done in the "Frequency of Traditional Food Use".

Then you explain the goal of this questionnaire: *In this questionnaire I would like you to recall as exactly as possible what you ate yesterday, from the time you first woke up. You may want to tell me first all the food*

you ate then we may go back over each food to define how each food was prepared and how much of it you exactly ate. To help in recording the serving size, I have one cup (CINE cup), one bowl, spoons of various sizes and a card with drawings representing a small, a medium and a large bannock. You may want to use any of these models to tell me the serving size of the food you ate, selecting the one you think is the best to describe the amount of food you ate: for example, to record your drinks, we may use the cup. The bowl would be more appropriate for soups, stews, cereals etc. Depending on the way you ate fish for example you may use the bowl or the bannock card to help identifying the serving size you ate. It is very important in this exercise that we record as exactly as possible not only the type of food, but also the quantity of each food consumed. What is the first food you ate after waking up yesterday? at what time did you eat _____ (food name). What did you eat then...

FOOD NAME

Name the food, the particular type or part used in the dish (eg. caribou stew, meat only). To help the respondent remember all the food s/he ate the day before, you may use probes. However remember to use neutral probes, meaning questions that do not suggest the answer but help the respondent to remember all the details of the food eaten the previous day. For example you would ask: "Did you eat the bread plain?" and not "Did you put butter on the bread?" Other examples would be:

DO NOT ASK:	**DO ASK:**
What did you eat for breakfast?	What was the first thing you ate when you first woke up yesterday? At what time was it?
Did you drink sodas or eat popcorn while watching TV?	Did you drink or eat anything while watching TV?
Did you have dessert at lunch?	Did you eat or drink anything after your sandwich?
Did you have cookies at your friend's house?	Did you have anything to eat or drink at your friend's house?

HOW PREPARED / INGREDIENTS

When you have listed all the food eaten during the day, inform the respondent that you are now going to get over the list again, recording **as many details as possible** and what was the exact amount eaten. For example, in the case of a "caribou stew", you would list each ingredient: lard, flour, potato, carrot, salt, caribou (meat, backstrap), water.

In probing for a complete list and a complete description of each food eaten, you may use any of the following questions:

General questions:

- What kind or what is the brand name?
- Did you have anything with it?
- If a package or mix, did you follow the directions exactly? What did you change?
- Did you eat everything or was some left on your plate?
- Is there anything else you ate? you drank? at someone else's house? at the store? From the bush?

Particular probes:

Milk: Kind/brand name? Was it powdered? Evaporated? Whole? 2%? Did you add any water? How much?

Coffee/tea: How much? Did you add anything? Sugar? Coffeemate? Honey? Milk? If milk, what kind?

Juice: What kind/brand? (eg. Tang?_____) Flavour? (eg. cherry) How much?
Was it powdered? Carton? Frozen? Canned? Did you follow directions? Did you add sugar? How much?

Cereal: What kind? Was it cooked? In what? How much? Did you add milk? What kind? Did you add sugar? How much?

Bread: Homemade or store-bought? White or brown? How many slices? Size of slices (typical slice in a package is 25 g). If homemade, how? Recipe? Anything on the bread?

Bannock: What do you put in your bannock? Brown or white flour? How do you cook it? baked? fried? In oil or lard? Was it light or heavy in texture? Could you show me how big and thick were the pieces you ate? (use the "bannock card"). Do you add anything to your bannock? Raisins? Bacon? Skim milk powder?

Butter: How much? Butter/margarine or lard?

Fruits and vegetables: How much? Fresh? Frozen? Canned?

Sweets/Snacks: Fruit pastry? Pie? Cake? Tarts? Candy bar? What kind? Chips? What kind?

Alcohol: How much? What kind?

Meat and fat: What kind of meat (or fish)? What part of the animal? How prepared? Did you add any fat in cooking or dipping? If meat was boiled, did you have the broth? Thick or thin broth? Added soup mix? What kind?

Stew: Homemade or store-bought? Recipe? Kind of meat? Which part of the animal? Vegetables? Broth? Soup mix? How much eaten?

In case market food were prepared without following the directions, ask how they were prepared.

Adequate probing is the key to this interview since even the most cooperative respondent will not volunteer all the details you are after, details necessary to later code and to calculate the individual diets. WRITE DOWN AS MUCH INFORMATION AS YOU CAN.

AMOUNT
To obtain the serving sizes, use the measuring cups/bowl/spoons and drawings, alone or in combination. For meat and fish, the CINE cup may be the most useful guides. For fish for example, the respondent may tell you that s/he ate 1/4 of the arctic char. You would then write "1/4 arctic char" and ask for precision: *comparing the amount of flesh (without bones or internal organs) to this cup or any other models you think appropriate, how much do you think you ate*. After writing the answer (eg.1 2 cups), you would ask for the corresponding serving size for the internal organs. In that case the serving spoons would become handy.

Ultimately, the amount must be recorded in either cups, spoons or grams or in terms of number when the food comes in defined units (eg. 1 apple - medium). Your project coordinator will check your records and help you in recording the food into appropriate serving sizes.

When the respondent seems to think that the recall is completed, go over the record and read the whole record inviting the respondent to add any comments. When reading the diet record to the respondent make sure that all information is legible, that each food type has a time attached to it and a corresponding serving size.

In this final review of the 24-hour recall you may remember that the respondent mentioned in the previous questionnaire (I) eating some particular food every day. Double check these entries to ascertain whether they were recorded accurately, especially if they were not reported in the 24-hour recall. This way, cross-checking the questionnaires (I) and (II) may increase the reliability of the information.

Finally ask the respondent questions 1 and 2.
For question 1, you may want to ask to see the bottle if the respondent does not remember exactly the name of the supplement.

For question 2, yesterday's diet may have differed significantly from the usual diet for any number of possible reasons, such as participation in a wedding or presence of illness. Please list any such circumstance in question 2.

Question 3 records the respondent's height (cm), weight (kg). If the person does not want to answer, do not insist, just make a note. Ask then whether the person wouldn't=t mind being weighed, then check that your scale is well calibrated (O-mark), and record the weight again (without shoes), even if different from the weight previously reported. Measure height accordingly.

The questionnaire (II) takes approximately 20-25 minutes to administer.

APPENDIX 8: EXAMPLE FOOD FREQUENCY DATA

A. Frequency of traditional fish consumption as percentage of the Inuit population consuming each fish and average weekly frequency of consumption (number of days/week) for consumers only, by region, for summer and winter combined

		Inuit Communities											
Species	**Part**	**Inuvialuit (n= 409)**		**Kitikmeot (n=322)**		**Kivalliq (n=355)**		**North Baffin[1] (n=302)**		**South Baffin[2] (n=232)**		**Labrador (n=420)**	
		Percentage of population consuming the food (%) days/week											
Trout	liver	9	0.7	21	0.7	2	0.7	<1	0.2	<1	0.1	1	0.5
	fishpipe/ stomach	9	0.6	17	0.8	1	0.2	0	-	0	-	<1	0.3
	bones	4	0.3	5	0.9	3	0.9	<1	0.1	<1	0.1	6	0.6
	skin	22	0.6	30	0.9	13	0.6	4	0.2	2	0.3	41	1
	head	22	0.6	42	0.7	24	0.6	3	0.2	1	0.5	34	0.7
	fat	12	0.4	26	0.7	11	0.8	3	0.2	<1	0.2	23	1.2
	soup/broth	17	0.8	43	0.8	17	0.6	3	0.2	2	0.4	49	0.6
	meat	40	0.6	56	0.7	39	0.5	6	0.2	2	0.4	71	0.9
	eggs/roe	11	0.6	26	0.6	9	0.7	<1	0.4	0	-	6	0.3
Whitefish	liver	8	0.7	12	0.3	<1	0.1	0	-	0	-	0	-
	fishpipe/ stomach	16	0.7	12	0.7	1	0.3	<1	0.3	0	-	0	-
	bones	2	1.2	2	0.5	1	0.2	<1	0.2	0	-	0	-
	skin	7	1.2	6	0.3	4	0.2	1	0.2	<1	0.2	1	0.2
	head	11	0.7	14	0.6	9	0.2	0	-	0	-	<1	0.3
	fat	12	0.5	17	0.6	2	0.3	1	0.2	<1	0.2	1	0.2
	soup/broth	9	0.4	21	0.6	7	0.2	<1	0.3	<1	0.2	0	-
	meat	49	0.6	43	0.6	18	0.2	3	0.2	1	0.1	2	0.2
	eggs/roe	19	0.9	21	0.5	3	0.2	0	-	0	-	0	-
Char	liver	19	0.9	37	1.1	9	0.6	3	0.2	17	0.8	3	0.8
	fishpipe/ stomach	16	0.8	31	1	2	0.6	2	0.5	6	0.6	<1	0.2
	bones	4	1.5	8	1.3	3	1	5	0.4	5	0.8	6	0.9
	skin	28	1.1	58	1.1	33	0.8	51	1	54	1.0	37	0.6
	head	27	0.9	65	0.9	40	0.8	41	0.6	35	0.8	33	0.6
	fat	18	1	38	1	32	0.9	34	0.9	37	1.2	25	0.8
	soup/broth	34	1	76	1	33	0.8	37	0.6	56	0.8	33	0.4
	meat	68	0.9	87	1.1	72	0.7	88	1	71	1.0	60	0.5
	eggs/roe	18	0.8	41	0.8	16	0.9	9	0.3	6	0.5	5	0.7
Other:	cartilage, flippers, flipper fat, gills												

APPENDIX 9: INDIVIDUAL 24-HOUR RECALL

Community _____ Respondent's gender _____ Household number _____
(1=Adult Female, 2=Adult Male,
3=Adolescent Female, 4=Adolescent Male)

For women only, please ask (and circle) whether:
Pregnant: Yes No
Breastfeeding an infant: Yes No

Respondent's ID #_____

Self-identification: Inuit____ Other _____(specify)

Age-group: 15-20 ____ if you are between 15 and 20, please give exact age _____ years old.

21-40_____ 41-60 ____ Over 60 ____

Interviewer's name _____ Date _____
(day/month/year)

_____

Interviewer, please read to the respondent:
Please, recall as exactly as possible what you ate yesterday, _____ (write which day of the week), from the time you first woke up.

TIME	FOOD NAME	HOW PREPARED/INGREDIENTS	AMOUNT
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Continued...

TIME	FOOD NAME	HOW PREPARED/INGREDIENTS	AMOUNT
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Interviewer, did you remember to check about:

the lard, butter, salad dressing, the milk/creamer/sugar in the beverages, any juice, alcohol, jam/honey...? Any snacks, beverages, or foods consumed outside the home?

1. Did you take any vitamin/mineral supplements yesterday?
   Yes____ No____
   If yes, what brand name?_____

2. Was yesterday, a "usual day"?
   Yes _____
   No _____ (please explain) _____

3. Do you know your height? _____ your weight? _____
   (if not known, write Ank@)
   Do you want to have your height and weight measured now?
   Yes _____ No _____
   If yes, please record the measured height _____
   measured weight _____

APPENDIX 10: EXAMPLE FOOD COMPOSITION TABLE

Nutritive values of Dalit (Zaheerabad, AP) uncultivated green vegetables as determined by the National Institute of Nutrition (Hyderabad, India) *

Local name	Scientific name	Moisture	Protein	Fat	Minerals	Crude fiber	Carbo-hydrate	Energy
		G%	G%	G%	G%	G%	G%	Kcal
Sannapayala	*Portulaca* sp	92.1	1.4*	0.4	1.4	1.1*	3.6*	24*
Tangedu puvvu	*Cassia ariculata*	76.7	2.5	2.2	1.3*	3.7	13.6	84
Adavi soyakura	*Aurthum graveolus wild*	78.3	2.9	0.8	2.1	2.4	13.5	73
Athelli	*Lactuca runcinata*	85.1	4.0	1.1	3.0	1.7	5.1	46
Pittakura	*Acalypha malavarica*	69.7	5.4	1.0	4.4	3.0	16.5	97
Bankantikura	*Corchorus olitorius*	72.5	5.0	0.8	3.7	2.8	15.2	88
Chennagi	*Lagerstoeemia parviflora*	67.4	8.5	1.3	3.6	3.3	15.9	109
Yennadri	*Commelina venghalensis*	87.4	2.3	0.4	2.4	1.9	5.6	35
Uttareni	*Achranthes aspera*	81.3	3.3	0.3*	3.5	3.3	8.3	65
Gunugu	*Celosia argentia*	83.1	3.9	0.3	3.0	2.1	7.6	49
Buddakashe	*Physalis minima*	79.4	6.0	0.8	3.8	1.5	8.5	65
Gorumadi	*Enicostema hyssopifolium*	53.2	7.0	0.7	8.4	4.2	26.5	140
Tellagarjala	*Trianthema decandra*	85.2	2.9	0.4	3.8	1.9	5.8	38
Thadakadobbudu	*Merremia tridentatavar. Hastata*	44.6	12.5	3.9	5.9	5.3	27.8	196
Jonnachamcheli	*Digera arvensis*	33.3*	9.3	1.6	14.2	8.8	32.8	183
Adavi Pullakura	*Oxlis corniculata*	72.6	6.0	2.5	4.0	4.1	10.8	90
Tagarancha	*Cassia tora*	72.7	6.8	0.7	3.7	2.7	13.8	87
Yelakachevulakura	*Merremial emarginata*	40.0	14.3	1.5	6.0	5.4	32.8	202
Angibingi	*NI*	75.9	6.2	1.1	4.7	2.1	10.0	75
Pappukura	*Phyllanthus maderaspatensis*	60.9	3.0	2.6	5.2	4.2	24.1	132
Adavimenthum kura	*Trigonella foemumgraecum*	74.4	2.7	1.9	1.6	3.4	16.0	92
Tummikura	*Lucas aspera*	65.1	3.7	1.2	4.3	4.5	21.2	51
Gurumashi	*Mirabilis jalapa*	83.4	4.9	0.7	3.2	1.6	6.2	51
Adaviponnaganti aalam	*Alternanthera lenella*	80.8	4.6	0.7	4.6	2.2	7.1	53
Nalla kashe	*Solanum nigrum*	81.4	4.6	1.7	2.8	2.4	7.1	62
Doosari	*Coculus hirsutus*	44.4	9.1	1.9	3.2	7.6	33.8	189

Local name	Scientific name	Calcium	Iron	Copper	Zinc	Mag-nesium	Manga-nese	Phos-phorus	Beta-Carotene
		mg/100g	mg/100g	mg/100g	mg/100g	mg/100g	mg/100g	mg/100g	mg/100g
Sannapayala	*Portulaca* sp	*124*	25.3	*0.1*	*0.3*	113	*0.6*	*25*	
Tangedu puvvu	*Cassia ariculata*	167	12.7	0.2	0.6	*58*	0.6	42	
Adavi soyakura	*Aurthum graveolus wild*	412	26.6	0.4	1.1	134	4.0	48	
Athelli	*Lactuca runcinata*	320	13.6	0.4	1.0	130	2.7	152	
Pittakura	*Acalypha malavarica*	1342	40.7	0.4	1.0	130	2.7	152	
Bankantikura	*Corchorus olitorius*	366	15.4	0.2	0.5	82	1.3	77	2.5
Chennagi	*Lagerstoeemia parviflora*	882	10.7	0.4	1.1	258	3.0	125	11.9
Yennadri	*Commelina venghalensis*	243	17.0	*0.1*	0.4	67	1.6	47	
Uttareni	*Achranthes aspera*	417	12.5	0.2	0.6	188	3.6	68	10.49
Gunugu	*Celosia argentia*	398	20.9	0.3	0.8	291	2.5	78	1.2
Buddakashe	*Physalis minima*	424	24.5	0.7	1.6	177	101	96	
Gorumadi	*Enicostema hyssopifolium*	1641	49.9	0.6	1.4	384	10.1	81	
Tellagarjala	*Trianthema decandra*	219	20.7	0.2	0.5	79	3.4	45	0.68
Thadakadobbudu	*Merremia tridentatavar. Hastata*	556	49.1	0.7	1.6	250	4.2	140	
Jonnachamcheli	*Digera arvensis*	3237*	111.3*	0.7	2.7*	520*	21.3*	154*	6.94
llakura	*Oxlis corniculata*	331	139	0.5	1.1	116	3.4	98	6.83
Tagarancha	*Cassia tora*	869	9.7	0.3	1.2	94	1.3	108	5.29
Yelakachevulakura	*Merremial emarginata*	1350	97	0.9*	1.7	479	70	166	
Angibingi	*NI*	554	16.7	0.2	0.8	158	1.6	112	
Pappukura	*Phyllanthus maderaspatensis*	767	59.4	0.3	1.0	205	5.7	91	
Adavimenthum kura	*Trigonella foemumgraecum*	171	34.9	0.2	0.8	84	1.7	33	
Tummikura	*Lucas aspera*	719	81.6	0.5	1.1	64	5.8	46	4.1
Gurumashi	*Mirabilis jalapa*	344	11.5	0.4	0.4	227	1.2	30	
Adaviponnaganti aalam	*Alternanthera lenella*	535	11.2	0.2	0.3	122	3.1	41	
Nalla kashe	*Solanum nigrum*	367	*7.1*	0.4	0.7	87	1.4	79	14.05
Doosari	*Coculus hirsutus*	1152	10.7	0.6	1.4	161	2.8	107	

*Table 38-2 from Dalit report. Yesudas, Satheesh and Kuhnlein, 2003. Analyses conduced by laboratory of Dr. Bapu Rao, NIN.

N=1; analyses in duplicate or triplicate

Appendix 11: Example of Process Indicator Form

Process Indicator Form

Date: _____ Name of Person Reporting:_____

Community: _____ Program and Place:_____

Event/Activity: (attach agenda, announcement or other hard copy, if applicable)

_____

Time Taken (hours, days or weeks):_____

Leader and Assistants: _____

Number of Participants: (attach list of participants, if available)_____

Outcome (if measurable):_____

Positive Aspects: _____

Negative Aspects, if any:_____

What to Consider for Next Time:_____

Other Relevant Information: _____